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Delegated Agency Authority to Address Chemicals of Emerging Concern: EPA’s Strategic Use of Emergency Powers to Address PFAS Air Pollution

Robert L. Glicksman* and Johanna Adashek[◇]

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Abstract

PFAS are a class of chemicals that pose some of the most serious and multifaceted health and environmental threats of the past century. Manufactured since the 1940s, used in everyday products from non-stick cookware, to fire-fighting foams, to makeup and shaving cream, and found in even the most remote parts of the world, PFAS are ubiquitous. The most thoroughly-studied PFAS have demonstrable serious health effects that include reproductive and developmental dysfunctions, interference with the body’s hormonal and immune systems, suppression of vaccine responsiveness, and links to various types of cancers. In response to scientists’ identification of the multitude of health threats posed by exposure to PFAS, EPA has prioritized regulatory action to address those threats, announcing a whole-of-agency approach that relies on the exercise of its authority under a host of federal environmental statutes.

Despite the serious health and environmental threats posed by airborne emissions of PFAS, however, EPA has taken little to no action under the Clean Air Act (CAA). The only CAA program EPA has identified to address airborne PFAS is the one that authorizes regulation of national emission standards for hazardous air pollutants. Other regulatory mechanisms, such as the adoption of standards of performance for new sources, may also be useful.

This Article focuses on a third option, which EPA to date seems to have ignored, despite its accelerating use in other contexts—EPA’s authority under § 303 of the CAA to tackle imminent and substantial endangerment to public health, welfare, or the environment through issuance of administrative orders or the initiation of a civil suit seeking abatement of activities contributing to the endangerment. We argued that this overlooked mechanism has great potential to minimize PFAS-related exposure risks pending completion of the often lengthy processes needed to implement other regulatory programs. The fact that EPA has never used § 303 to target PFAS raises the possibility that litigants will challenge any attempt to do so by relying on the major questions doctrine (MQD). We demonstrate that such a challenge should fail both because the doctrine is inapplicable and EPA’s statutory authority to abate PFAS emissions under § 303 is clear even if the MQD does apply. Our analysis provides a template for rebutting attacks on federal agency regulatory efforts in other contexts based on the MQD.

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I. Introduction

Enactment of federal legislation is difficult, and intentionally so. As Justice Kavanaugh recently put it, “Both by design and as a matter of fact, enacting new legislation is difficult—and far more difficult than the [Supreme] Court’s cases sometimes seem to assume.”¹ The legislative process may be cumbersome and inconvenient, but “Convenience and efficiency are not the primary objectives—or the hallmarks—of democratic government.”² Congress must comply with Article I’s bicameralism and presentment requirements.³ These requirements are designed both to “exemplify the concept of separation of powers”⁴ and to “safeguard federalism by making federal legislation more difficult to pass and more responsive to state interests.”⁵ Legislators themselves have constructed additional procedural obstacles such as the filibuster

¹ *Ramos v. Louisiana*, 140 S. Ct. 1390, 1413 (2020) (Kavanaugh, J., concurring in part). Justice Kavanaugh made the same point as an appellate judge:

The legislative process can be slow because the Constitution makes it far harder to enact legislation than to block it: Under the Constitution, three different entities must agree in order to enact legislation—the House, the Senate, and the President (or two-thirds of both the House and the Senate to override a President’s veto). But the Framers knew the legislative process would be laborious. They designed it that way.

Coal. for Responsible Regulation v. EPA, 2012 WL 6621785, at *22 (D.C. Cir. 2012) (Kavanaugh, J., dissenting from the denial of reh’g en banc).

² *Immigration and Naturalization Serv. v. Chadha*, 462 U.S. 919, 944 (1983).

³ U.S. CONST. art. I, § 7, cl. 2, 3. See Paul J. Larkin, *Revitalizing the Nondelegation Doctrine*, 23 FEDERALIST SOC’Y REV. 238, 241–42 (2022) (“Article I makes the federal legislative process slow, deliberate, and onerous.”).

⁴ *Chadha*, 462 U.S. at 946 (also stating that bicameralism and presentment requirements “are integral parts of the constitutional design for the separation of powers”).

⁵ *Collins v. Virginia*, 138 S. Ct. 1663, 1679 (2018) (Thomas, J., concurring).

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mechanism,⁶ which has been defended as a means of ensuring “careful deliberation and unlimited debate.”⁷

While these procedural constraints on the passage of federal legislation may be rooted in important separation of powers and federalism concerns and a desire to sustain legislative practices,⁸ they are not costless. Elaborate procedural constraints can prevent Congress from acting expeditiously in the face of urgent problems. For example, Congress faced criticism for having “slow-walked its response to COVID-19.”⁹ As one observer put it, “Shepherding a detailed and comprehensive COVID-19 relief budget through the United States’ characteristically slow legislative process in March 2020 may well have proved impossible.”¹⁰ In the absence of a legislative response to an unaddressed public policy problem, it may be both appropriate and helpful for another branch of the federal government to step in. As Professor Daniel Walters commented, “While the response from [federal] agencies [to the COVID pandemic] can certainly be criticized, it was surely more effective than tasking Congress with the details of the emergency response at a moment’s notice.”¹¹ The legislature’s laggardly response

⁶ See *Common Cause v. Biden*, 748 F.3d 1280, 1281 (D.C. Cir. 2014) (describing “the mechanics of a filibuster”); Tonja Jacobi & Jeff VanDam, *The Filibuster and Reconciliation: The Future of Majoritarian Lawmaking in the U.S. Senate*, 47 U.C. DAVIS L. REV. 261, 265 (2013) (“The filibuster has become the central mechanism of gridlock and delay in the U.S. Senate. The latter was conceived as a simple fiscal device, but has morphed by necessity into the primary enabler of majorities in the Senate against minoritarian interests.”); Catherine Fisk & Erwin Chemerinsky, *The Filibuster*, 49 STAN. L. REV. 181, 182 (1997) (“Filibusters are so ubiquitous in the contemporary Senate that it is now commonly said that sixty votes in the Senate, rather than a simple majority, are necessary to pass legislation and confirm nominations.”).

⁷ Fisk and Chemerinsky, *supra* note 6, at 184; *cf. id.* at 185 (“Depending on one’s perspective, the filibuster appears to be either a pillar of the Senate’s venerable tradition of unlimited debate and a bulwark against tyranny of the majority, or evidence of the rise of partisanship and the decline of principle, reason, and collegiality in the Senate.”).

⁸ See Fisk & Chemerinsky, *supra* note 6, at 184 (“Defenders of the filibuster often exalt it as a venerable part of the Senate’s tradition. . . .”).

⁹ Mariah D. Haley, Note, *Unequal Treatment: (in)compassionate Release from Federal Prison in the Context of the Covid-19 Pandemic and Vaccine*, 122 COLUM. L. REV. 1997, 2010 (2022) (quoting Rep. Jerry Nadler).

¹⁰ Note, *Lending in the Time of Coronavirus*, 135 HARV. L. REV. 1885, 1904 (2022).

¹¹ Daniel E. Walters, *Decoding Nondelegation After Gundy: What the Experience in State Courts Tells Us About What to Expect When We're Expecting*, 71 EMORY L.J. 417, 435–36 (2022). For criticism of the Trump administration’s response to COVID-19, see Alejandro E. Camacho & Robert L. Glicksman, *Structured to Fail:*

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to COVID-19 was arguably symptomatic of a larger problem. Congressional critics have complained that “we have entered an Age of Dysfunction, in which gridlock has destroyed legislative capacity and ‘[t]he nation’s political system seems completely incapable of solving, or even grappling with, its most pressing problems.’”¹²

Perhaps recognizing the difficulty of acting nimbly in the face of unforeseen or emerging problems, Congress has delegated authority to respond to emergencies and other situations in which time is of the essence to either the President¹³ or federal administrative agencies.¹⁴ Indeed, Congress has made emergency response the core mission of some agencies, such as the Federal Emergency Management Agency.¹⁵ These components of the executive branch may be able to take actions to protect the public from threats to health, safety, or security more quickly than Congress can if they are less encumbered by procedural constraints than Congress. The Supreme Court has long recognized the utility of such arrangements. At the dawn of the 20th century, the Court, addressing the claim that a state’s delegation of the authority to impose a vaccination

Lessons from the Trump Administration’s Faulty Pandemic Planning and Response, 10 MICH. J. ENVTL. & ADMIN. L. 329 (2021) (characterizing that response as uncoordinated and ineffective); Elizabeth Goitein, *Emergency Powers, Real and Imagined: How President Trump Used and Failed to Use Presidential Authority in the COVID-19 Crisis*, 11 J. NAT’L SECURITY L. & POL’Y 27, 28 (2020)

¹² David E. Pozen, *Self-Help and the Separation of Powers*, 124 YALE L.J. 2, 40 (2014) (quoting Jonathan Zasloff, *Courts in the Age of Dysfunction*, 121 YALE L.J. ONLINE 479, 480 (2012)).

¹³ See, e.g., David Landau, *Rethinking the Federal Emergency Powers Regime*, 84 OHIO ST. L.J. 603 (2023) (recommending enhanced congressional and judicial control over presidential exercise of emergency powers); Amy L. Stein, *Energy Emergencies*, 115 NW. U. L. REV. 799 (2020) (discussing delegated presidential power to address energy emergencies); Samuel Weitzman, *Back to Good: Restoring the National Emergencies Act*, 54 COLUM. J.L. & SOC. PROBS. 365 (2021) (discussing presidential power under the National Emergencies Act).

¹⁴ See, e.g., Babette E.L. Boliek, *Agencies in Crisis? An Examination of State and Federal Agency Emergency Powers*, 81 FORDHAM L. REV. 3339 (2013); Desirée LeClercq, *Judicial Review of Emergency Administration*, 72 AM. U. L. REV. 143, 145 (2022).

¹⁵ See 6 U.S.C. § 313(b)(1) (“The primary mission of the Agency is to reduce the loss of life and property and protect the Nation from all hazards, including natural disasters, acts of terrorism, and other man-made disasters, by leading and supporting the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation.”); Hunter Knapp, *Managing an Administrative Emergency: Establishing FEMA As an Independent Agency*, 31 COLO. NAT. RESOURCES, ENERGY & ENV’T L. REV. 231, 232 (2020).

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mandate if it deemed such a requirement “necessary for the public health or safety,” upheld the exercise of delegated authority as a means of addressing an outbreak of smallpox:

The authority to determine for all what ought to be done in such an emergency must have been lodged somewhere or in some body; and surely it was appropriate for the legislature to refer that question, in the first instance, to a board of health composed of persons residing in the locality affected, and appointed, presumably, because of their fitness to determine such questions. To invest such a body with authority over such matters was not an unusual, nor an unreasonable or arbitrary, requirement. Upon the principle of self-defense, of paramount necessity, a community has the right to protect itself against an epidemic of disease which threatens the safety of its members.¹⁶

In reviewing agency use of the APA’s “good cause” exemption from notice and comment rulemaking requirements¹⁷ and state equivalents, Babette Boliek identified two polar views about the desirability of agency exercise of emergency powers.¹⁸ On one hand, some observers have emphasized the need for recognition of broad agency discretion based on the exercise of the unique expertise that agencies possess when circumstances demand a rapid government response. Others have voiced concerns that the broad exercise of emergency powers unaccompanied by normal administrative processes threatens to aggrandize agency power and escape the accountability checks that robust public participation mechanisms provide. The locus of public opinion along the spectrum between these polar positions has shifted over time:

“Distress over agency overreach has waxed and waned and has generally mirrored the countervailing concern for agency efficiency and expediency.”¹⁹

Elizabeth Magill and Adrian Vermeule encapsulate the first view. They note that

In times of perceived emergency, the opportunity costs of agency inaction are especially high, and courts will be reluctant to block agencies from taking action while ponderous legal proceedings and scientific studies go forward. Ossification . . . becomes especially

¹⁶ *Jacobson v. Commonwealth of Massachusetts*, 197 U.S. 11, 27 (1905).

¹⁷ 5 U.S.C. § 553(b)(B).

¹⁸ Boliek, *supra* note 14. Professor Boliek recommended changes to the statutes governing federal and state administrative procedure to enhance the constraints on agencies’ use of “good cause” and similar provisions to avoid notice and comment procedures and enhanced legislative oversight of the use of those provisions.

¹⁹ *Id.* at 3358.

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worrisome, however much of a problem it may or may not be in normal times. . . . The result is that the relatively more cumbersome processes of technocratic and legalistic governance are temporarily shunted aside.²⁰

Similarly, Nicholas Bagley, discussing judicial responses to legislation that authorized Michigan's governor to take emergency actions to combat COVID-19, argued that the reason that statutory delegations to agencies, including delegations to address immediate or emerging problems, pervades the American legal landscape "is simple: Legislatures aren't equipped to resolve every question for themselves. Nor are they nimble enough to confront every new challenge as it arises. Sometimes, they need to draw on the executive branch's expertise and dispatch."²¹ Others stress the dangers that the broad exercise of delegated authority may pose if those exercising it are not held accountable²² through mechanisms such as targeted substantive delegations,²³ procedural requirements that ensure opportunities for public participation,²⁴ and meaningful judicial review.²⁵

²⁰ Elizabeth Magill & Adrian Vermeule, *Allocating Power Within Agencies*, 120 YALE L.J. 1032, 1056 (2011).

²¹ Nicholas Bagley, *A Warning from Michigan*, THE ATLANTIC (Oct. 7, 2020), <https://www.theatlantic.com/ideas/archive/2020/10/america-will-be-michigan-soon/616635/>.

²² Will Rhee & Claire Flynn Sellers, *Retooling Blue-Ribbon Advisory Committees for a Post-Fact World*, 125 W. VA. L. REV. 451, 470 (2022) (identifying the "legitimate policy concern—that unelected public health officials should not have unaccountable, unlimited power during a pandemic regardless of public health effectiveness").

²³ See, e.g., Patrick J. D. Griffin, Note, *An Overview of Federal Emergency Powers*, 15 NYU J.L. & LIBERTY 859, 901–02 (2022) (applauding statutory provisions delegating to executive officials the authority to respond to emergencies whose purpose is "to provide a procedure and a framework that helps to focus, direct, and limit the presidential exercise of emergency power towards a controlled, accountable, and beneficial end").

²⁴ See, e.g., Michael Barsa & David Dana, *Regulating During Emergencies*, 116 NW. U.L. REV. ONLINE 223, 225 (2021) (supporting revisions to the notice and comment rulemaking requirements of the Administrative Procedure Act to ensure deliberative governance in the face of emergencies).

²⁵ See, e.g., Boliek, *supra* note 14, at 3362-65; cf. David Cole, *Judging the Next Emergency: Judicial Review and Individual Rights in Times of Crisis*, 101 MICH. L. REV. 2565 (2003) (noting the critical role that the courts play in constraining emergency powers as a means of protecting individual rights).

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Putting aside potential constitutional limits arising from sources such as the nondelegation doctrine²⁶ and the individual rights provisions,²⁷ the task of balancing these competing conceptions of the public interest lies with the legislature. Congress, acting within the bounds of the authority delegated to it by Article I of the Constitution, has the authority to decide whether to delegate emergency law and policymaking powers, and, if so, to whom the delegation should be directed and under what conditions and constraints. Congress has seen fit to delegate such powers to the President or to federal agencies in numerous instances.²⁸ In doing so, it has “recognize[d] that statutory allocations of authority appropriate under business-as-usual conditions may be insufficient during periods of crisis. At such moments, concentrated executive authority may be needed to confront exigencies quickly and decisively.”²⁹ The recipients of that power have at times exercised it expansively. The legality of the exercise of such emergency authority depends on whether Congress intended to grant to the President³⁰ or the agency the authority to take the action it has taken or proposed to take. The Supreme Court has noted in the

²⁶ *Gundy v. United States*, 139 S. Ct. 2116, 2121 (2019) (stating that “[t]he nondelegation doctrine bars Congress from transferring its legislative power to another branch of government,” and holding that Sex Offender Registration and Notification Act did not violate the doctrine).

²⁷ See, e.g., Leslie E. Gerwin, *Planning for Pandemic: A New Model for Governing Public Health Emergencies*, 37 AM. J.L. & MED. 128, 144 (2011) (claiming that “the attacks on 9/11 initiated new debates over the legitimacy of executive emergency powers derogating individual rights”); Lawrence O. Gostin & Benjamin E. Berkman, *Pandemic Influenza: Ethics, Law, and the Public’s Health*, 59 ADMIN. L. REV. 121, 174 (2007) (arguing that “laws must clearly establish the criteria for the exercise of such emergency powers and provide adequate due process to minimize infringements on individual rights”); James G. Hodge, Jr., et. al., *COVID’s Constitutional Conundrum: Assessing Individual Rights in Public Health Emergencies*, 88 TENN. L. REV. 837, 867 (2021) (urging “courts weighing emergency powers against routine perceptions of individual rights [to] tread carefully”); William I. Amberger, Note, *Between Scylla and Charybdis: The Courts, the Constitution, and COVID-19*, 55 IND. L. REV. 113, 115 (2022) (explaining emergency powers and how they interact with individual rights).

²⁸ See e.g., 15 U.S.C. § 2648; 33 U.S.C. § 1364; 42 U.S.C. § 300i; 42 U.S.C. § 9606(a).

²⁹ Sharon B. Jacobs, *The Statutory Separation of Powers*, 129 YALE L.J. 378, 402 (2019).

³⁰ The President may have independent constitutional authority under Article II to take action in response to emergencies that implicate foreign affairs or the national defense.

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face of the Great Depression that “While emergency does not create power, emergency may furnish the occasion for the exercise of power.”³¹

Determining whether an exercise of delegated power is within the bounds of the grant, in other words, entails what would seem to be a routine exercise in statutory construction. That exercise may be a difficult one, however, if Congress did not foresee (and may have been incapable of foreseeing) the exact nature of the threat that occasioned an executive official’s desire to act. The timing and scope of the COVID-19 pandemic may not have been foreseeable.³² The production of acid rain due to chemical reactions involving sulfur dioxide was not on Congress’s radar when it passed the Clean Air Act of 1970.³³ The issue is whether the legislature’s failure to anticipate or provide adequate safeguards for a problem that cries out for a governmental response precludes an agency from exercising statutory authority to address the problem. The issue is likely to recur because “Without regular legislative activity, agencies are forced to get more creative with stale statutory mandates to address new problems and changed circumstances.”³⁴

This Article focuses on the federal Environmental Protection Agency (EPA)’s efforts to abate health-threatening exposures to Per- and Polyfluoroalkyl Substances (PFAS) to illustrate how judicial review of the exercise of delegated agency authority to address imminent threats to the public welfare may confirm the legality of the exercise even if Congress failed to anticipate the exact nature of the threat. PFAS are man-made chemical compounds that have been

³¹ Home Bldg. & Loan Ass’n v. Blaisdell, 290 U.S. 398, 426 (1934).

³² *But cf.* Camacho & Glicksman, *supra* note 11, at 343 (describing a pandemic management “playbook” prepared by the Obama administration well in advance of the appearance of COVID-19 based in part on knowledge acquired during the Ebola outbreak).

³³ See Lakshman Guruswamy, *Integrating Thoughtways: Re-Opening of the Environmental Mind?*, 1989 WIS. L. REV. 463, 468 n.20 (1989).

³⁴ Jonathan H. Adler & Christopher J. Walker, *Delegation and Time*, 105 IOWA L. REV. 1931, 1937 (2020).

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manufactured and used since the 1940s and are ubiquitously present and continuously accumulating in our bodies and the environment.³⁵ Now numbering in the thousands, PFAS continue to be used in the manufacture of everyday products, causing people to be exposed to them through contact with air, soil, water, and household items.³⁶ Because PFAS exposures have been linked to reproductive and health problems and various forms of cancer, they thus pose a public health problem of potentially enormous magnitude.³⁷

In response to the threat posed by continued exposure to PFAS, EPA under the Biden Administration has committed itself to regulate PFAS under its existing regulatory authorities. It has initiated rulemaking proceedings under various statutes, including the Toxic Substances Control Act, the Safe Drinking Water Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act.³⁸ While EPA has stated that it is utilizing an whole-of-agency approach, it has not undertaken analogous endeavors under the Clean Air Act (CAA), even though air pollution from fluorochemical and fluoropolymer manufacturing facilities play a significant role in PFAS pollution.³⁹

³⁵ *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, EPA <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas> (last updated June 7, 2023) [hereinafter *Current Understanding*]; *PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024*, EPA (Oct. 2021), https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf [hereinafter *PFAS Strategic Roadmap*].

³⁶ *Understanding PFAS exposure and your body*, ATSDR <https://www.atsdr.cdc.gov/pfas/health-effects/PFAS-exposure-and-your-body.html> (last updated Nov. 1, 2022); Amila De Silva et al., *PFAS Exposure Pathways for Humans and Wildlife: A Synthesis of Current Knowledge and Key Gaps in Understanding*, 40 ENV'T TOXICOLOGY & CHEMISTRY 631 (2021).

³⁷ *Current Understanding*, *supra* note 35.

³⁸ See *infra* Part II.B.

³⁹ See Jennifer Faust, *PFAS on atmospheric aerosol particles: a review*, 25 ENV'T SCI.: PROCESSES IMPACTS 133 (2023); Catherine Barton et al., *Characterizing Perfluorooctanoate in Ambient Air Near the Fence Line of a Manufacturing Facility: Comparing Modeled and Monitored Values*, 56 J. AIR WASTE MGMT. ASSOC. 48 (2006); Jason Galloway et al., *Evidence of Air Dispersion: HFPO-DA and PFOA in Ohio and West Virginia Surface Water and Soil near a Fluoropolymer Production Facility*, 54 ENV'T SCI. TECH. 7175 (2020) [hereinafter Galloway et al., *Air Dispersion*]; Presentation by Ryan, J. EPA, *PFAS Air Emission Measurements: Activities and Research*,

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EPA has several potential mechanisms for regulating PFAS under the CAA, including regulating PFAS emissions from new sources (and analogous existing sources) as industrial stationary source categories whose PFAS emissions cause or contribute significantly to air pollution which may endanger public health or welfare.⁴⁰ Alternatively, it could resort to the provisions of the CAA that authorize regulation of hazardous air pollutants.⁴¹ And EPA may well pursue these options. But, due to the extended nature of most significant federal rulemaking proceedings,⁴² people and the environment will continue to be exposed in the interim. As a result, this Article urges implementation of a strategy that involves selective reliance on § 303 of the CAA.⁴³

Section 303 provides authority for EPA to exercise “emergency powers” to address “imminent and substantial endangerment[s] to public health, welfare, or the environment.”⁴⁴ If EPA’s exercise of that authority to regulate PFAS emissions is challenged, the reviewing court will have to assess how broadly the scope of that provision sweeps. We argue that a proper

Presented at EPA Region 9 Laboratory Technical Information Group Meeting, San Francisco, CA (June 6, 2019), https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRMRL&dirEntryId=345762; *Frequently Asked Questions on Air Quality Related Issues Air Quality Workgroup - Michigan PFAS Action Response Team (MPART)*, MICH. DEP’T OF ENV’T, GREAT LAKES, AND ENERGY (Aug. 2019), <https://www.michigan.gov/-/media/Project/Websites/PFAS-Response/Workgroups/Air-Quality/FAQ-Air-Quality-Related-Issues.pdf?rev=cdb9c3f0d4f04a9699d288ab5b38f056>.

⁴⁰ See 42 U.S.C. § 7411(b), (d). See *infra* Part IIIA. We use the term stationary sources to include non-mobile sources, such as factory smokestacks. Cf. 42 U.S.C. §7411(a)(3) (CAA provision defining a stationary source for purposes of the adoption of standards of performance for new sources as “any building, structure, facility, or installation which emits or may emit any air pollutant”).

⁴¹ 42 U.S.C. § 7412. See *infra* Part IIIB.

⁴² See Richard J. Pierce, Jr., *Regulation in the Biden Administration*, 6 ALR ACCORD 113, 123 (2021) (“It usually takes years to issue a major new rule through use of the notice-and-comment process.”); Richard J. Pierce, Jr., *Rulemaking Ossification Is Real: A Response to Testing the Ossification Thesis*, 80 GEO. WASH. L. REV. 1493, 1503 (2012) (footnote omitted) (stating that “[r]ulemaking ossification is a real and serious problem measured with reference to any plausible normative baseline,” and that “[t]here is a veritable army of people with agency-specific substantive expertise who have expressed the view that ossification is a source of many serious problems. I am not aware of anyone with agency-specific substantive expertise who has challenged that near-universal belief.”)

⁴³ 42 U.S.C. § 7603.

⁴⁴ *Id.*

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interpretation of § 303 supports the conclusions that EPA may rely on that provision to address through civil actions for injunctive relief or administrative enforcement actions both pollutants it has regulated under other provisions of the statute and those it has not so regulated; that EPA may use § 303 to target sources that may be only be contributing to—or even are merely suspected of contributing to—endangering pollution; and that it may even regulate (or request that a court limit emissions from) sources that are in full compliance with other CAA provisions.⁴⁵ We also argue that application of the major questions doctrine should not pose any obstacles to EPA’s reliance on § 303 to seek abatement of PFAS air emissions, notwithstanding the Supreme Court’s recent invocation of the doctrine to invalidate the authority of EPA and other federal agencies to address public health and safety threats.⁴⁶ In doing so, we identify limits to the major questions doctrine as an authority-negating device, particularly in situations involving the use of emergency or analogous statutory powers. We conclude that Congress intended through the enactment of § 303 to empower EPA to act quickly when pollutants not yet regulated under other CAA provisions substantially endanger public health, welfare, or the environment, if only to act as a stopgap pending EPA’s accumulation of sufficient knowledge to engage in more comprehensive regulation. As a result, § 303 can (and was intended to) serve as a bridge between current unaddressed threats and the adoption of final regulations under other CAA programs.

The Article proceeds as follows. Part IIA provides background information on the widespread and ubiquitous nature of PFAS as well as the associated health effects. Part IIB

⁴⁵ See Memorandum on transmittal of Guidance on Section 303 of the Clean Air Act from Eric V. Schaeffer, at 1, 13 (Apr. 1, 1999), <https://www.epa.gov/sites/default/files/2021-05/documents/transmittalofguidanceonsection303ofcaa040199.pdf> [hereinafter referred to as Schaeffer Letter]

⁴⁶ See *infra* Section IVC.

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details EPA's incipient efforts to regulate PFAS under statutes other than the CAA to address threats in environmental media such as water and land pollution. Part III outlines EPA's regulatory options under the CAA to address airborne PFAS emissions from stationary sources, including regulation of new and existing sources under new source performance standards, designation of PFAS as hazardous air pollutants, and the use of EPA's enforcement authority under § 303 of the CAA, the emergency powers provision.

Part IV addresses the legality of EPA's choice of litigation and administrative enforcement as a mechanism for addressing the health and environmental risks associated with airborne PFAS. Part IVA explores the history of imminent and substantial endangerment provisions under the federal environmental statutes, focusing on the growth of EPA's authority under § 303 of the CAA. Part IVB describes EPA's previous uses of its emergency powers. Part IVC explains why § 303 authorizes EPA to address air emissions of PFAS from stationary sources notwithstanding the absence of prior regulation and the availability of alternative regulatory mechanisms for limiting PFAS air pollution. It demonstrates that Congress provided clear authorization for EPA to use its emergency powers under § 303 of the CAA to address both existing unaddressed and emerging or newly discovered health and environmental threats resulting from air pollution.⁴⁷

⁴⁷ We borrow the term "emerging" from the National Defense Authorization Act of 2020, which defined the terms "contaminants of emerging concern" and "emerging contaminant" as substances "that may have an adverse effect on the health of individuals" but which were not then the subject of a national primary drinking water regulation under the Safe Drinking Water Act. Pub. L. No. 116-92, § 7341(1)-(2), 133 Stat. 1198, 2284 (2019). The Act directed EPA to "identify and analyze the public health effects of drinking water contaminants of emerging concern." *Id.* § 7342(b)(1). It also directed the Office of Science and Technology Policy to establish a research strategy "to improve the identification, analysis, monitoring, and treatment methods of contaminants of emerging concern." *Id.* § 7342(c)(1)(A)(i). For further discussion of regulation of PFAS under the SDWA, see *infra* notes 119-130 and accompanying text.

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Part IVB also shows that the recently minted major questions doctrine should play no part in the process of interpreting § 303's scope in the event of a challenge to EPA's efforts to regulate PFAS, but that even if the doctrine applies, EPA's authority to address PFAS under § 303 is clear enough to survive major questions doctrine scrutiny. Our analysis of both whether the major questions doctrine should apply to EPA's choice to initiate enforcement action against sources of airborne PFAS under § 303, and whether EPA's resort to § 303 should survive if a court decides that the doctrine does apply, provide a template for a structured analysis that should be of assistance to agencies seeking to protect their authority from curtailment.

Part V concludes, suggesting that although Congress did not abandon efforts to ensure that EPA could be held accountable for the exercise of its § 303 authority, it tipped the scales decidedly, and increasingly so over time, through a series of statutory amendments, toward promoting timely and effective abatement of health, welfare, and environmental threats. We argue that judicial efforts to interpret § 303's scope should reflect that accommodation.

II. Background

Although scientific understanding of the health and environmental impacts of PFAS is incomplete, enough is known to raise serious concerns about the risks of human and environmental exposure.⁴⁸ The first section of this Part briefly summarizes the nature of PFAS

⁴⁸ See, e.g., Phillippe Grandjean et al., *Perfluorinated Alkyl Substances: Emerging Insights Into Health Risks*, 25 NEW SOLUTIONS # 2 (2015), <https://doi.org/10.1177/1048291115590506> (stating that “[r]ecent reports on adverse effects suggest that the toxicity of these substances has long been underestimated”); Laura Anderson & Emma Pennea, *Exposures to per-and polyfluoroalkyl substances (PFAS): Potential risks to reproductive and children's health*, 50 CURRENT PROBLEMS IN PEDIATRIC & ADOLESCENT CARE # 2 (2015), <https://doi.org/10.1016/j.cppeds.2020.100760> (“Very few PFAS chemicals have been studied for human health effects, although emerging evidence documents that PFOS [perfluorooctane sulfonate] and PFOA [perfluorooctanoic acid] have been associated with some adverse health outcomes.”). PFOA and PFOS are forms of PFAS. See Autumn Spanne, *What Are PFAS?*, ENV'T HEALTH NEWS (Feb. 15, 2022), https://www.ehn.org/what-are-pfas-2656619391/whats-the-difference-between-pfas-pfos-pfoa-ptfe-and-genx?gclid=Cj0KCQjwk96lBhDHARIsAEKO4xb61_Od3LvEcDTqeG1IIsfN8aszBY4xQhGhTycysu4CE6ttsJiKwcaAiVYEALw_wcB; *infra* notes 60-63 and accompanying text.

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and the health and environmental risks they present. The second section describes existing regulatory initiatives that address the risks of PFAS exposure.

A. Background Information on PFAS

PFAS are synthetic, long-lasting chemicals that have been used since the 1940s and have been linked to various health and reproductive problems.⁴⁹ PFAS endure in the human body and environment because they are made up of a strong carbon-fluorine chain that breaks down very slowly over time.⁵⁰ PFAS are widely used in products all over the world, including water-repellent clothing, stain resistant fabrics, shaving cream, cosmetics, firefighting foams, and, famously, nonstick cookware coated with Teflon.⁵¹ PFAS are coveted for their hydrophobic (water repellent) and oleophobic (oil resistant) properties, making many PFAS valuable surfactants (also known as surface active agents), which, by lowering water resistance, facilitate the removal of oil and grease from surfaces and materials by reducing the surface tension between two substances.⁵²

The term “PFAS” actually represents a class of chemical compounds that EPA has separated into 12,000 substances that also include “partially fluorinated substances, polymers,

⁴⁹ *Current Understanding*, *supra* note 35; PFAS Strategic Roadmap, *supra* note 35.

⁵⁰ EPA, *PFOA, PFOS and Other PFAS*, <https://www.epa.gov/pfas/pfas-explained> (last updated Apr. 28, 2022); Nat'l Inst. of Env't Health Sci., *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)*, <https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm> (last updated July 29, 2022) [hereinafter *Other PFAS*]; De Silva et al., *supra* note 36, at 632; Ian T. Cousins et al., *The high persistence of PFAS is sufficient for their management as a chemical class*, 12 ENV'T SCI.: PROCESSES AND IMPACTS (2020), <https://pubs.rsc.org/en/content/articlelanding/2020/em/d0em00355g>.

⁵¹ Juliane Glüge et al., *An Overview of the uses of per- and polyfluoroalkyl substances (PFAS)*, 12 ENV'T SCI.: PROCESSES AND IMPACTS (2020), <https://pubs.rsc.org/en/content/articlelanding/2020/em/d0em00291g>; Agency for Toxic Substances and Disease Registry, *Per- and Polyfluoroalkyl Substances (PFAS) and Your Health*, <https://www.atsdr.cdc.gov/pfas/health-effects/overview.html> (last updated July 5, 2022). *See also* Johanna Adashek, *The Corrupt Past of PFAS and Corporate Greed*, GW LAW POINT SOURCE (Jan. 30, 2023), <https://blogs.gwu.edu/law-gwpointsource/2023/01/30/95/>.

⁵² Susanna Lauren, *What are surfactants and how do they work?*, BIOLIN SCIENTIFIC (June 26, 2018), <https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>; Glüge et al., *supra* (listing many examples of and locations for PFAS exposure).

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and ill-defined reaction products.”⁵³ The most common PFAS include Perfluorooctane sulfonic acid (PFOS), Perfluorooctanoic acid (PFOA), Perfluorononanoic acid (PFNA), Perfluorodecanoic acid (PFDA), Perfluorohexane sulfonic acid (PFHxS), and Hexafluoropropylene Oxide Dimer Acid (GenX).⁵⁴

Although the manufacture of some forms of PFAS (known as legacy PFAS) has been discontinued, many PFAS are still produced, and both appear in soil, air, and water.⁵⁵ PFAS are so ubiquitous that they can be found in human and animal blood all around the world.⁵⁶ Nearly every American has PFAS in their blood;⁵⁷ a CDC study analyzing PFOA, PFOS, PFHxS, and PFNA in blood serum detected PFAS in 97%-100% of blood samples from their 1,682

⁵³ *PFAS Master List of PFAS Substances*, EPA, <https://comptox.epa.gov/dashboard/chemical-lists/pfasmaster> (last updated Aug. 10, 2022).

⁵⁴ See Emma Schwartz, *Too Little Too Late: Underregulation of Contaminants of Emerging Concern*, 52 ENV'T L. REP. 10964, 10966 (2022); *The family tree of Per- and Polyfluoroalkyl Substances (PFAS) for environmental health professionals*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (June 9, 2017), https://www.atsdr.cdc.gov/pfas/docs/PFAS_FamilyTree_EnvHealthPro-508.pdf; Centers for Disease Control and Prevention, Nat'l Inst. for Occupational Safety and Health (NIOSH), *Per- and polyfluoroalkyl substances (PFAS)*, <https://www.cdc.gov/niosh/topics/pfas/default.html> (last updated July 7, 2021).

⁵⁵ See, e.g., Richard A. Brase et al., *Legacy and Emerging Per- and Polyfluoroalkyl Substances: Analytical Techniques, Environmental Fate, and Health Effects*, 22 INT'L J. MOLECULAR SCI. 995 (2021), <https://pubmed.ncbi.nlm.nih.gov/33498193/>; Anna R. Robuck et al., *Legacy and Novel Per- and Polyfluoroalkyl Substances in Juvenile Seabirds from the U.S. Atlantic Coast*, 54 ENV'T SCI. TECH. 12938 (2020), <https://pubs.acs.org/doi/10.1021/acs.est.0c01951>; Nat'l Inst. of Env't Health Sci., *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)*, <https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm> (last updated July 29, 2022); *Current Understanding*, *supra* note 35.

⁵⁶ See PFAS—The ‘Forever Chemicals,’ CHEMTRUST, <https://chemtrust.org/pfas/> (last visited July 19, 2023) (“PFAS are the most persistent synthetic chemicals to date, they hardly degrade in the natural environment and have been found in the blood and breastmilk of people and wildlife all round the world.”); Jun-Meng Jian et al., *A short review on human exposure to and tissue distribution of per- and polyfluoroalkyl substances (PFASs)*, 636 SCI. OF THE ENV'T 1058 (2018), <https://www.sciencedirect.com/science/article/abs/pii/S0048969718315651>; *Other PFAS*, *supra* note 50.

⁵⁷ See Schwartz, *supra* note 54, at 10966 (“PFAS are ubiquitous not only in their uses, but in contamination streams, particularly drinking water. Indeed, studies have estimated that 99% of Americans have some amount of PFAS in their blood.”).

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participants.⁵⁸ Researchers at Johns Hopkins have also found PFAS in every umbilical cord serum of 299 infants delivered and studied at its Baltimore, Maryland facility.⁵⁹

At various exposure levels, PFAS can lead to varied and severe health problems. PFAS have caused reproductive dysfunctions and developmental issues, including low birth weights, bone variations, and accelerated puberty.⁶⁰ PFAS interfere with the body's natural hormones, immune system, and vaccine responsiveness.⁶¹ The highly-studied PFAS have also been linked to different types of cancers, specifically kidney, prostate, and testicular cancers.⁶² Higher

⁵⁸ Ryan C. Lewis, Lauren E. Johns & John D. Meeker, *Serum Biomarkers of Exposure to Perfluoroalkyl Substances in Relation to Serum Testosterone and Measures of Thyroid Function among Adults and Adolescents from NHANES 2011-2012*, 12 INT'L J. OF ENV'T RES. & PUB. HEALTH (May 29, 2015), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4483690/>.

⁵⁹ Benjamin J. Apelberg et al., *Determinants of fetal exposure to polyfluoroalkyl compounds in Baltimore, Maryland*, 41 ENV'T SCI. TECH. 3891 (2007), <https://pubmed.ncbi.nlm.nih.gov/17612165/>.

⁶⁰ See Laura Anderko & Emma Pennea, *Exposures to per-and polyfluoroalkyl substances (PFAS): Potential risks to reproductive and children's health*, 50(2) CURRENT PROBS, IN PEDIATRIC & ADOLESCENT HEALTH CARE 100760 (2020), https://www.sciencedirect.com/science/article/pii/S1538544220300201?casa_token=W_bkqg3Q2YEAAAAA:PHxmgdq6nYhnCEqGEUFEGVrtmF9Ku0uHnDhOfXbEI8WAK5e-9VQYKfMKruHsD5Ow6uzUaG04y0; Brittany P. Richard, Imran Rizvi & Suzanne E. Fenton, *Per- and poly-fluoroalkyl substances (PFAS) and female reproductive outcomes: PFAS elimination, endocrine-mediated effects, and disease*, 465 SCIENCE DIRECT 153031 (2022), <https://www.sciencedirect.com/science/article/pii/S0300483X2100353X>; *Current Understanding*, *supra* note 35; see also Jessica Trowbridge et al., *Extending Nontargeted Discovery of Environmental Chemical Exposures during Pregnancy and Their Association with Pregnancy Complications—A Cross-Sectional Study*, 131 ENV'T HEALTH PERSPECTIVES NO. 7 (2023), <https://doi.org/10.1289/EHP11546>.

⁶¹ See Xin Xie et al., *Perfluoroalkyl and polyfluoroalkyl substance exposure and association with sex hormone concentrations: results from the NHANES 2015–2016*, 33 ENV'T SCI. EUROPE 69 (2021), <https://enveurope.springeropen.com/articles/10.1186/s12302-021-00508-9>; Francesca Coperchini, *Thyroid Disrupting Effects of Old and New Generation PFAS*, 11 FRONTIERS IN ENDOCRINOLOGY 612320 (2021), <https://www.frontiersin.org/articles/10.3389/fendo.2020.612320/full>; Carolyn Beans, *How “forever chemicals” might impair the immune system*, PNAS (Apr. 8, 2021), <https://www.pnas.org/doi/10.1073/pnas.2105018118>; Rebecca Trager, *PFAS exposure found to increase risk of severe Covid-19*, PLOS ONE (Jan. 12, 2021), <https://www.chemistryworld.com/news/pfas-exposure-found-to-increase-risk-of-severe-covid-19/4012992.article>.

⁶² See Nat'l Cancer Inst., *PFAS Exposure and Risk of Cancer*, <https://dceg.cancer.gov/research/what-we-study/pfas> (last visited July 19, 2023); Kyle Steenland & Andrea Winquist, *PFAS and cancer, a scoping review of the epidemiologic evidence*, 194 ENV'T RES. 110690 (2021), https://www.sciencedirect.com/science/article/pii/S0013935120315899?casa_token=jXkgIW8-85MAAAAA;j98R37mt1-F2USFb8wIptigShbT2v2-awYem16kdYbol_onK4nEKH_P8MdNbMF51aXUh1KTJgaM.

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exposure levels create increased chances of health issues, which is made more severe by the bioaccumulative and biopersistent qualities of PFAS.⁶³

Humans are exposed to PFAS through drinking water, soil, contact with PFAS-laden consumer products, food and food packaging, and airborne exposure due to emissions from stationary sources, the last of which is the focus of this Article.⁶⁴ PFAS are highly mobile and find transport across long distances via sorption to aerosols.⁶⁵ From the atmosphere, PFAS can enter surface water and soil via atmospheric deposition and then leach into groundwater.⁶⁶ These attributes of PFAS and their fate in the environment help to explain both how PFAS have been found in remote, untouched parts of the world like the Arctic, and why legacy PFAS are still found in areas where direct emissions of certain PFAS had ceased years prior.⁶⁷ They also

⁶³ See Hubertus Brunn et al., *PFAS: forever chemicals—persistent, bioaccumulative and mobile. Reviewing the status and the need for their phase out and remediation of contaminated sites*, 35 ENV'T SCI. EUROPE 20 (2023), <https://enveurope.springeropen.com/articles/10.1186/s12302-023-00721-8>; Nat. Inst. of Env't Health Sci., *Perfluoroalkyl and polyfluoroalkyl substances (PFAS)*, <https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm> (last updated Jan. 3, 2023).

⁶⁴ See De Silva et al., *supra* note 36, at 632; *Understanding PFAS exposure and your body*, ATSDR <https://www.atsdr.cdc.gov/pfas/health-effects/PFAS-exposure-and-your-body.html> (last updated Nov. 1, 2022); see also JIAQI Zhou et al., *Legacy and emerging airborne per- and polyfluoroalkyl substances (PFAS) collected on PM_{2.5} filters in close proximity to a fluoropolymer manufacturing facility*, 24 ENV'T SCI.: PROCESSES IMPACTS 2272 (2022), https://pubs.rsc.org/en/content/articlehtml/2022/em/d2em00358a?casa_token=WgvCJzCwXFcAAAAA:yoYbYxrKgsIngScbBEJnPVqB-cizlE8b8rMuE8-9RA38rsJPlhqFAurpD_Y93Vhc3iTWhKKcr6Wt_w.

⁶⁵ See Zhen Zhao et al., *Distribution and long-range transport of polyfluoroalkyl substances in the Arctic, Atlantic Ocean and Antarctic coast*, 170 ENV'T POLLUTION 71 (2012), <https://pubmed.ncbi.nlm.nih.gov/22771353/>; Tim Schroeder et al., *PFAS soil and groundwater contamination via industrial airborne emission and land deposition in SW Vermont and Eastern New York State, USA*, 23 ENV'T SCI.: PROCESSES IMPACTS 291 (2021) <https://pubs.rsc.org/en/content/getauthorversionpdf/d0em00427h>; Jennifer Faust, *PFAS on atmospheric aerosol particles: a review*, 25 ENV'T SCI.: PROCESSES IMPACTS 133 (2023) <https://pubs.rsc.org/en/content/articlelanding/2023/em/d2em00002d>.

⁶⁶ Galloway et al., *Air Dispersion*, *supra* note 39; Åse Høisæter & Gijs D. Breedveld, *Leaching potential of per- and polyfluoroalkyl substances from source zones with historic contamination of aqueous film forming foam - a surfactant mixture problem*, 8 ENV'T ADVANCES 100222 (2022), <https://www.sciencedirect.com/science/article/pii/S2666765722000576>.

⁶⁷ See Galloway et al., *Air Dispersion*, *supra* note 39.

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demonstrate that PFAS will continue to accumulate in soil and water via atmospheric deposition long after they are no longer manufactured.⁶⁸

PFAS are released into the air during the entire lifecycle of many products, including manufacture, use, and disposal.⁶⁹ Manufacturing facilities' air pollution plays a significant role in PFAS pollution in the environment and have been detected in releases from industrial smokestacks.⁷⁰ In particular, fluorochemical and fluoropolymer manufacturing facilities are responsible for significant amount of certain PFAS air emissions in the United States.⁷¹ Air emissions are an especially serious health concern for the communities surrounding the stationary source of emissions.⁷² In such areas, communities may be exposed to PFAS by breathing the ambient air, through exposure to contaminated surface water or groundwater, through soil and vegetation, and even through the produce and livestock they grow.⁷³

PFAS can form from atmospheric chemical compounds that transform or degrade in the environment into PFAS.⁷⁴ Studies hypothesize that short-chain PFAS can form from the atmospheric degradation of precursor hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons

⁶⁸ *Id.*

⁶⁹ See De Silva et al., *supra* note 36, at 632.

⁷⁰ Jennifer Faust, *PFAS on atmospheric aerosol particles: a review*, 25 ENV'T SCI.: PROCESSES IMPACTS 133 (2023); Catherine Barton et al., *Characterizing Perfluorooctanoate in Ambient Air near the Fence Line of a Manufacturing Facility: Comparing Modeled and Monitored Values*, 56 J. AIR WASTE MGMT. ASSOC. 48 (2006); Galloway et al., *Air Dispersion*, *supra* note 39; *Frequently Asked Questions on Air Quality Related Issues Air Quality Workgroup - Michigan PFAS Action Response Team (MPART)*, MICH. DEP'T OF ENV'T, GREAT LAKES, AND ENERGY (Aug. 2019), <https://www.michigan.gov/-/media/Project/Websites/PFAS-Response/Workgroups/Air-Quality/FAQ-Air-Quality-Related-Issues.pdf?rev=c9d9c3f0d4f04a9699d288ab5b38f056>.

⁷¹ De Silva et al., *supra* note 36 at 632 (stating that "legacy emissions of [PFOA] were dominated by its manufacture and use to manufacture fluoropolymer products, . . . whereas emissions of [PFOS] were dominated by its release during use of consumer and industrial products"); Zhou et al., *supra* note 64, at 2272.

⁷² See Schroeder et al., *supra* note 65; De Silva et al., *supra* note 36, at 641.

⁷³ See De Silva et al., *supra* note 36, at 641.

⁷⁴ Jinxia Liu & Sandra Mejia Avendano, *Microbial Degradation of Polyfluoroalkyl Chemicals in the Environment: A Review*, 61 ENV'T INT'L 98 (2013) <https://www.sciencedirect.com/science/article/abs/pii/S0160412013001931?via%3Dihub>; William F. Hartz et al., *Levels and Distribution Profiles of Per- and Polyfluoroalkyl Substances (PFAS) in a High Arctic Svalbard Ice Core*, 871 SCI. OF THE TOTAL ENV'T (2023) <https://www.sciencedirect.com/science/article/pii/S004896972300445X>.

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(HCFCs).⁷⁵ HCFCs are fluorochemicals that are used throughout the world as refrigerants and were phased out in the initial Montreal Protocol and later amended for a more expeditious phaseout.⁷⁶ HFCs were an alternative adopted during the phaseout of ozone depleting substances such as chlorofluorocarbons and HCFCs.⁷⁷ Because HFCs have global warming potentials ranging from 12 to 14,000 times stronger than carbon dioxide, the international community adopted the Kigali Amendments to phase them out as well.⁷⁸ Not only are these compounds ozone depleting substances and/or powerful greenhouse gases, but they may also be PFAS precursors, further amplifying their detrimental environmental potential.

B. Existing and Anticipated Regulation of PFAS

Federal regulation of PFAS is of relatively recent vintage. Although PFAS manufacturers were aware of the chemicals' potential toxicity as early as 1950, and certainly by the 1970s, the federal government did not address PFAS under the environmental statutes until after 2000.⁷⁹ One commentator attributes this delay to a combination of factors that include "a lack of public information as a result of industry secrecy and misinformation" and the existence of a regulatory commons due to the ubiquity and diversity of uses of PFAS.⁸⁰ Others have pointed to EPA's

⁷⁵ See Hartz et al., *supra* note 74, at 6.

⁷⁶ *About Montreal Protocol*, UN ENV'T PROGRAMME, <https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol#:~:text=Phase%20out%20of%20HCFCs%20-%20the%20Montreal%20Amendment&text=Recognizing%20the%20potential%20benefits%20to,phase%20them%20out%20by%202020> (last visited Aug. 1, 2023) [hereinafter, *About Montreal Protocol*].

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ See Schwartz, *supra* note 54, at 10974-75.

⁸⁰ *Id.* at 10975. See also Kim Tingley, *Forever Chemicals are Everywhere. What Are They Doing to Us?*, N.Y. TIMES MAG., Aug. 18, 2023, <https://www.nytimes.com/2023/08/16/magazine/pfas-toxic-chemicals.html> (noting that "there are thousands of varieties of PFAS" and that "[s]o far, human health data exists for a tiny fraction of them. . . . To consider them individually would be virtually impossible—which might well be the point.").

William Buzbee pioneered the analysis of the dynamics of a regulatory commons in environmental law. He posits that:

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typical practice of regulating chemicals one at a time, coupled with manufacturers' substitution of new or unregulated PFAS for those that are the targets of regulation.⁸¹ Professors Nevin and Percival claim that “thousands of PFAS of unknown toxicity enter our streams of commerce unabated, untested, and unregulated” and that “federal environmental laws have failed to adequately address the mounting PFAS crisis.”⁸² They assert that the existing “regulatory approach to PFAS—and newly developed chemicals in general—amounts to a self-reporting and self-policing ‘toxicity honor system’ [which] places the onus on private companies—not the EPA or other regulatory bodies—to report the dangers posed by new chemicals.”⁸³ They also

when social ills match no particular political-legal regime or jurisdiction, but instead encounter fragmented political-legal structures, predictable incentives arise for potential regulators to opt against investing in such regulatory opportunities. . . . [F]ragmented political-legal structures that do not match a social ill in cause or effect may be viewed as a regulatory commons and thereby prompt political underinvestment.

William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 1, 6 (2003). *See also id.* at 22 (“The more complex, multilayered, or fragmented the legal and political setting, the more likely it is that regulatory commons dynamics will arise.”).

Ms. Schwartz describes six theories that seek to explain the phenomenon of underregulation. Schwartz, *supra*, at 10968-69. Schwartz postulates that:

These theories in combination suggest that underregulation occurs as a cyclic, three-phase process. First, underregulation can occur due to hesitancy or inability to begin regulating in the first place. Once one or more agencies decide to begin the regulation process, temporary underregulation can occur as a result of delay in promulgating final regulations. Finally, underregulation may occur even after the publication of final regulations if they contain gaps either when promulgated or when implemented. Underregulation of CECs [chemicals of environmental concern] likely arises during all of these phases, and at each phase underregulation is particularly significant.

Id. at 10969. Schwartz argues that this process has resulted in underregulation of CECs, including PFAS.

⁸¹ Nicholas “Hoo” Ray, *Emerging Trends in PFAS Litigation*, 52 TEX. ENV'T L.J. 73, 76 (2023) (“Regulators are aware of this challenge but have thus far failed to overcome it.”).

⁸² Mark P. Nevitt & Robert V. Percival, *Can Environmental Law Solve the “Forever Chemical” Problem?*, 57 WAKE FOREST L. REV. 239, 242 (2022); *see also* Tingler, *supra* note __ (stating that the revelation in 1999 through testing by the Centers for Disease Control that PFAS “were present in virtually everyone . . . was met with a collective shrug by federal health officials and policymakers. More than two decades later, in fact, PFAS production remains largely unregulated”).

⁸³ Nevitt & Percival, *supra* note 82, at 242.

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credit Rob Bilott, an attorney whose lawsuits against DuPont involved extensive discovery, with bringing the dangers posed by PFAS to the collective attention of the nation and its regulators.⁸⁴

Nevin and Percival identify six “plausible statutory candidates that *could be* used to regulate PFAS. These are the Toxic Substances Control Act (TSCA), the Emergency Planning and Community Right-to-Know Act (EPCRA), the Safe Drinking Water Act (SDWA), the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).⁸⁵ Notably, they do not discuss airborne PFAS or the CAA provisions that are the focus of this Article.

1. The Toxic Substances Control Act

EPA’s earliest efforts to address PFAS stemmed from its authority under TSCA,⁸⁶ which authorizes EPA to regulate the manufacture, distribution, use, and disposal of chemicals that pose an unreasonable risk to human health and the environment.⁸⁷ The 2016 amendments to TSCA enhanced EPA’s regulatory authority,⁸⁸ eliminating, for example, the provision that had required EPA to demonstrate that its regulations were the least burdensome that were capable of

⁸⁴ See Nevitt & Percival, *supra* note 82, at 251-55 (“Due to Bilott’s efforts and the discovery of PFAS contamination at military bases, Congress has slowly awoken from its regulatory slumber.”). Mr. Bilott’s efforts are described in ROBERT BILOTT, EXPOSURE (2019).

⁸⁵ Nevitt & Percival, *supra* note 82, at 255-56.

⁸⁶ 15 U.S.C. §§ 2601-2697.

⁸⁷ TSCA authorizes EPA to require manufacturers to test chemical substances that it finds present an unreasonable risk of injury to health or the environment, *id.* § 2603, to require manufacturers to notify EPA before they begin manufacturing new chemical substances, *id.* § 2604, and regulate chemical substances so that they no longer present an unreasonable risk, including prohibiting the manufacture, processing, or distribution so that they no longer present such a risk. *Id.* § 2605.

⁸⁸ Pub. L. No. 114-82, 130 Stat. 448 (2016); see *The Frank R. Lautenberg Chemical Safety for the 21st Century Act*, EPA <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/frank-r-lautenberg-chemical-safety-21st-century-act> (last updated Mar. 20, 2023); Charles W. Schmidt, *TSCA 2.0: A New Era in Chemical Risk Management*, 124 ENV'T HEALTH PERSPECTIVES A-182 (2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5047785/>.

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achieving its risk minimization goals.⁸⁹ EPA first addressed PFAS under TSCA in 2002, when it issued “significant new use” rules⁹⁰ that required that manufacturers notify EPA before beginning the manufacture or processing of certain PFAS for new uses.⁹¹ EPA adopted similar notification requirements in 2007, 2013, and 2020.⁹² It did not invoke its authority to regulate under § 6 of TSCA,⁹³ despite announcing in 2009 that it was considering regulation of long-chain PFAS variants.⁹⁴

In 2021, EPA published a “Strategic Roadmap” utilizing a multitude of federal environmental statutes to address PFAS between 2021 and 2024.⁹⁵ The Roadmap deemed PFAS to be “an urgent public health and environmental issue facing communities across the United States.”⁹⁶ It described a “whole-of-agency approach to addressing PFAS” and declared that EPA “must leverage the full range of statutory authorities to confront the human and ecological risks of PFAS.”⁹⁷ The Roadmap sketched out a plan for pursuing “a comprehensive approach to proactively prevent[ing] PFAS from entering air, land, and water at levels that can adversely affect health and the environment.”⁹⁸

⁸⁹ See *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir. 1991) (remanding EPA’s regulation of asbestos-containing products because, among other things, EPA failed to make that demonstration). For a revealing analysis of the reasons for EPA’s unsuccessful efforts to regulate asbestos, see *Rachel Rothschild, Unreasonable Risk: The Failure to Ban Asbestos and the Future of Toxic Substances Regulation*, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4189677#.

⁹⁰ TSCA prohibits the manufacture or processing of any chemical substance for a significant new use within 90 days of notifying EPA of the person’s intent to manufacture or process the substance. 15 U.S.C. § 2604(a)(1).

⁹¹ Perfluoroalkyl Sulfonates; Significant New Use Rule, 67 Fed. Reg. 11008 (Mar. 11, 2022).

⁹² See Schwartz, *supra* note 54, at 10975.

⁹³ 15 U.S.C. § 2605.

⁹⁴ See Nevitt & Percival, *supra* note 82, at 161-62.

⁹⁵ PFAS Strategic Roadmap, *supra* note 35.

⁹⁶ *Id.* at 5.

⁹⁷ *Id.*

⁹⁸ *Id.*; see also *id.* at 6 (“EPA cannot solve the problem of “forever chemicals” by tackling one route of exposure or one use at a time. Rather, EPA needs to take a lifecycle approach to PFAS in order to make meaningful progress.”).

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Part of this approach involved reliance on TSCA. The Roadmap noted that in the 2020 National Defense Authorization Act (NDAA),⁹⁹ Congress directed EPA to create a process for prioritizing which PFAS or classes of PFAS should be the focus of future research. EPA committed in the Roadmap to evaluating existing test data for PFAS and identifying important gaps in the data so that it could select representative chemicals as priorities for additional research.¹⁰⁰ The agency indicated that it expected to invoke § 4 of TSCA to require PFAS manufacturers to conduct and fund the studies, and to issue the first round of test orders by the end of 2021.¹⁰¹ It also announced its determination to “apply a rigorous premanufacture notice review process for new PFAS to ensure these substances are safe before they enter commerce”¹⁰² and to impose “rigorous safety requirements” before allowing significant new uses of existing PFAS.¹⁰³ Lastly, it stated that it would consider how best to address inactive or abandoned but unregulated uses of PFAS.¹⁰⁴

EPA has begun to implement its TSCA agenda. Its actions have included proposed or final regulations to establish reporting requirements for PFAS,¹⁰⁵ to adopt significant new use rules for PFAS that were the subject of premanufacture notifications,¹⁰⁶ to revise and update its TSCA new chemicals procedural regulations to implement the 2016 amendments, to improve the

⁹⁹ Pub. L. No. 116-92, § 7362(a), 133 Stat. 1198, 2290 (2019).

¹⁰⁰ PFAS Strategic Roadmap, *supra* note 35, at 10.

¹⁰¹ *Id.*

¹⁰² *Id.* at 11.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ TSCA Section 8(a)(7) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances, 86 Fed. Reg. 33926 (June 28, 2021) (proposed rule); *see also* TSCA Section 8(a)(7) Reporting and Recordkeeping Requirements for Perfluoroalkyl and Polyfluoroalkyl Substances; Notice of Data Availability and Request for Comment, 87 Fed. Reg. 72439 (Nov. 25, 2022).

¹⁰⁶ Significant New Use Rules on Certain Chemical Substances (22-1.5e), 87 Fed. Reg. 74072 (Dec. 2, 2022) (proposed rule); *see also* Significant New Use Rules on Certain Chemical Substances (23-2.5e), 88 Fed. Reg. 39804 (June 20, 2023) (proposed rule).

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efficiency of the new chemical processes,¹⁰⁷ and to conform its requirements for the assertion of confidentiality claims to conform to the 2016 amendments.¹⁰⁸ To further these ambitions, in 2023 EPA announced a new framework for assessing new PFAS and new uses of existing PFAS that could require more testing, risk mitigation, and even ban manufacturing of likely persistent, bioaccumulative, and toxic PFAS that result in exposure or environmental release and are not a critical need or needed by the military.¹⁰⁹

2. The Emergency Planning and Community Right-to-Know Act

EPCRA is another source of authority to address PFAS-related threats. Section 313 of EPCRA requires the owner or operator of certain industrial facilities to complete and submit each year a toxic chemical release form for designated toxic chemicals that it manufactured, processed, or used in amounts that exceed reportable quantities established by the statute or EPA.¹¹⁰ EPA aggregates the information and makes it publicly available in the form of the Toxic Release Inventory (TRI),¹¹¹ which “aims squarely at measuring and disclosing the environmental performance of those parties most directly responsible for significant environmental impacts, with the aim of thereby improving performance outcomes.”¹¹²

EPCRA requires PFAS identified in the PFAS Act of 2019, which was part of the 2020 NDAA, to be listed as toxic chemicals covered by the TRI reporting and disclosure program,

¹⁰⁷ Updates to New Chemicals Regulations Under the Toxic Substances Control Act (TSCA), 88 Fed. Reg. 34100 (May 26, 2023) (proposed rule).

¹⁰⁸ Confidential Business Information Claims Under the Toxic Substances Control Act (TSCA), 88 Fed. Reg. 37155 (June 7, 2023) (final rule).

¹⁰⁹ EPA, Framework for TSCA New Chemicals Review of PFAS Premanufacture Notices (PMNs) and Significant New Use Notices (SNUNs), (June 28, 2023), https://www.epa.gov/system/files/documents/2023-06/PFAS%20Framework_Public%20Release_6-28-23_Final_508c.pdf.

¹¹⁰ 42 U.S.C. § 11023(a).

¹¹¹ EPA, TRI Data and Tools, <https://www.epa.gov/toxics-release-inventory-tri-program/find-understand-and-use-tri> (last visited July 20, 2023).

¹¹² Bradley C. Karkkainen, *Information As Environmental Regulation: Tri and Performance Benchmarking, Precursor to A New Paradigm?*, 89 GEO. L.J. 257, 287 (2001).

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either immediately or after certain assessments or determinations by EPA.¹¹³ EPA's Strategic Roadmap noted, however, that exemptions and exclusions significantly limit the date EPA received during the first year that TRI reporting was required for these chemicals.¹¹⁴

Accordingly, EPA stated its intention to propose rules that would treat PFAS on the TRI list as "Chemicals of Special Concern" and to eliminate de minimis exemptions for them. It also planned to update the list of PFAS subject to TRI reporting.¹¹⁵ EPA began implementing that plan in 2022. It subsequently issued proposed or final rules adding to the list of TRI-covered PFAS that the 2020 NDAA required it to list¹¹⁶ and eliminating de minimis exemptions from reporting requirements for certain PFAS.¹¹⁷ To date EPA has added 189 PFAS to the TRI.¹¹⁸

3. The Safe Drinking Water Act

To address the presence of PFAS in water, EPA can resort to both the SDWA and the CWA. The SDWA requires that EPA establish national drinking water regulations that include maximum contaminant levels (MCLs) that limit permissible concentrations of drinking water contaminants in public water systems.¹¹⁹ EPA must set maximum contaminant level goals

¹¹³ Pub. L. No. 116-92, § 7321(b)-(d), 133 Stat. 1198, 2277-80 (2019)42 U.S.C. § 11023(c)(2) referring to chemicals listed in the PFAS Act of 2019); *see also* 42 U.S.C. § 11023(c)(2) (stating that the toxic chemicals subject to TRI reporting obligations must include "the chemicals included . . . under . . . section 7321 of the PFAS Act of 2019).

¹¹⁴ PFAS Strategic Roadmap, *supra* note 35, at 12.

¹¹⁵ *Id.* at 10-11.

¹¹⁶ Implementing Statutory Addition of Certain Per- and Polyfluoroalkyl Substances (PFAS) to the Toxics Release Inventory Beginning With Reporting Years 2021 and 2022, 87 Fed. Reg. 42651 (July 18, 2022) (final rule); *see also* Implementing Statutory Addition of Certain Per- and Polyfluoroalkyl Substances (PFAS) to the Toxics Release Inventory Beginning With Reporting Years 2021 and 2022; Correction, 87 Fed. Reg. 47102 (Aug. 2, 2022) (correcting that rule); Implementing Statutory Addition of Certain Per- and Polyfluoroalkyl Substances (PFAS) to the Toxics Release Inventory Beginning With Reporting Year 2023, 88 Fed. Reg. 41035 (June 23, 2023);

¹¹⁷ Changes to Reporting Requirements for Per- and Polyfluoroalkyl Substances and to Supplier Notifications for Chemicals of Special Concern; Community Right-to-Know Toxic Chemical Release Reporting, 87 Fed. Reg. 74379 (Dec. 5, 2022).

¹¹⁸ EPA, EPA Requires Reporting on Releases and Other Waste Management for Nine Additional PFAS (Jan. 6, 2023), <https://www.epa.gov/newsreleases/epa-requires-reporting-releases-and-other-waste-management-nine-additional-pfas>.

¹¹⁹ *See* 42 U.S.C. § 300g (stating that national primary drinking water regulations shall apply to public water systems).

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(MCLGs) at “the level at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety.”¹²⁰ The MCLs must be “as close to the [MCLGs] as is feasible,¹²¹ unless the technology, treatment techniques, or other means used to determine the feasible level would increase the concentration of other contaminants or interfere with the efficacy of techniques used to comply with the regulations, or if the benefits of MCLs that are as close to the MCLGs as is feasible would not justify the costs of complying with that level.¹²²

EPA’s Strategic Roadmap noted that the agency had already published a proposed rule concerning contaminant monitoring that would provide critically needed data to assist EPA in understanding the frequency and concentration of PFAS in public drinking water supplies.¹²³ EPA indicated that it would subject additional PFAS to monitoring requirements. At the time, EPA had not yet adopted national drinking water regulations for any PFAS, but it had proposed such regulations for PFOA and PFOS.¹²⁴ The agency would also consider adopting regulations for additional PFAS.¹²⁵ EPA has since finalized the rule requiring the collection of data concerning 29 PFAS,¹²⁶ hosted public meetings to address environmental justice considerations stemming from the presence of PFAS in drinking water,¹²⁷ and issued a list of Contaminant Candidates that may merit regulation under the SDWA that included PFAS as a group of

¹²⁰ *Id.* § 300g-1(b)(4)(A).

¹²¹ *Id.* § 300g-1(b)(4)(B).

¹²² *Id.* § 300g-1(b)(5)-(6).

¹²³ PFAS Strategic Roadmap, *supra* note 35, at 12.

¹²⁴ *Id.* at 12-13.

¹²⁵ *Id.*

¹²⁶ Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meetings, 86 Fed. Reg. 73131 (Dec. 27, 2021) (final rule).

¹²⁷ Notice of Public Meeting: Environmental Justice Considerations for the Development of the Proposed Per- and Polyfluoroalkyl Substances (PFAS) National Primary Drinking Water Regulation (NPDWR), 87 Fed. Reg. 7412 (Feb. 9, 2022).

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chemicals.¹²⁸ It also proposed national primary drinking water regulations for six PFAS (PFOA, PFOS, PFNA, GenX chemicals, PFHxS, and PFBS).¹²⁹ If finalized, these NPDWRs would create legally enforceable MCLs for each of the six PFAS and require public water systems to monitor and notify the public of the presence of excessive levels of regulated PFAS and reduce those levels to come into compliance.¹³⁰

4. The Clean Water Act

The CWA prohibits the discharge of pollutants into waters of the United States without a permit from EPA or an authorized state.¹³¹ The statute directs EPA to establish regulatory effluent limits for categories of industrial and municipal dischargers, generally based on EPA's determination of the level of discharge that could be achieved using the best available technology that is economically achievable for the category.¹³² Discharge permits, referred to as National Pollutant Discharge Elimination System (NPDES) permits,¹³³ generally incorporate the regulatory limits established by EPA for the category of point sources that the permit applicant falls within. NPDES permits additionally include monitoring and reporting requirements and may require permit holders to monitor and conduct studies for pollutants, including PFAS, which are not covered by the industry's regulatory effluent limits.¹³⁴ In addition, the CWA authorizes

¹²⁸ Drinking Water Contaminant Candidate List 5—Final, 87 Fed. Reg. 68060 (Nov. 14, 2022),

¹²⁹ PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18638 (Mar. 29, 2023).

¹³⁰ EPA, *Per- and Polyfluoroalkyl Substances (PFAS) Proposed PFAS National Primary Drinking Water Regulation* (last updated Mar. 14, 2023), <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>; EPA, *Biden-Harris Administration Proposes First-Ever National Standard to Protect Communities from PFAS in Drinking Water*, <https://www.epa.gov/newsreleases/biden-harris-administration-proposes-first-ever-national-standard-protect-communities> (last updated Mar. 14, 2023).

¹³¹ 33 U.S.C. §§ 1311(a), 1342(a).

¹³² 33 U.S.C. §§ 1311(b)(2)(A), 1314(b)(2)(A).

¹³³ See 33 U.S.C. § 1342.

¹³⁴ Congressional Research Service, *Regulating PFAS Under the Clean Water Act (2022)* [hereinafter *Regulating PFAS Under the CWA*].

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permit issuing authorities to establish effluent limits on a case-by-case basis for pollutants not covered by regulatory limits based on the issuer's best professional judgment.¹³⁵

Although, EPA has not yet set any regulatory effluent limits that apply to PFAS discharges,¹³⁶ it announced in its 2023 biennial plan for new and revised regulatory effluent limitation guidelines (called Effluent Guidelines Program Plan 15) its intention to continue “to focus on and evaluate the extent and nature of Per- and Polyfluoroalkyl Substances (PFAS) discharges and assess opportunities for limiting those discharges from multiple industrial categories.”¹³⁷ In particular, EPA indicated it would update regulatory limitations for landfills, whose leachate often contains PFAS.¹³⁸ It also planned to expand an ongoing study of textile mills' use, treatment, and discharges of PFAS and initiate a new study on PFAS discharges from industrial facilities into publicly owned treatment works.¹³⁹ Plan 15 also included an update on an ongoing study of airports, which currently use firefighting foams containing PFAS in the absence of fluorine-free foams that satisfy requisite regulatory standards.¹⁴⁰ Finally, the plan included updates on rulemaking efforts for organic chemicals, plastics, synthetic fibers, and metal finishing and electroplating point sources, all of which EPA intended to pursue through proposed rules in 2024.¹⁴¹

¹³⁵ 33 U.S.C. § 1342(a)(1)(B).

¹³⁶ See Regulating PFAS Under the CWA, *supra* note 134.

¹³⁷ Effluent Guidelines Program Plan 15, 88 Fed. Reg. 6258, 6259 (Jan. 31, 2023); *see also* EPA, Effluent Guidelines Program Plan 15 (2023), https://www.epa.gov/system/files/documents/2023-01/11143_ELG%20Plan%2015_508.pdf [hereinafter Plan 15]. Periodic review of the effluent limitations guidelines issued by EPA under the CWA pursuant to § 304, 33 U.S.C. § 1314, is required by *id.* § 1314(m).

¹³⁸ 88 Fed. Reg. at 6259.

¹³⁹ *Id.*

¹⁴⁰ Plan 15, *supra* note 137, at 6-4 to 6-6 (Jan. 2023).

¹⁴¹ *Id.* at 7-3 to 7-4.

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In April 2023, EPA supplemented its rulemaking efforts by bringing an enforcement action for unlawful PFAS discharges for the first time.¹⁴² EPA alleged that discharges at the Washington Works facility of Chemours' (previously E.I. du Pont de Nemours or DuPont, which manufactured Teflon) into the Ohio River and its tributaries had exceeded the applicable discharge permit limits for PFOA and Gen X PFAS from 2018 to 2023.¹⁴³ EPA's administrative compliance order on consent required Chemours to conduct discharge sampling, analyze the results to promote better understanding of the presence of PFAS in industrial and stormwater discharges, and submit a plan to treat or minimize PFAS discharges in compliance with the facility's NPDES permit.¹⁴⁴ In addition, the Center for Biological Diversity recently submitted a petition to EPA to add dozens of PFAS, among other pollutants, to the CWA's list of toxic pollutants, which has remained unchanged for nearly 50 years.¹⁴⁵

5. The Resource Conservation and Recovery Act

EPA's PFAS Strategic Roadmap described EPA's intention under multiple statutes, including TSCA, the SDWA, the CWA, RCRA, and CERCLA, to identify past and ongoing releases of PFAS into the environment at facilities at which PFAS has been manufactured, discharged, disposed of, or spilled.¹⁴⁶ RCRA is a statute whose primary focus is on the regulation

¹⁴² EPA takes first-ever federal Clean Water Act enforcement action to address PFAS discharges at Washington Works facility near Parkersburg, W. Va., EPA (Apr. 26, 2023), <https://www.epa.gov/newsreleases/epa-takes-first-ever-federal-clean-water-act-enforcement-action-address-pfas> [hereinafter Parkersburg PFOAs] (stating that "This is the first EPA Clean Water Act enforcement action ever taken to hold polluters accountable for discharging PFAS into the environment"); Madeline Lyskawa, *EPA Slaps Chemours with First-Of-Its-Kind PFAS Action*, LAW360 (Apr. 27, 2023), <https://www.law360.com/articles/1601615/epa-slaps-chemours-with-first-of-its-kind-pfas-action>.

¹⁴³ Parkersburg PFOAs, *supra* note 142. The permit for the Parkersburg facility is available at EPA, *2018 National Pollutant Discharge Elimination System (NPDES) Permit No. WV0001279 – Chemours Washington Works (Washington, West Virginia) [DCN PFAS00139]*, REGULATIONS (Sep. 15, 2021), <https://www.regulations.gov/document/EPA-HQ-OW-2021-0547-0393>.

¹⁴⁴ Parkersburg PFOAs, *supra* note 142; Lyskawa, *supra* note 142.

¹⁴⁵ Ctr. for Biological Diversity, *EPA Petitioned to Update 47-Year-Old Toxic Pollutant List* (July 31, 2023), <https://biologicaldiversity.org/w/news/press-releases/epa-petitioned-to-update-47-year-old-toxic-pollutant-list-2023-07-31/>.

¹⁴⁶ PFAS Strategic Roadmap, *supra* note 35, at 20.

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of ongoing generation, transportation, treatment, storage, and disposal of hazardous waste.¹⁴⁷ It authorizes EPA to list chemical substances as hazardous waste¹⁴⁸ and adopt regulatory standards to govern those who generate, transport, or treat, store, or dispose of hazardous waste.¹⁴⁹ But RCRA's provisions are not entirely forward-looking. The statute also authorizes EPA to bring civil actions in federal court to restrain any person who has contributed or is contributing to past or present handling, storage, treatment, transportation, or disposal of solid or hazardous waste from continuing to engage in that activity or "to take such other action as may be necessary."¹⁵⁰ EPA may also issue administrative orders to the same effect.¹⁵¹

In 2021, New Mexico's Governor petitioned EPA to designate PFAS, either individually or as a class, as hazardous under RCRA.¹⁵² In response, EPA added that it would initiate a rulemaking to add four specific PFAS chemicals as hazardous constituents.¹⁵³ The agency explained that the addition of PFAS to the list of hazardous constituents is a necessary component of a hazardous waste listing. Further, hazardous constituents are subject to corrective actions at TSD facilities.¹⁵⁴ EPA also indicated in the letter that it would initiate a rulemaking to clarify that "emerging contaminants such as PFAS can be addressed through RCRA corrective action."¹⁵⁵

¹⁴⁷ RCRA's purposes include "assuring that hazardous waste management practices are conducted in a manner which protects human health and the environment." 42 U.S.C. § 6902(a)(4).

¹⁴⁸ *Id.* § 6921.

¹⁴⁹ *Id.* §§ 6922-6924. Treatment, storage, or disposal facilities are known as TSD facilities.

¹⁵⁰ 42 U.S.C. § 6973(a).

¹⁵¹ *Id.* (authorizing EPA to issue "such orders as may be necessary to protect public health and the environment").

¹⁵² RCRA authorizes state governors to petition EPA to identify or list a material as a hazardous waste. 42 U.S.C. § 6921(c).

¹⁵³ Letter from EPA Administrator Michael Regan to New Mexico Governor Michelle Lujan Grisham (Oct. 26, 2021), https://www.epa.gov/system/files/documents/2021-10/oct_2021_response_to_nm_governor_pfas_petition_corrected.pdf [hereinafter Regan Letter].

¹⁵⁴ Regan Letter, *supra* note 153. *See* 42 U.S.C. § 6924(u)-(v) (authorizing EPA to require corrective action for releases of hazardous wastes at TSD facilities).

¹⁵⁵ Regan Letter, *supra* note 153; *see also* Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 87 Fed. Reg. 54415, 54431 (Sept. 6,

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6. The Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA's focus is on responding to releases of hazardous substances into the environment. It defines hazardous substances as substances regulated under other environmental statutes, including provisions of the CWA, RCRA, the CAA, and TSCA.¹⁵⁶ It authorizes EPA to adopt regulations designating as additional hazardous substances "such elements, compounds, mixtures, solutions, and substances which, when released into the environment, may present substantial danger to the public health or welfare or the environment."¹⁵⁷ CERCLA authorizes the President, acting through EPA, to engage in response actions deemed "necessary to protect the public health or welfare or the environment" whenever any hazardous substance is released, or there is a substantial threat of a release, into the environment.¹⁵⁸ It also authorizes the federal government to seek reimbursement for its response costs in civil actions against potentially responsible parties (PRPs) that include (1) present owners and operators of facilities at which a release or threatened release has occurred, (2) those who owned or operated such a facility at the time of disposal of hazardous substances there, (3) any person who arranged for disposal, treatment or transport for disposal or treatment of hazardous substances owned or possessed by such person at a facility at which a release or threatened release occurred (including generators of hazardous substances found at the facility), and (4) any person who transported any hazardous substance to a facility from which there is a release or threatened release.¹⁵⁹ In lieu of cleaning

2022) (describing EPA's response to Governor Grisham's petition); PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18638, 18688 (Mar. 29, 2023) (stating that "EPA is in the process of proposing some PFAS be designated as hazardous substances under CERCLA and listed as hazardous constituents under RCRA").

¹⁵⁶ 42 U.S.C. § 9601(14).

¹⁵⁷ *Id.* § 9602(a). EPA may also designate quantities of hazardous substances which trigger duties to report releases of those substances to the government. *See id.* §§ 9602(a), 9603(a).

¹⁵⁸ *Id.* § 9604(a).

¹⁵⁹ *Id.* § 9607(a).

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up a response itself (or arranging for a contractor to do so), EPA may bring a civil action against a PRP to abate an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release from a facility.¹⁶⁰ Alternatively, EPA may respond to such an endangerment by issuing such administrative orders “as may be necessary to protect public health and welfare and the environment.”¹⁶¹ Designation of PFAS as a hazardous substance would allow EPA to conduct cleanups of releases at facilities to which PFAS were sent, to bring civil actions to impose response cost liability to persons whose activities qualify them as PRPs with respect to those facilities, or issue administrative compliance orders to such PRPs.¹⁶² It would also require facilities to which PFAS were sent and at which a release or threatened release occurred to report that occurrence to the government.¹⁶³

EPA’s PFAS Strategic Roadmap indicated that EPA was developing a notice of proposed rulemaking to designate PFOA and PFOS as CERCLA hazardous substances.¹⁶⁴ EPA also described its intention in a separate rulemaking to seek public input on whether to similarly designate other PFAS.¹⁶⁵ The Roadmap stated that EPA would consider designating additional PFAS as hazardous substances as more information becomes available about the health effects of PFAS and methods to measure them in groundwater.¹⁶⁶ EPA subsequently carried through on both initiatives. It proposed designation of PFOA and PFOS as hazardous substances under §

¹⁶⁰ *Id.* § 9606(a).

¹⁶¹ *Id.*

¹⁶² *See Proposed Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances*, EPA <https://www.epa.gov/superfund/proposed-designation-perfluorooctanoic-acid-pfoa-and-perfluorooctanesulfonic-acid-pfos> (last updated Mar. 2, 2023).

¹⁶³ *See id.* § 9603(a). Violations of related recordkeeping requirements would trigger potential criminal liability. *See id.* § 9603(d)(2).

¹⁶⁴ PFAS Strategic Roadmap, *supra* note 35, at 17.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

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102(a) of CERCLA.¹⁶⁷ It found that “the totality of evidence about PFOA and PFOS . . . demonstrates that they can pose substantial danger to public health or welfare or the environment. This level of evidence is more than sufficient to satisfy the CERCLA section 102(a) standard.”¹⁶⁸ It also indicated that “if finalized, these designations would provide some additional tools that the government and others could use to address PFOA/PFOS contamination and, thus, could facilitate an increase in the pace of cleanups of PFOA/PFOS contaminated sites.”¹⁶⁹ EPA also issued an advance notice of proposed rulemaking in which it sought public input and data concerning PFAS other than PFOA and PFOS as possible additions to the list of hazardous substances.¹⁷⁰

7. Activity by Other Federal Agencies

EPA is not the only federal agency that has sought to minimize the health and environmental risks associated with PFAS.¹⁷¹ For example, the Food and Drug Administration is studying PFAS in food and packaging and the Department of Agriculture is addressing PFAS in both plant and animal agriculture.¹⁷² Both the Department of Homeland Security and the Federal Emergency Management Agency are creating programs to protect emergency responders who may be exposed to PFAS in fire-fighting foams and other materials.¹⁷³ The Department of Defense (DoD) has conducted cleanups at military installations where PFAS were or may have

¹⁶⁷ Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 87 Fed. Reg. 54415 (Sept. 6, 2022).

¹⁶⁸ *Id.* at 54417.

¹⁶⁹ *Id.* at 54418.

¹⁷⁰ Addressing PFAS in the Environment, 88 Fed. Reg. 22399 (Apr. 13, 2023).

¹⁷¹ Actions taken by state legislatures or agencies and tort actions against PFAS manufacturers are beyond the scope of this Article.

¹⁷² The White House, *Fact Sheet: Biden-Harris Administration Launches Plan to Combat PFAS Pollution* (Oct. 18, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/10/18/fact-sheet-biden-harris-administration-launches-plan-to-combat-pfas-pollution/>.

¹⁷³ *Id.*

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been used.¹⁷⁴ DoD is also at the forefront of research about and regulation of PFAS in aqueous firefighting foams, which are used at airports and military bases to fight liquid fuel fires that may result in soil and groundwater contamination.¹⁷⁵ DoD has embarked on multiple initiatives to remove PFAS from military actions, including the removal of PFOA and PFOS from aqueous firefighting foams, from personal protective equipment for firefighters, and remediation of military sites contaminated with PFAS.¹⁷⁶ Through this government-wide approach, each agency can ensure that its sector is sufficiently abating and removing PFAS.

III. Regulatory Options Under the Clean Air Act to Address Airborne PFAS

EPA is aware that PFAS can be found in the air and that action is needed to prevent airborne PFAS from posing health risks to exposed communities.¹⁷⁷ The fact that “a relatively narrow set of industries directly . . . generate air emissions in large quantities . . . helps to pinpoint clear opportunities to restrict releases into the environment.”¹⁷⁸ Yet, airborne PFAS emissions are poorly constrained.¹⁷⁹ The CAA, which is the federal government’s main regulatory tool for controlling air pollution, includes several program and provisions that are available to EPA in addressing health and environmental risks that have been linked to PFAS.

¹⁷⁴ *Id.*

¹⁷⁵ *Per- and Polyfluoroalkyl Substances (PFAS)*, DEP’T OF DEFENSE ENV’T CLEANUP AND COMPLIANCE, <https://www.acq.osd.mil/eie/ee/ecc/pfas/index.html> (last visited Aug. 9, 2023).

¹⁷⁶ *Id.*; *Aqueous Film Forming Foam*, DEP’T OF DEFENSE ENV’T CLEANUP AND COMPLIANCE, <https://www.acq.osd.mil/eie/ee/ecc/pfas/oe/aff/milspec-standard.html> (last visited Aug. 9, 2023); Dep’t of Defense, Performance Specification for Fire Extinguishing Agent, Fluorine-Free Foam (F3) Liquid Concentrate, For Land-Based, Fresh Water Applications (Jan. 6, 2023), <https://media.defense.gov/2023/Jan/12/2003144157/-1/-1/1/MILITARY-SPECIFICATION-FOR-FIRE-EXTINGUISHING-AGENT-FLUORINE-FREE-FOAM-F3-LIQUID-CONCENTRATE-FOR-LAND-BASED-FRESH-WATER-APPLICATIONS.PDF>.

¹⁷⁷ PFAS Strategic Roadmap, *supra* note 35, at 5, 6.

¹⁷⁸ *Id.* at 7.

¹⁷⁹ Emma L. D’Ambro et al., *Characterizing the Air Emissions, Transport, and Deposition of Per- and Polyfluoroalkyl Substances from a Fluoropolymer Manufacturing Facility*, 55(2) ENV’T SCI. TECH. 862 (2021), <https://pubs.acs.org/doi/epdf/10.1021/acs.est.0c06580>.

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This Part describes the provisions most likely to be useful in controlling airborne PFAS emissions. It first describes the regulatory provisions governing new and modified sources of air pollutants and emissions of hazardous air pollutants.¹⁸⁰ It then turns to the CAA provisions that enable EPA to use litigation and enforcement (which we will refer to as the CAA's nonregulatory mechanisms)¹⁸¹ as a tool to abate PFAS emissions. The next Part surveys EPA's use of these non-regulatory mechanisms to address airborne PFAS and assesses whether the statute authorizes EPA to rely on these mechanisms to reduce health and environmental risks from airborne PFAS. Because the regulatory options are likely to involve the use of time-consuming regulatory procedures, which are typically followed by litigation challenging the validity of the regulations adopted, turning to litigation or enforcement actions to abate imminent hazards arising from PFAS emissions into the air may allow EPA to reduce PFAS-related health risks quickly and effectively.

A. New Source Performance Standards

The CAA authorizes regulation of new and modified stationary sources of air pollution. The Act requires EPA to publish a list of categories of stationary sources which, in the judgment of the Administrator, cause or contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.¹⁸² Once EPA has listed a source, it must

¹⁸⁰ We will not consider the adoption of national ambient air quality standards (NAAQS) for PFAS. EPA has adopted NAAQS for only six air pollutants. See EPA, NAAQS Table, <https://www.epa.gov/criteria-air-pollutants/naaqs-table> (last updated Mar. 15, 2023). It adopted NAAQS for lead only after being compelled by court order to do so. See *NRDC v. Train*, 545 F.2d 320 (2d Cir. 1976). EPA has been hesitant to adopt additional NAAQS for pollutants such as greenhouse gases. See Ari R. Lieberman, *Turning Lemons into Lemonade: Utilizing the NAAQS Provisions of the Clean Air Act to Comprehensively Address Climate Change*, 21 BUFF. ENV'T L.J. 1, 6 (2014). Given the relatively small number of stationary sources that emit PFAS into the air, we think it is unlikely that EPA will decide to adopt NAAQS for PFAS. The PFAS Strategic Roadmap does not discuss NAAQS as an option under the CAA.

¹⁸¹ We use this term to describe mechanisms that do not rely primarily on the use of regulations or permits to abate air pollution.

¹⁸² 42 U.S.C. § 7411(b)(1)(A).

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establish a standard of performance applicable to new sources¹⁸³ in the category.¹⁸⁴ The standard must reflect the degree of emission limitation achievable through what EPA determines is the best system of emission reduction that has been adequately demonstrated (BSER), taking into account factors that include cost.¹⁸⁵

Thus, if EPA determines that a category of stationary sources that emit PFAS cause or contribute to air pollution which may be anticipated to endanger public health or welfare, it could list that category, which would require it to adopt a standard of performance for the source category. This technology-based performance standard would require stationary sources in the category to achieve the degree of emission limitation that sources using BSER are capable of achieving.¹⁸⁶ Further, if EPA adopts new source performance standards for a category of stationary sources that emit PFAS, § 111(d) would trigger an obligation on the part of the states to submit a plan to EPA for regulation of existing sources in the same industrial category, but

¹⁸³ A source qualifies as a new source if its construction or modification commenced after publication of proposed or final regulations prescribing an applicable standard of performance. *Id.* § 7411(a)(2). A “modification” is any physical change, or change in the method of operation of, a stationary source that increases the amount of air pollution emitted by the source or results in the emission of an air pollutant not previously emitted. *Id.* § 7411(a)(4). Henceforth, we will use the term “new source” to include both newly constructed sources and those that qualify as having been modified. *See also id.* § 7411(e) (making it unlawful for any owner or operator of any new source to operate it in violation of an applicable standard of performance).

¹⁸⁴ *Id.* § 7411(b)(1)(B).

¹⁸⁵ *Id.* § 7411(a)(1).

¹⁸⁶ Wendy Wagner described technology-based standards as follows:

In most instances, Congress requires the EPA to survey currently available (or soon-to-be-available) pollution control technologies for classes and categories of industry and to select the technology in each industrial category that best fulfills congressional goals under the circumstances.¹⁸ The EPA then converts the pollution reduction capabilities of the selected technology to numerical effluent or emission limits for each pollutant of concern.

Wendy E. Wagner, *The Triumph of Technology-Based Standards*, 2000 U. ILL. L. REV. 83, 88–89 (2000). Performance standards establish a goal (such as a cap on allowable emissions), often based on the degree of emissions limitation that regulated entities would be capable of achieving if they used the “reference technology” (such as the BSER) on which the standard is based, but regulated entities may use any means they choose to comply with the standard. Only the end result (compliance with the goal) matters to the agency. *See* SIDNEY A. SHAPIRO & ROBERT L. GLICKSMAN, RISK REGULATION AT RISK: RESTORING A PRAGMATIC APPROACH 151 (2003).

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only if EPA had not adopted national ambient air quality standards for those PFAS or designated them as a hazardous air pollutant.¹⁸⁷

B. Hazardous Air Pollutants

The CAA lists 189 chemicals as hazardous air pollutants (HAPs).¹⁸⁸ EPA must publish a list of stationary source categories that emit one or more of these pollutants.¹⁸⁹ It must then adopt regulations establishing technology-based emission standards for each listed category that apply to both new and existing sources.¹⁹⁰ The initial round of those standards must require the maximum degree of reduction in emissions that EPA, taking into consideration cost and other factors, determines is achievable for the category through specified measures.¹⁹¹ EPA is required to assess the degree of health risk remaining after compliance with these initial sources and report the results to Congress.¹⁹² If Congress does not act, EPA must adopt a second round of standards if it determines that doing so is required to “provide an ample margin of safety to protect public health,” unless it also determines that a more stringent standard is necessary to prevent an adverse environmental effect.¹⁹³

EPA’s authority to regulate HAPS is not limited to the initial list of 189 HAPs in § 112(b). The CAA authorizes EPA to add a pollutant to the list “which present, or may present, through inhalation or other routes of exposure, a threat of adverse human health effects . . . or adverse environmental effects whether through ambient concentrations, bioaccumulation,

¹⁸⁷ 42 U.S.C. § 7411(d); *West Virginia v. EPA*, 142 S. Ct. 2587, 2601 (2022).

¹⁸⁸ 42 U.S.C. § 7412(b)(1); *see also* EPA, *Initial List of Hazardous Air Pollutants with Modifications*, <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications> (last updated Dec. 19, 2022).

¹⁸⁹ 42 U.S.C. § 7212(c)(1).

¹⁹⁰ *Id.* § 7412(d)(1).

¹⁹¹ *Id.* § 7412(d)(2). The method for computing the maximum degree of emissions that is deemed achievable in a category is different for new and existing sources. *Id.* § 7412(d)(3).

¹⁹² *Id.* § 7412(f)(1).

¹⁹³ *Id.* § 7412(f)(2)(A).

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deposition, or otherwise.”¹⁹⁴ In addition, any person may file a petition with EPA to modify the initial list of HAPs, and EPA must add a pollutant to the list if emissions, ambient concentrations, bioaccumulation or deposition of the substance is “known to cause or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects.”¹⁹⁵

Given the known adverse health and environmental effects of exposure to PFAS,¹⁹⁶ listing PFAS as a HAP is perhaps the most powerful action the CAA authorizes EPA to take to reduce health and environmental threats caused by airborne PFAS. Listing PFAS as HAPs is the only CAA regulatory method mentioned in the PFAS Strategic Roadmap. The Roadmap explained that EPA was “building the technical foundation” to inform future decisions on whether and how to regulate PFAS as HAPs.¹⁹⁷ The Roadmap stated that “by Fall 2022, EPA [would] evaluate mitigation options, including listing certain PFAS as hazardous air pollutants and/or pursuing other regulatory and non-regulatory approaches.”¹⁹⁸

¹⁹⁴ *Id.* § 7412(b)(2).

¹⁹⁵ *Id.* § 7412(b)(3)(B). For the first time since the HAP program was created, EPA added a pollutant to the original list of 189. EPA added 1-bromopropane, a dry-cleaning solvent that potentially damages nerves and causes cancer. EPA added the pollutant in response to two petitions asking it to do so. Clean Air Act Section 112 List of Hazardous Air Pollutant: Amendments to the List of Hazardous Air Pollutants (HAP), 87 Fed. Reg. 393 (Jan. 5, 2022).

¹⁹⁶ See *supra* notes 60-63 and accompanying text. For discussion of adverse environmental effects, see Bentuo Xu et al., *Translocation, bioaccumulation, and distribution of perfluoroalkyl and polyfluoroalkyl substances (PFASs) in plants*, 25 ISCIENCE at 3-4, 12-13 (Apr. 15, 2022), <https://www.sciencedirect.com/science/article/pii/S2589004222003315>; Jiuyi Li et al., *Exposure routes, bioaccumulation and toxic effects of per- and polyfluoroalkyl substances (PFASs) on plants: A critical review*, 158 ENV'T INT'L (2022), <https://www.sciencedirect.com/science/article/pii/S016041202100516X>.

¹⁹⁷ *PFAS Strategic Roadmap*, *supra* note 35, at 18.

¹⁹⁸ *Id.* The task of defining the term PFAS, no less which PFAS to regulate under § 112 or some other CAA provision, is itself fraught and controversial. In 2023, EPA’s Office of Pollution Prevention and Toxics announced that it would address whether chemical qualifies as PFAS, and should be regulated, on a case-by-case basis. The Office indicated that it would focus on substances most likely to be persistent in the environment. Critics claimed that this “lack of definition . . . makes no sense” and would lead to “terrible confusion,” and that the agency appeared to be excluding some chemicals in pharmaceuticals and pesticides that are generally defined as PFAS. Tom Perkins, *EPA’s New Definition of PFAS Could Omit Thousands of ‘Forever Chemicals’*, THE GUARDIAN (Aug. 18, 2023), <https://www.theguardian.com/environment/2023/aug/18/epa-new-definition-pfas-forever-chemicals>.

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While adoption of new source performance standards and designation of PFAS as HAPs remain open to EPA, it has undertaken neither of those regulatory actions yet and has made no announcement of its intention of doing so soon.¹⁹⁹ Nevertheless, regulation of PFAS under §§ 7411 or 7412 of the CAA could be useful long-term solutions, but regulation of this sort would likely take considerable time to adopt and litigate before compliance efforts would even begin. In the interim, airborne exposure to PFAS, with the accompanying health and environmental risks, would continue. The next section introduces “the other regulatory and non-regulatory approaches” to which EPA referred to in its Strategic Roadmap.

C. EPA’s Emergency Powers Under § 303

Section 303 of the CAA is labeled “Emergency powers.” It provides, in part:

Notwithstanding any other provision of [the CAA], the Administrator, upon receipt of evidence that a pollution source or combination of sources (including moving sources) is presenting an imminent and substantial endangerment to public health or welfare, or the environment, may bring suit on behalf of the United States in the appropriate United States district court to immediately restrain any person causing or contributing to the alleged pollution to stop the emission of air pollutants causing or contributing to such pollution or to take such other action as may be necessary. If it is not practicable to assure prompt protection of public health or welfare or the environment by commencement of such a civil action, the Administrator may issue such orders as may be necessary to protect public health or welfare or the environment. . . . Any order issued by the Administrator under this section shall be effective upon issuance and shall remain in effect for a period of not more than 60 days, unless the Administrator brings an action pursuant to the first sentence of this section before the expiration of that period. Whenever the Administrator brings such an action within the 60-day period, such order

¹⁹⁹ Several bills have been introduced in Congress that sought to add PFOS and PFOA to the list of HAPs under § 112(b), but none has been enacted. *See, e.g.*, H.R. 535, § 8, 116th Cong. (2019); H.R. 2467, § 8, 117th Cong. (2021); H.R. 7142, § 2, 117th Cong. (2022). In 2012, EPA updated the National Emissions Standard for Hazardous Air for the hard and decorative chromium electroplating and chromium anodizing tanks source categories. National Emission Standards for Hazardous Air Pollutant Emissions: Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks; and Steel Pickling—HCl Process Facilities and Hydrochloric Acid Regeneration Plants, 77 Fed. Reg. 58220 (Sept. 19, 2012). These standards specifically phased out PFOS-based fume suppressants. *Id.* at 58220, 58230. The rulemaking did not affect other PFAS from these or any other source categories.

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shall remain in effect for an additional 14 days or for such longer period as may be authorized by the court in which such action is brought.²⁰⁰

If EPA can demonstrate that a source emitting PFAS is presenting an imminent and substantial endangerment to public health or welfare or the environment, EPA can bring suit in federal district court, issue an administrative order to halt the harmful emissions, or “take such other action as may be necessary.” To use § 303, EPA must demonstrate that the defendant is a “person”; that the person qualifies as a “pollution source or combination of sources”; that it is “causing or contributing” to the emission of an “air pollutant”; that the emissions if allowed to continue are presenting an imminent and substantial endangerment to public health or welfare or the environment; and, if EPA issues an administrative order, that it is not practicable to wait for the commencement of a civil action in federal district court.

EPA’s authority to invoke its emergency powers under § 303 is expansive. Because § 303’s applicability to airborne PFAS emissions is thoroughly discussed below,²⁰¹ here we simply provide some examples of the breadth of those powers. Section 303 applies to a wide range of sources. A “pollution source or combination of sources” covers both to a single, sole-cause emitter and to one or more of a group of emitters of the problematic pollutant.²⁰² Thus, EPA has issued § 303 orders involving pollutants other than PFAS to individual entities²⁰³ and, in one instance, a group of 23 industrial stationary sources in Burlington, Alabama suspected of

²⁰⁰ 42 U.S.C. § 7603.

²⁰¹ See Part IVC.1.

²⁰² The CAA defines the term “person” broadly to include “an individual, corporation, partnership, association, State, municipality, political subdivision of a State, and any agency, department, or instrumentality of the United States and any officer, agent, or employee thereof.” *Id.* § 7602(e). It even includes a company that was a successor by merger that was simultaneously undergoing Chapter 11 bankruptcy. *E.g.*, U.S. v. G-I Holdings Inc. et al., No 01-30135-RG Doc. 8479 (U.S. Bankruptcy Court D. NJ Nov. 5, 2008) [hereinafter G-I Holdings Complaint].

²⁰³ See *infra* Section IVB.

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contributing to excessive particulate emissions.²⁰⁴ Similarly, the use of the term “causing or contributing” makes it clear that an emitter need not be the only party suspected of emitting the pollutant to be an appropriate target of a § 303 emergency order. EPA’s previous uses of § 303 is consistent with that reading of the statutory text. In one § 303 proceeding, for example, EPA acknowledged in a consent decree between the United States and PennTex “that there may be other sources of hydrogen sulfide emissions contributing to ambient levels in Bridgeport and Petrolia outside the control of PennTex and Rex Energy.”²⁰⁵ Further, the decree noted that “EPA *believes* that oil production from the Lawrence Wellfield *may be* a significant source of hydrogen sulfide emissions.”²⁰⁶ Thus, EPA’s position has been it need only have a reasonable basis for suspecting that the recipient of a § 303 order is contributing to the pollution it seeks to abate.²⁰⁷

The range of pollutants covered by § 303 is also broad. Section 303 authorizes actions to “stop the emission of air pollutants” that are causing or contributing to an endangerment. The CAA defines “air pollutant” to encompass any physical, chemical, or biological substance or matter that is “emitted into or otherwise enters the ambient air.”²⁰⁸ The definition does not require that an “air pollution agent” be regulated elsewhere in the statute.²⁰⁹

Finally, as the discussion in Part IV below indicates, the exercise of EPA’s emergency powers does not require proof that an air pollutant has caused or is causing health or environmental damage. EPA’s authority is triggered by an endangerment; a risk of harm

²⁰⁴ Schaeffer Letter, *supra* note 45, at 10-11; Rendleman, *supra* note 226, at 91; George E. Hardy, Jr., et. al., *First Use of the Federal Clean Air Act’s Emergency Authority: A Local Analysis*, 64 AM. J. PUB. HEALTH 72, 74-75 (1974).

²⁰⁵ Consent Decree in *U.S. v. PennTex Resources Illinois, Inc.*, Case No. 3:07-cv-241-DRH at 2 (D. Ill. June 7, 2007), <https://www.ilsd.uscourts.gov/opinions/ilsd.3.7.cv.241.711311.0.pdf> [hereinafter PennTex Consent Decree].

²⁰⁶ *Id.* (emphasis added).

²⁰⁷ See Schaeffer Letter, *supra* note 45, at 1, 13.

²⁰⁸ 42 U.S.C. § 7602(g). The term also includes any precursors to the formation of any air pollutant, See Schaeffer Letter, *supra* note 45, at 18.

²⁰⁹ For further discussion of the applicability of § 303 to PFAS, see *infra* notes 365-378 and accompanying text.

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suffices.²¹⁰ Indeed, EPA has asserted that it may take action under § 303 even before emissions occur.²¹¹

EPA may only resort to § 303 if it is in “receipt of evidence that a pollution source or combination of sources is presenting an imminent and substantial endangerment to public health or welfare, or the environment.”²¹² According to EPA, evidence is “fact-specific and may include ‘witness statements, medical reports, expert opinion, or other evidence.’”²¹³ In its past uses of § 303, EPA has relied on evidence derived from fence-line monitoring, source-submitted reports, and on-site tests.²¹⁴ EPA may not issue an administrative order under § 303 unless it is “not practicable” to promptly protect health or the environment through the commencement of a civil action in federal district court.²¹⁵ Past examples of impracticability have included oil droplets raining from the sky,²¹⁶ ammonia potentially exposed to an entire building complex and surrounding community,²¹⁷ and high levels of pollutant emissions.²¹⁸ Along similar lines, administrative orders under § 303 are not subject to pre-enforcement judicial review, which

²¹⁰ See *infra* notes 369-378 and accompanying text.

²¹¹ See Schaeffer Letter, *supra* note 45, at 10 (starting that it “is not necessary . . . to wait for the emissions to occur before issuing a § 303 order to abate the endangerment”).

²¹² 42 U.S.C. § 7603.

²¹³ Schaeffer Letter, *supra* note 45, at 10.

²¹⁴ EPA REGION 5, ADMINISTRATIVE CONSENT ORDER IN THE MATTER OF CITY OF DETROIT, DETROIT WATER AND SEWERAGE DEPARTMENT, EPA-5-11-113(a)-MI-01 (2011) [hereinafter City of Detroit Order]256; Complaint, U.S. v. S.H. Bell Co., No. 4:17-cv-131 (N.D. Ohio, Jan. 18, 2017) [hereinafter S.H. Bell Complaint]; EPA REGION 1, EMERGENCY ORDER IN THE MATTER OF RBF FROZEN DESSERTS LLC (2014) [hereinafter RBF Frozen Desserts Order]; EPA REGION 2, EMERGENCY ORDER IN THE MATTER OF Total Petroleum Puerto Rico Corp. (2019) [hereinafter Total Petroleum Order].

²¹⁵ 42 U.S.C. § 7603.

²¹⁶ EPA REGION 2, EMERGENCY ORDER IN THE MATTER OF LIMETREE BAY TERMINALS, LLC, CAA-02-2021-1003 (May 14, 2021), <https://www.epa.gov/vi/clean-air-action-section-303-limetree-bay> [hereinafter Limetree Bay Order].

²¹⁷ Frozen Desserts Order, *supra* note 214.

²¹⁸ City of Detroit Order, *supra* note 214; Total Petroleum Order, *supra* note 214; Clean Air Act Emergency Order in the matter of New-Indy Catawba LLC, d/b/a New-Indy Containerboard, <https://response.epa.gov/sites/15198/files/New%20Indy%20Order%205132021.pdf> (May 13, 2021) [hereinafter New Indy Catawba Order].

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could otherwise delay implementation in the face of impending harm.²¹⁹ In the event of noncompliance with a § 303 order, EPA may initiate a suit to enjoin further noncompliance and recover civil penalties²²⁰ or issue an administrative order assessing civil penalties.²²¹ Violation of such an order also triggers statutory penalties.²²²

EPA's emergency powers under § 303 are broad indeed. A straightforward reading of the statutory text makes it clear that, in appropriate circumstances, EPA may use those powers to abate the health and environmental threats posed by airborne PFAS emissions. Recent Supreme Court decisions, however, call into question the logical reading of statutory language and administrative authority. The next Part concludes that these decisions do not undercut the use of § 303 to address health and environmental threats posed by PFAS emissions.

IV. Past and Future Use of the Clean Air Act's Emergency Power to Abate Chemicals of Emerging Concern

The Supreme Court's recent uses of the major questions doctrine and other statutory canons of construction to constrain agency regulatory authority raise the possibility that a narrow judicial interpretation of EPA's emergency powers under § 303 of the CAA would prohibit or

²¹⁹ See Schaeffer Letter, *supra* note 45, at 20; Charles de Saillan, *The Use of Imminent Hazard Provisions of Environmental Laws to Compel Cleanup at Federal Facilities*, 27 STAN. ENV'T L.J. 43, 186 n.829 (2008) (citing § 307(e) of the CAA, 42 U.S.C. § 9607(e), which limits judicial review of EPA orders under the CAA). *Solar Turbines Inc. v. Seif*, 879 F.2d 1073, 1076 (3d Cir. 1989), held that an administrative order issued under § 167 of the CAA, 42 U.S.C. § 7477, was not subject to pre-enforcement judicial review. *But cf.* *Sackett v. EPA*, 566 U.S. 120 (2012) (holding that administrative compliance order issued under the CWA was subject to pre-enforcement review).

²²⁰ 42 U.S.C. § 7413(b)(2).

²²¹ *Id.* § 7413(d)(1)(B).

²²² *Id.* § 7413(c)(1), (4)-(5); see Arnold W. Reitze Jr., *Emergency Response and Planning Requirements Applicable to Unpermitted Air Pollution Releases*, 2005 BYU L. REV. 1077, 1157 (2005) (stating that “the conduct necessary to violate a section 303 order would in most cases be negligent endangerment or knowing endangerment that is punishable by the criminal provisions of CAA section 113(c)(4) and (5)”).

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limit EPA's authority to address the health and environmental risks associated with stationary source emissions of PFAS through the use of those powers. In this Part, we argue that there is no basis for such a result. Part A recites the history of congressional delegation of authority to EPA to address imminent and substantial endangerments from air pollution through civil litigation seeking injunctive relief or through the issuance of administrative compliance orders. It focuses on the expansion of EPA's authority through a series of amendments to the CAA, illustrating congressional intent to grant expansive authority to EPA under § 303. Part B describes the history of EPA's invocation of its emergency powers, indicating that use of such powers to address PFAS would not represent an unprecedented expansion of, or dramatic departure from, EPA's past use of § 303. Part C argues that the major questions doctrine would not apply to EPA's use of its emergency powers to abate health and environmental risks associated with airborne PFAS and that, even if the doctrine does apply, statutory authorization to use § 303 to abate stationary source emissions of PFAS is sufficiently clear to distinguish past cases such as *West Virginia v. EPA*.

A. The Expanding Nature of EPA's Emergency Powers Under the Clean Air Act

Congress authorized federal environmental agencies to seek judicial assistance to abate pollution endangering public health or welfare well before the adoption of the 1970 Clean Air Act. The Federal Water Pollution Control Act (FWPCA), prior to adoption in its modern form in 1972, authorized the Secretary of Health, Education, and Welfare (HEW) to "request the Attorney General to bring a suit on behalf of the United States to secure abatement of pollution" if "pollution of waters . . . is endangering the health or welfare of persons in a State other than

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that in which the discharge or discharges (causing or contributing to such pollution) originate.”²²³

In legislation dating back to 1963, Congress also delegated to federal agencies the authority to address air pollution through suits seeking injunctive relief. The 1963 Clean Air Act delegated authority to the Secretary of HEW that matched the authority provided in the pre-1972 FWPCA.²²⁴ The 1963 Act also addressed the scope of judicial power in such a lawsuit, providing that the court, after taking into account the practicality of compliance and “the physical and economic feasibility of securing abatement of any pollution provided, shall have jurisdiction to enter such judgment, and orders enforcing such judgment, as the public interest and the equities of the case may require.”²²⁵

Similarly, the Air Quality Act of 1967 provided that the Secretary of HEW, upon receipt of evidence that a “pollution source or combination of sources” was “presenting an imminent and substantial endangerment to the health of person” that state or local authorities had not acted to abate, could request that the Attorney General bring suit in federal district court “to immediately enjoin any contributor to the alleged pollution to stop the emission of contaminants causing such pollution or to take such other action as may be necessary.”²²⁶ The House Report on the 1967 legislation made it clear that the Secretary could invoke this authority to seek “abatement of any

²²³ *United States v. Reserve Min. Co.*, 380 F. Supp. 11, 24 (D. Minn. 1974), *modified and remanded sub nom. Reserve Mining Co. v. Env’t Prot. Agency*, 514 F.2d 492 (8th Cir. 1975), *modified sub nom. Reserve Min. Co. v. Lord*, 529 F.2d 181 (8th Cir. 1976) (quoting 33 U.S.C. § 1160(g)(2)).

²²⁴ The 1963 CAA, Pub. L. No. 88-206, § 5(f)(1), 77 Stat. 392, 397-98 (1963), provided that if the Secretary of HEW found, after a hearing with appropriate state and local officials, that “pollution of air is endangering the health or welfare of person in a State other than that in which the discharge or discharges (causing or contributing to such pollution) originates,” the Secretary could “request the Attorney General to bring a suit on behalf of the United States to secure abatement of pollution.”

²²⁵ *Id.*, § 5(g), 77 Stat. at 398.

²²⁶ Air Quality Act of 1967, Pub. L. No. 90-148, § 108(k), 81 Stat. 485, 493, 497 (1967). For discussion of the 1967 and 1970 versions of the emergency powers provisions, see Doug Rendleman, *Legal Anatomy of an Air Pollution Emergency*, 2 B.C. ENV’T AFF. L. REV. 90, 92 (1972).

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pollution that creates substantial and imminent public health endangerment.”²²⁷ Significantly, the Committee added that it “feels this authority is necessary during the standards development period, due to the necessary passage of time which will occur prior to establishment of enforceable standards.”²²⁸ Thus, the Committee envisioned the use of emergency powers as a stopgap pending promulgation of appropriate regulatory standards. Finally, in a departure from the FWPCA and 1963 versions of emergency authority, the Committee explained that “the Secretary may obtain the necessary injunction regardless of technological and economic feasibility.”²²⁹

The current section 303 of the CAA, vesting emergency powers in EPA rather than the Secretary of HEW, originated in the 1970 CAA, although it was closely patterned after the endangerment provision of the 1967 Act. But amendments to the CAA in 1977 and 1990 expanded the scope emergency power under § 303, broadening its reach and facilitating its use.

The version of § 303 adopted in 1970 authorized EPA to bring an abatement action in federal district court upon receipt of evidence that a pollution source or combination of sources was presenting an imminent and substantial endangerment.²³⁰ At the time, only an endangerment “to the health of persons” triggered EPA’s emergency powers.²³¹ Like its predecessors, § 303 additionally stipulated that EPA could only act if the appropriate state or local authorities had not

²²⁷ H.R. Rep. No. 90-728, 1967 USCCAN 1938, 1954-55 (1967).

²²⁸ *Id.* The Committee added, however, that “[i]t is not intended as a substitute procedure for chronic or generally recurring pollution problems, which should be dealt with under the other provisions of the act.” *Id.*

²²⁹ *Id.* The Senate Report simply stated that “[a] new subsection (k),” which originated in the House, “authorizes the Secretary, upon receipt of evidence of imminent and substantial endangerment to health . . . to request Attorney General to seek injunctions to stop emission of contaminants or to take such other action as may be necessary.” S. Rep. No. 90-780, 1967 USCCAN at 1971:

²³⁰ Pub. L. No. 91-604, § 303, 84 Stat. 1676, 1705-1706 (originally codified as 42 U.S.C. § 1871i (Supp. IV 1970)) (amended 1977).

²³¹ *Id.*

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taken abatement action.²³² The Senate Report on the legislation stated that the emergency authority was “necessary to provide for immediate, effective action whenever air pollution agents reach levels of concentration that are associated with (1) the production of significant health effects, (2) incapacitating body damage, or (3) irreversible body damage in any significant portion of the general population,” and that “an emergency situation exists whenever there is any perceptible increase in the mortality rate.”²³³ The report added that concentrations of air pollutants should never reach levels that substantially endanger the public health, and that when a reasonable prediction indicated that “such elevated levels could be reached even for a short period of time—that is that they are imminent—an emergency action plan should be implemented to reduce emissions of air pollution agents and prevent the occurrence of substantial endangerment.”²³⁴

Congress amended § 303 both in 1977 and 1990, each time expanding its scope. The 1977 amendments²³⁵ made three major changes to § 303. First, it allowed EPA for the first time to issue administrative orders in lieu of bringing civil action, although, such orders were limited to 24 hours in duration unless EPA brought a civil action within that time and the judge approved an extension.²³⁶ Second, it loosened the consultation requirement so that instead of demonstrating the absence of state or local abatement action, EPA need only confirm with State and local authorities the correctness of the information on which it based its determination of an

²³² *Id.*

²³³ S. Rep. No. 91-1196 (1970), at 35-36.

²³⁴ *Id.* at 36.

²³⁵ Pub. L. No. 95-95, 91 Stat. 685, 770-71 (1977) (codified at 42 U.S.C. § 7603).

²³⁶ *Id.*

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endangerment.²³⁷ Third, it authorized a penalty for violation of an administrative order of up to \$5,000 per day.²³⁸

The 1990 amendments further strengthened § 303 by expanding the scope of the endangerments that triggered EPA's abatement authority to cover not only the "health of persons," but also the public welfare or the environment.²³⁹ Congress once again altered the consultation language, amending a requirement to confirm the correctness of the information to merely require an attempt to do so. It also lengthened the duration of administrative orders from one day to sixty days.²⁴⁰

In sum, over time, Congress has repeatedly enhanced EPA's abatement authority to address imminent and substantial endangerments by adding authority to pursue abatement through administrative orders rather than solely through civil litigation in federal court, replacing the condition that EPA verify the absence of appropriate state or local action with a requirement that it attempt to confirm the accuracy of the information on which it bases its endangerment finding, expanding the kinds of endangerments that trigger § 303 authority from health risks to cover welfare and environmental risks in addition to health risks, and lengthening the maximum duration of EPA abatement orders. In addition, the language of § 303,²⁴¹ EPA's view of the

²³⁷ *Id.* For discussion of the repeated lessening of the stringency of the consultation burden, *see* Schaeffer Letter, *supra* note 45, at 12.

²³⁸ *See* de Saillan, *supra* note 219, at 93.

²³⁹ This change enabled EPA to "address emergency threats to ecosystems in instances where there is no readily demonstrable immediate threat to human health." S. Rep. No. 101-228, at 370 (1989). But even before the amendment, the statute defined (and still defines) "welfare" to include impacts to water, soil, vegetation, animals, wildlife, and climate. 42 U.S.C. § 7602(h).

²⁴⁰ Pub. L. No. 101-549, 104 Stat. 2399, 2681-82 (1990); *see also* Reitze, *supra* note 222, at 1155. The 1990 amendments deleted provisions in § 303 imposing civil penalties, but, as indicated above, § 113 authorizes civil penalties for violations of § 303 orders and § 303 still authorizes the district courts to "take such other action as may be necessary." 42 U.S.C. § 7603; *see also* Schaeffer Letter, *supra* note 45, at 19 ("Administrative orders issued under §303 are enforceable by the Administrator under the §113 provisions for administrative, civil judicial, and criminal penalties.").

²⁴¹ Section 303 provides that EPA may seek to abate an imminent and substantial endangerment "[n]otwithstanding any other provision of this chapter." 42 U.S.C. § 7603.

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scope of its authority,²⁴² and judicial interpretation of analogous provisions under other environmental statutes²⁴³ make it clear that EPA's abatement authority under § 303 is in addition to its regulatory authority under other CAA provisions, and that EPA may invoke § 303 as a stopgap measure while it is engaged in taking regulatory action such as rulemaking to address health, welfare, or environmental threats.²⁴⁴

B. EPA's Past Uses of Its Emergency Powers

Over the years, EPA has used § 303 at least a dozen times, with the agency's reliance on its emergency powers increasing in recent years. EPA's use of § 303 has accelerated more recently, with the agency resorting to a mix of civil actions in federal district court and the issuance of administrative orders.²⁴⁵ While EPA resorted to its § 303 authority only four times

²⁴² Schaeffer Letter, *supra* note 45, at 15 (“Section 303 may also be necessary when there are practical impediments to the use of other authorities in specific situations. For example, § 303 may be appropriate when a revision to a State Implementation Plan would take too long to address an endangerment, or emissions of HAPs present an endangerment even though the facility is in compliance with emissions requirements.”).

²⁴³ For example, in *United States v. Reilly Tar & Chem. Corp.*, 546 F. Supp. 1100 (D. Minn. 1982), the court stated that while RCRA's imminent hazard provision, 42 U.S.C. § 6973, was not meant to be “a substitute for other reasonably available and adequate response authorities, it certainly may be used to supplement the response actions taken by government agencies under other environmental statutes.” *Id.* at 1111. Speaking in more general terms, the court also remarked that Congress's desire to provide EPA with regulatory flexibility “indicates that *an imminent hazard provision such as section 106(a)* may be used simultaneously with other statutory response authorities, and that “the availability of other response authorities for dealing with chronic and recurring pollution problems does not preclude the simultaneous invocation” of CERCLA's imminent hazard provision. *Id.* at 1114.

²⁴⁴ Congress has adopted provisions authorizing EPA or private persons to address imminent and substantial endangerments under most of the other federal pollution control statutes. *See, e.g.*, 15 U.S.C. § 2648 (TSCA); 33 U.S.C. § 1364 (CWA); 42 U.S.C. § 300i (SDWA); 42 U.S.C. §§ 6972(a)(1)(B), 6973 (RCRA); 42 U.S.C. § 9606(a) (CERCLA).

²⁴⁵ The authors have found reference to 16 uses of § 303. The first use is well documented and is the case of U.S. Steel (1971). Schaeffer Letter, *supra* note 45, at 10-11 (Apr. 1, 1999). The OECA Cookbook on Imminent and Substantial Endangerment references 4 uses of § 303 (including U.S. Steel) prior to 1990 “to address an asbestos hazard at a mine in Globe Arizona (1983), and two § 303 orders were combined with RCRA actions and issued against property owners to address the storage of hazardous chemicals (1980), and the storage of pesticides and related chemicals (1980).” EPA, *OECA Cookbook on Imminent and Substantial Endangerment* 23 (Nov. 12, 1997) [1997 OECA Cookbook on Imminent and Substantial Endangerment](#). In 1990 EPA pursued § 303 actions against Minerec Mining Company (1994), Shallow Water Refinery (1997), and Trinity American Corporation (1997). *See Id.* at 66, 220, 230, 243. *See also* EPA, *FY 1994 Enforcement and Compliance Assurance Accomplishments Report Draft* at 135 (1994), [FY 1994 Enforcement and Compliance Assurance Accomplishments Report](#). The following are EPA uses of § 303 after 2000: PennTex (2007), PennTex Consent Decree, *supra* note 205; G-I Holdings (2008), G-I Holdings Complaint, *supra* note 202; City of Detroit, Detroit Water and Sewerage Department (2011), City of

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between 1970 and 2000, since 2000 it has done so nine additional times, three of those occurring between 2020 and 2023 alone. This section provides examples of EPA's use of its imminent endangerment authority to demonstrate its wide applicability in past practice and its potential utility in addressing future endangerments.

EPA's first use of § 303 occurred on November 18, 1971, when EPA obtained a temporary restraining order against U.S. Steel under § 303 from a federal district court that curtailed particulate emissions at 23 industrial stationary sources near Birmingham, Alabama.²⁴⁶ Birmingham suffered from consistently poor air quality conditions and at the time, with some observers noting "'a dark cloud of industrial waste' [that] is endemic in the industrial section of Birmingham."²⁴⁷ Birmingham's average particulate count for 1970 exceeded the federal critical level designation.²⁴⁸ One study of residents' lung function showed 30% with measurable deterioration.²⁴⁹ When EPA stepped in to take emergency action on November 19, 1971, the particulate count was in excess of 750, nearly 400 above the critical designation level.²⁵⁰

On November 16, the state of Alabama notified 23 major industrial sources of particulate matter, requesting that they make voluntary emissions reductions.²⁵¹ The next day, November 17, particulate levels were even higher in North Birmingham and EPA requested permission to

Detroit Order, *supra* note 214; RBF Frozen Desserts (2014), RBF Frozen Desserts Order, *supra* note 214; S.H. Bell (2017), S.H. Bell Complaint, *supra*, note 214; Total Petroleum Puerto Rico Co. (2019), Total Petroleum Order, *supra* note 214; New-Indy Catawba, LLC, (2021), New Indy Catawba Order, *supra* note 218; Limetree Bay Terminals and Limetree Bay Refining (2021), Limetree Bay Order, *supra* note 216; Denka (2023), Denka Complaint, *supra* note 257.

²⁴⁶ Schaeffer Letter, *supra* note 45, at 10-11 (Apr. 1, 1999); Rendleman, *supra* note 226, at 91.

²⁴⁷ Rendleman, *supra* note 226, at 95-96.

²⁴⁸ *Id.* at 96-97. While federal authorities designate a particulate count of 260 as a critical level which should not be exceeded more than once a year, the downtown Birmingham monitoring station recorded a particulate count in excess of 260 on 67 days in 1970, and in April, 1971 the downtown count reached 607. The industrial North Birmingham monitoring station averaged 280 at the time. *Id.*

²⁴⁹ *Id.* at 96-97.

²⁵⁰ *Id.* at 97-98.

²⁵¹ Hardy, *supra* note 251, at 74.

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observe the situation.²⁵² The version of § 303 then in effect under the 1970 conditioned EPA's use of its emergency powers on a failure to abate the problematic emissions, but neither state nor local authorities were able to abate the pollution; based on surveys conducted on the 23 industrial sources, it became clear less than half of the requested emissions reductions had occurred.²⁵³ Acting quickly, on November 18 EPA brought suit under § 303 and secured a temporary restraining order, pursuant to which EPA informed the 23 industrial sources that they had to nearly cease all emissions short of destroying equipment.²⁵⁴ By the next day, the pollution had in large part abated (due in part to favorable weather conditions) and EPA requested that the temporary restraining order be vacated and that there be no further legal proceedings.²⁵⁵

During the past 20 years, the nine instances in which EPA relied on § 303 encompassed five administrative orders²⁵⁶ and four civil suits.²⁵⁷ The air pollutants addressed varied widely. Some of the air pollutants responsible for the triggering endangerments were already listed as HAPs under § 112²⁵⁸ or under the accidental release provisions of §112(r).²⁵⁹ Others were pollutants for which EPA had issued NAAQS.²⁶⁰ EPA has also used § 303 in combination with

²⁵² *Id.*

²⁵³ *Id.* at 74-75.

²⁵⁴ *Id.* at 75.

²⁵⁵ *Id.* at 101.

²⁵⁶ City of Detroit Order, *supra* note 214; Frozen Desserts Order, *supra* note 214; Total Petroleum Order, *supra* note 214; New Indy Catawba Order, *supra* note 218; Limetree Bay Order, *supra* note 216.

²⁵⁷ PennTex Consent Decree, *supra* note 205; S.H. Bell Complaint, *supra*, note 214; Complaint, United States v. Denka Performance Elastomer, LLC, No. 2:23-cv-735 (E.D. La. Feb. 28, 2023) <https://www.justice.gov/opa/press-release/file/1570471/download> [hereinafter Denka Complaint].

²⁵⁸ G-I Holdings Complaint, *supra* note 202 (asbestos); S.H. Bell Complaint, *supra*, note 214 (manganese); Total Petroleum Order, *supra* note 214, (benzene, xylene, ethyl benzene, and toluene); Denka Complaint, *supra* note 257 (chloroprene).

²⁵⁹ PennTex Consent Decree, *supra* note 205, City of Detroit Order, *supra* note 214, New Indy Catawba Order, *supra* note 218, Limetree Bay Order, *supra* note 216 (hydrogen sulfide); RBF Frozen Desserts Order, *supra* note 214 (anhydrous ammonia). Section 112(r) seeks to prevent and minimize the accidental consequences of accidental release of substances listed under § 112(r)(3) or other extremely hazardous substances. 42 U.S.C. § 7412(r)(1).

²⁶⁰ Limetree Bay Order, *supra* note 216 (SO₂, particulate matter).

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the emergency provisions of other statutes it administers, including RCRA § 7003²⁶¹ and CERCLA § 106.²⁶² EPA has targeted a wide range of sources in these lawsuits and administrative proceedings, including oil production facilities,²⁶³ an asbestos mine and milling site,²⁶⁴ a city sewage facility,²⁶⁵ a frozen dessert facility,²⁶⁶ a metal handler and storage company,²⁶⁷ a petroleum storage terminal,²⁶⁸ a containerboard pulp and paper mill,²⁶⁹ a refinery,²⁷⁰ and most recently the only neoprene manufacturer in the United States.²⁷¹

The three most recent examples of EPA's use of its § 303 authority illustrate the versatility of that authority and EPA's increased willingness to rely on it in the face of public health risks. In 2021, EPA issued a § 303 administrative order against an emitter of hydrogen sulfide (H₂S).²⁷² The New-Indy Containerboard Pulp and Paper Mill in Catawba, South Carolina

²⁶¹ 42 U.S.C. § 6973; G-I Holdings Complaint, *supra* note 202, at 2.

²⁶² 42 U.S.C. § 9606; S.H. Bell Complaint, *supra*, note 214.

²⁶³ PennTex Consent Decree, *supra* note 205 (a lawsuit against an oil production company in Illinois for suspected pollution of hydrogen sulfide).

²⁶⁴ G-I Holdings Complaint, *supra* note 202. In this civil action, EPA requested that the court order G-I Holdings to restrict access to the asbestos mine and milling site where hikers, bikers, and all-terrain vehicles who entered the improperly secured site would be exposed to asbestos and potentially disturb the site so as to release or emit more asbestos into the air; apply security measures; engage in dust suppression; monitor the air quality; and investigate and document the locations of any asbestos-containing material that had been transported and plan for the abatement of dangerous off-site materials.

²⁶⁵ City of Detroit Order, *supra* note 214. EPA ordered the city to control hydrogen sulfide emissions to the maximum extent possible and, if necessary, to implement technology to control groundwater and emissions.

²⁶⁶ RBF Frozen Desserts Order, *supra* note 214. In this § 303 order, EPA directed RBF to remove an estimated 2000 pounds of anhydrous ammonia from its freezer system, submit a plan for addressing dangerous conditions posed by exposure to anhydrous ammonia emissions, and make all necessary repairs and upgrades to adhere to generally accepted good engineering practices.

²⁶⁷ *See* S.H. Bell Complaint, *supra*, note 214 (initiating a civil action against Bell after a monitoring station detected the highest levels of ambient manganese concentrations in the United States); *see also* United States v. S.H. Bell Co., No. 4:17-cv-131 (District Court N.D. Ohio Eastern Division, Feb. 14, 2018).

²⁶⁸ Total Petroleum Order, *supra* note 214. In response to leaks of improperly managed VOCs and HAPs (including benzene, xylene, ethyl benzene, and toluene) EPA required Total Petroleum to stop adding products to the fuel tanks at issue, and to empty, clean, and repair those tanks.

²⁶⁹ *EPA Issues Emergency Order and Information Request to New Indy Containerboard Pulp and Paper Mill in Catawba, S.C. and Expands Community Air Monitoring*, EPA, <https://www.epa.gov/newsreleases/epa-issues-emergency-order-and-information-request-new-indy-containerboard-pulp-and> (last updated May 13, 2021) [hereinafter New Indy Catawba News Release].

²⁷⁰ Limetree Bay Order, *supra* note 216.

²⁷¹ Denka Complaint, *supra* note 257.

²⁷² New Indy Catawba News Release, *supra* note 269.

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emitted large quantities of H₂S, resulting in health risks to people within a wide area near the facility.²⁷³ EPA ordered New-Indy to reduce its H₂S emissions at the facility's fenceline, install three fenceline monitors, and comply with daily and weekly reporting requirements.²⁷⁴ A couple of months later, EPA and the Department of Justice (DOJ) initiated an action in federal district court to extend the § 303 order. Although filing the complaint automatically extended the duration of the § 303 order by only 14 days, DOJ requested additional time to find a long-term solution.²⁷⁵ Ultimately, EPA and New-Indy entered, and the court approved, a consent decree resolving the matter, finding that New-Indy had caused an imminent and substantial endangerment and imposing a civil penalty of \$1,100,000 on it.²⁷⁶

One day after issuing its initial administrative order against New-Indy, on May 14, 2021, EPA again invoked § 303, ordering Limetree Bay to cease operations at its refinery in S. Croix, U.S. Virgin Islands.²⁷⁷ Improperly conducted operations caused flare failures, which spewed oil droplets that rained down on the nearby community and resulted in emissions of H₂S, light hydrocarbons, SO₂, particulate matter, and many heavy organic compounds.²⁷⁸ An expert EPA contractor found that the incidents at the Limetree Bay facility presented an imminent and substantial endangerment to public health and welfare, enabling the agency to issue a § 303 order.²⁷⁹ Because EPA concluded that the order was necessary for prompt protection of public

²⁷³ New Indy Catawba Order, *supra* note 218, at ¶ 48.

²⁷⁴ *Id.*

²⁷⁵ EPA, *H₂S in South and North Carolina*, https://response.epa.gov/site/site_profile.aspx?site_id=15198 (last visited Dec. 12, 2021).

²⁷⁶ *Id.*; see also EPA Region 4, *New Indy Agrees to \$1.1 Million Penalty and Consent Decree to Resolve Imminent and Substantial Endangerment* (Nov. 17, 2022), <https://www.epa.gov/newsreleases/new-indy-agrees-11-million-penalty-and-consent-decree-resolve-imminent-and-substantial>.

²⁷⁷ Limetree Bay Order, *supra* note 216.

²⁷⁸ *Id.* at ¶ 104.

²⁷⁹ *Id.*

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health or welfare or the environment and that it was impracticable to wait for a court to address the situation, it ordered Limetree Bay to cease operations at the polluting plant.²⁸⁰

Most recently, in February 2023, EPA initiated a lawsuit in Louisiana requesting the Court to enjoin emissions of chloroprene from Denka Performance Elastomer, LLC.²⁸¹ Although the company responded that it was in compliance with all applicable air permits,²⁸² even if that were true, EPA's position is that compliance with requirements and permits is not a bar to action under § 303.²⁸³ Denka is one of many industrial sources of air pollution contributing to the environmental hazard in St. John the Baptist Parish that is often referred to as "Cancer Alley."²⁸⁴ The area is made up of majority black residents who suffer from environmental risks to a greater proportion than the general population.²⁸⁵ Denka is the only U.S. manufacturer of neoprene, a synthetic rubber. Its facility emits chloroprene, a likely human carcinogen, a mutagenic, and a HAP under § 112 of the CAA.²⁸⁶ Denka treats reactive chloroprene-containing sludge and other materials in open pits, which volatilize chloroprene into the air.²⁸⁷

EPA's recommended limitation on ambient concentrations of chloroprene is set at .2 micrograms per cubic meter over a 70-year life span, producing a 1-in-10,000 excess cancer risk.²⁸⁸ For at least the seven years preceding 2023 (when monitoring began), Denka's emissions

²⁸⁰ *Id.* ¶ 112.

²⁸¹ Sean Reilly, *Rare EPA lawsuit targets 'Cancer Alley' chemical emissions*, GREENWIRE (Mar. 1, 2023), <https://www.eenews.net/articles/rare-epa-lawsuit-targets-cancer-alley-chemical-emissions/>.

²⁸² *Id.*

²⁸³ Schaeffer Letter, *supra* note 45, at 1, 13.

²⁸⁴ *Id.* See generally Courtney J. Keehan, Note and Comment, *Lessons from Cancer Alley: How the Clean Air Act Has Failed to Protect Public Health in Southern Louisiana*, 29 COLO. NAT. RESOURCES, ENERGY & ENV'T L. REV. 341 (2018).

²⁸⁵ Reilly, *supra* note 281; see also Idna G. Castellón, Comment, *Cancer Alley and the Fight Against Environmental Racism*, 32 VILL. ENV'T L.J. 15 (2021).

²⁸⁶ Denka Complaint, *supra* note 257, at 2; Reilly, *supra* note 281.

²⁸⁷ *Id.* at 10.

²⁸⁸ *Id.* at 4.

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have been consistently greater than the acceptable limit.²⁸⁹ As a result, EPA estimated that infants in the surrounding communities with the highest concentration would exceed the 70-year lifetime estimate in just two years.²⁹⁰ Further, the Denka facility is within 450 feet of an elementary school.²⁹¹ EPA concluded that the increased cancer risk “presents an imminent and substantial endangerment to public health and welfare” and filed suit in federal district court to stop Denka from emitting at such dangerous levels.²⁹² As of this writing, the case has not been resolved.

Thus, over the past twenty years EPA has used § 303 in multiple instances in a variety of contexts to quickly address the health risks posed by air pollutant emissions. The government has used its authority under § 303 to address many different air pollutants²⁹³ under by the CAA, and it has even sought relief against emitters that were in full compliance with their CAA permits and other obligations.²⁹⁴ Because of the length of many rulemaking proceedings, EPA’s pursuit of regulatory standards may leave exposed populations to dangerous health risks for considerable periods of time. Section 303 allows immediate action to address those risks in the interim. Even if EPA does not contemplate the adoption of regulatory standards, air pollution may pose serious health and environmental risks that demand immediate attention. EPA has relied on § 303 in precisely those contexts. Section 303 therefore seems to be an available and well-suited mechanism for abating dangerous emissions of pollutants of emerging concern such as PFAS.

²⁸⁹ *Id.*

²⁹⁰ *Id.* at 5.

²⁹¹ DOJ, *Justice Department Files Complaint Alleging Public Health Endangerment Caused by Denka Performance Elastomer’s Carcinogenic Air Pollution* (Feb. 28, 2023), <https://www.justice.gov/opa/pr/justice-department-files-complaint-alleging-public-health-endangerment-caused-denka>.

²⁹² Denka Complaint, *supra* note 257, at 5-6.

²⁹³ See Schaeffer Letter, *supra* note 45, at 1, 13 (“Section 303 applies to a broad range of endangerment scenarios. It applies regardless of whether a pollutant is regulated, or how it is regulated.”).

²⁹⁴ *Id.* See also Denka Complaint, *supra* note 257; Reilly, *supra* note 281.

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The next section addresses the question of whether EPA will be vulnerable to challenges to its use of § 303 to address health risks associated with PFAS emissions a result of the emergence of the major questions doctrine as a powerful regulation-constraining tool.

C. The Major Questions Doctrine and EPA's Emergency Powers

This section considers both the applicability and application of the major questions doctrine (MQD) to efforts by EPA to emissions of PFAS into the ambient air under § 303 of the CAA. The Supreme Court has recently interpreted the scope of EPA's regulatory authority under the Clean Air Act and the Clean Water Act narrowly, invoking the MQD and other statutory canons of construction to support invalidation of EPA's efforts to regulate greenhouse gas emissions under the CAA²⁹⁵ and to define the jurisdictional scope of the CWA, especially as it applies to the discharge of pollutants to wetlands.²⁹⁶ In both cases, several dissenting Justices (three dissenting Justices in the CAA case, four concurring Justices in the CWA case) criticized the majority's atextual readings. Justice Kagan, in *West Virginia v. EPA*, charged that the majority had “magically” wielded “special canon like the ‘major questions doctrine’ . . . as get-out-of-text-free cards.”²⁹⁷ In *Sackett v. EPA*, Justice Kavanaugh took issue with the majority's failure to “stick to the text,” and argued that “[t]o be faithful to the statutory text,” the Court could not interpret “adjacent” wetlands to be the same as “adjoining wetlands,” as he claimed the majority had done.²⁹⁸ In another case decided during the 2022 term, which was not an

²⁹⁵ *W. Va. v. EPA*, 142 S. Ct. 2587 (2022)

²⁹⁶ *Sackett v. EPA*, 143 S. Ct. 1322 (2023).

²⁹⁷ *West Virginia*, 142 S. Ct. at 2461 (Kagan, J., dissenting). *See also Sackett*, 143 S. Ct. at 1361 (Kagan, J., concurring in the judgment) (arguing that in *West Virginia*, “the Court invoked another clear-statement rule (the so-called major questions doctrine) to diminish [a] plainly expansive term (‘system of emission reduction’). *Sackett v. EPA*, 143 S. Ct. 1322, 1361 (2023)

²⁹⁸ *Sackett*, 143 S. Ct. at 1369 (Kavanaugh, J., concurring in the judgment). For criticism of *Sackett*, see Robert L. Glicksman, *Response, Sackett v. Environmental Protection Agency*, GEO. WASH. L. REV. ON THE DOCKET (May 27, 2023), <https://www.gwlr.org/sackett-v-epa-the-court-delivers-another-massive-blow-to-federal-environmental-law>.

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environmental case, the Court, relying in part on the major questions doctrine, struck down President Biden's effort to eliminate certain student loan obligations.²⁹⁹ In another dissent, Justice Kagan claimed that "the majority will not accept the text's meaning. At every turn it 'impose[s] limits on an agency's discretion that are not supported by the text."³⁰⁰ Focusing on the majority's use of the major questions doctrine, she attacked the majority for having used a "judicially manufactured tool to negate text enabling regulation."³⁰¹

Whether one agrees with those critiques or not, the Court's recent uses of the major questions doctrine and other canons of construction,³⁰² coupled with the uncertain parameters of the former, raise the possibility that EPA's efforts to rely on § 303 to abate air emissions of PFAS would be subject to challenge.³⁰³ As Chief Justice Roberts indicated in *West Virginia*, even a "plausible" textual basis for agency action may not suffice to support agency action

²⁹⁹ *Biden v. Nebraska*, 143 S. Ct. 2355 (2023).

³⁰⁰ *Id.* at 2396 (quoting *Little Sisters of the Poor Saints Peter and Paul Home v. Pennsylvania*, 140 S. Ct. 2367, 2381 (2020)).

³⁰¹ *Id.* at 2397 (citing *Alabama Ass'n of Realtors v. Dep't of Health and Human Servs.*, 141 S. Ct. 2485 (2021); *Sackett v. EPA*, 143 S. Ct. 1322 (2023)). *See also* *Nat'l Fed'n of Indep. Bus. v. Dep't of Labor*, 142 S. Ct. 661, 673 (2022) (Breyer, J., dissenting) (arguing that "nothing in the Act's text supports the majority's limitation on OSHA's regulatory authority" to require large employers to mandate that their employees undergo COVID-19 vaccination or weekly testing).

³⁰² In *Sackett*, the majority refused to defer to EPA's interpretation of the term "waters of the United States" because the Court "'require[s] Congress to enact exceedingly clear language if it wishes to significantly alter the balance between federal and state power and the power of the Government over private property,'" *id.* at 1341 (quoting *United States Forest Service v. Cowpasture River Preservation Assn.*, 140 S. Ct. 1837, 1849-1850 (2020)), and because "Due process requires Congress to define penal statutes with sufficient definiteness that ordinary people can understand what conduct is prohibited and in a manner that does not encourage arbitrary and discriminatory enforcement," and Congress had not done so in the CWA. *Id.* at 1342 (quoting *McDonnell v. United States*, 136 S. Ct. 2355 (2016)) (internal quotations omitted).

³⁰³ *See, e.g.*, Natasha Brunstein & Richard L. Revesz, *Mangling the Major Questions Doctrine*, 74 ADMIN. L. REV. 217, 218-19 (2022) (asserting that "the Court has failed to clarify the scope and application of the doctrine. The Court has never defined what constitutes a major question, nor has it ever enumerated factors or set thresholds to answer this inquiry. Scholars have noted the ambiguity surrounding the contemporary understanding of the major questions doctrine."); David D. Doniger, *West Virginia, the Inflation Reduction Act, and the Future of Climate Policy*, 53 ENV'T L. REP. 10553, 10568 (2023) ("Large uncertainties remain, however, because *West Virginia* and the COVID-19 cases do not give clear guidance on what makes a case 'extraordinary,' what makes a question 'major,' or what makes a statute 'sufficiently clear.'").

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challenged under the major questions doctrine.³⁰⁴ But as the rest of this Part demonstrates, the MQD should not apply to EPA's use of § 303 in this manner and that, even if it were to apply, EPA's reliance on § 303 to abate PFAS pollution is well within its statutory authority. Our analysis of the MQD's applicability identifies limits to the major question doctrine's scope and application well beyond the specific statutory issue addressed here.

1. Applicability of the MQD

The Supreme Court solidified the status of the major questions doctrine (MQD) in *West Virginia v. EPA*.³⁰⁵ In the course of addressing the legality of the Obama administration's Clean Power Plan, the Court held that EPA lacks the power under § 111(d) of the CAA to limit greenhouse gas emissions by ordering fossil fuel-fired electric generating units to engage in "generation shifting."³⁰⁶ Although, as noted above,³⁰⁷ the Court has provided relatively little guidance on the applicability of application of the MQD, its opinions provide some direction. Chief Justice Roberts referred to the cases in which the MQD, or its unlabeled forerunners,³⁰⁸

³⁰⁴ *West Virginia*, 142 S. Ct. at 2609 ("[S]omething more than a merely plausible textual basis for the agency action is necessary. The agency instead must point to 'clear congressional authorization' for the power it claims.").

³⁰⁵ *W. Va. v. EPA*, 142 S. Ct. 2587, 2614-16 (2022). Justice Kagan bemoaned the "arrival of the 'major questions doctrine,' which replaces normal text-in-context statutory interpretation with some tougher-to-satisfy set of rules," and noted that "[t]he Court has never even used the term 'major questions doctrine' before." *Id.* at 1633-3 (Kagan, J., dissenting). The majority asserted that the principles reflected in the MQD had been enunciated in prior cases that comprised "an identifiable body of law that has developed over a series of significant cases all addressing a particular and recurring problem: agencies asserting highly consequential power beyond what Congress could reasonably be understood to have granted." *Id.* at 2609 (citing *Food and Drug Admin. v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000); *Util. Air Regulatory Group v. Env't Prot. Agency*, 573 U.S. 302 (2014); *King v. Burwell*, 576 U.S. 473 (2015). *See also* *Gonzales v. Or.*, 546 U.S. 243 (2006); *Nat'l Fed'n Of Indep. Bus. V. Occupational Safety and Health Admin.*, 142 S. Ct. 661 (2022) (cited in the majority opinion, 143 S. Ct. at 2608-09).

³⁰⁶ The nature of the MQD has been the subject of debate. Justice Barrett has pointed out that some regard it as a "strong-form" substantive canon of statutory construction. *Biden v. Nebraska*, 143 S. Ct. 2355, 2377 (Barrett, J., concurring). She disagrees, describing the doctrine instead as "serv[ing] as an interpretive tool reflecting 'common sense as to the manner in which Congress is likely to delegate a policy decision of such economic and political magnitude to an administrative agency.'" *Id.* (quoting *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000)). We do not wade in this Article into the debate over the proper characterization of the MQD. *Biden v. Nebraska*, 143 S. Ct. 2355, 2378 (2023)

³⁰⁷ *See supra* note 303 and accompanying text.

³⁰⁸ Justice Alito in *Biden v. Nebraska*, 143 S. Ct. 2355, 2374 (2023) (quoting *W. Va.*, 142 S. Ct. at 2609), stated that "while the major questions 'label' may be relatively recent, it refers to "an identifiable body of law that has

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had been applied as “*extraordinary cases . . . in which the ‘history and the breadth of the authority that [the agency] has asserted,’ and the ‘economic and political significance’ of that assertion, provided a ‘reason to hesitate before concluding that Congress meant to confer such authority.’*”³⁰⁹ He did not explain what qualifies as an “economically and politically significant” exercise of power, whether the exercise must be *both* economically and politically significant, what the difference is, or how to measure such significance. He also referred to cases involving “*extravagant power over the national economy*” as those in which the Court had reacted to efforts to exercise that power with “skepticism.”³¹⁰ Although it is unclear what the relationship is between “economically and politically significant” and “extravagant” exercises of regulatory power is, the degree of the impact on the national economy also seems to matter.³¹¹ The Chief Justice also explained that the MQD arose in response to “agencies asserting *highly consequential power* beyond what Congress could reasonably be understood to have granted.”³¹² Congress’s failure to enact legislation that would have delegated the claimed regulatory power to the agency may also cut against endorsement of the authority claimed by the agency.³¹³ The

developed over a series of significant cases’ spanning decades”). This section confines its analysis of the applicability and application of the MQD to *West Virginia*, the first case in which the Court attached the label to the doctrine, and subsequent cases such as *Nebraska*.

³⁰⁹ *West Virginia*, 142 S. Ct. at 2608 (emphasis added). See also *id.* at 2609 (quoting *Whitman v. Env’t Prot. Agency*, 531 U.S. 457, 468 (2001)) (“Extraordinary grants of regulatory authority are rarely accomplished through ‘modest words,’ ‘vague terms,’ or ‘subtle device[s]’”); *id.* (quoting *Util. Air Regulatory Group*, 573 U.S. at 324) (“Thus, in certain extraordinary cases, both separation of powers principles and a practical understanding of legislative intent make us ‘reluctant to read into ambiguous statutory text’ the delegation claimed to be lurking there.”).

³¹⁰ *Id.* (quoting *Util. Air. Regulatory Groups*, 573 U.S. at 324) (emphasis added).

³¹¹ Perhaps an exercise of “extravagant” power of that kind qualifies as an “economically significant” exercise of authority.

³¹² *W. Va.*, 142 S. Ct. at 2609 (emphasis added).

³¹³ See *W. Va.*, 142 S. Ct. at 2610 (referring to EPA’s assertion of a power “that Congress had conspicuously and repeatedly declined to enact itself”); see also, *Nat’l Fed’n of Indep. Bus. v. Dep’t of Labor, Occupational Safety and Health Admin.*, 142 S. Ct. 661, 667-68 (2022) (Gorsuch, J., concurring) (“But Congress has chosen not to afford OSHA—or any federal agency—the authority to issue a vaccine mandate. Indeed, a majority of the Senate even voted to *disapprove* OSHA’s regulation.”).

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prominence of the statutory provision on which the agency relied in exercising the challenged regulatory authority in the entire statutory scheme is another potentially relevant factor. For example, the Court in *West Virginia* referred to § 111(d) as an “ancillary provision,”³¹⁴ a “gap-filler,”³¹⁵ and a “little-used backwater.”³¹⁶

Despite the flurry of dramatic adjectives the Court used, and its failure to define their meanings in the context of the MQD, (1) the history of the exercise of the asserted regulatory power (i.e., whether the agency has used the power claimed before),³¹⁷ (2) the breadth of that power,³¹⁸ (3) the “economic and political significance” of the power claimed, (4) the degree of the impact on the national economy,³¹⁹ (5) the degree to which Congress could have anticipated the agency’s use of the power in question, and (6) whether previous legislative efforts to delegate the asserted power failed,³²⁰ are all apparently relevant to whether the MQD applies. These questions all assist a court in deciding (7) whether the challenged exercise of executive branch authority would “effec[t] a ‘fundamental revision of the statute, changing it from [one sort of] scheme of . . . regulation’ into an entirely different kind.”³²¹ A related inquiry, enunciated by

³¹⁴ *Id.* at 2610.

³¹⁵ *Id.*

³¹⁶ *Id.* at 2613.

³¹⁷ The Court described the *Alabama Ass’n of Realtors* case as one in which the agency’s claimed authority was “unprecedented.” *Id.* at 2608. *See also id.* at 2610 (describing the power asserted by EPA as “newfound” that “had rarely been used in the preceding decades”); *id.* at 2614 (referring to “the regulatory writ EPA newly uncovered”). *See also* Biden v. Nebraska, 143 S. Ct. 2355, 2372 (2023) (concluding that the validity of the Biden administration’s loan forgiveness program involved a major question because the statute that provided the authority for the program “has been used only once before to waive or modify a provision related to debt cancellation.”).

³¹⁸ *Cf.* Biden v. Nebraska, 143 S. Ct. 2355, 2380 (Barret, J., concurring) (suggesting that agency action involving “interstitial matters” do not trigger the MQD).

³¹⁹ *See also* *W. Va.*, 142 S. Ct. at 2610 (quoting *Util. Air Regulatory Group*, 573 U.S. at 324) (taking issue with EPA’s assertion that § “111(d) empowers it to substantially restructure the American energy market, . . . representing a ‘transformative expansion in [its] regulatory authority’”).

³²⁰ *See also* Biden v. Nebraska, 143 S. Ct. 2355, 2373 (2023) (stating that “Congress is not unaware of the challenges facing student borrowers and that it had considered more than 80 student loan forgiveness bills and related legislation during on recent congressional session).

³²¹ *W. Va.*, 142 S. Ct. at 2373 (quoting *MCI Telecomm’n Corp. v. Am. Tel. & Tel. Co.*, 512 U.S. 218, 231(1994)); *see also* Biden v. Nebraska, 143 S. Ct. at 2373); *id.* at 2382 (Barrett, J., concurring) (quoting *In re MCP No. 165*,

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Justice Barrett in a concurring opinion issued a year after *West Virginia*, is whether the agency acted “outside its wheelhouse.”³²² If so, then this eighth factor cuts in favor of application of the MQD.

Justice Gorsuch, joined by Justice Alito in his *West Virginia* concurrence, claimed that the Court’s prior cases “supply a good deal of guidance about when an agency action involves a major question for which clear congressional authority is required.” He agreed that the MQD applies “when an agency claims the power to resolve a matter of great ‘political significance.’”³²³ He added that it applies to assertions of regulatory power that are surrounded by “earnest and profound debate across the country.”³²⁴ Given that only one other Justice signed onto Justice Gorsuch’s concurrence, the degree to which courts will pay attention to factors he identified that the majority did not mention is unclear. It is possible, however, that the debate (or lack thereof) relating to the agency’s claimed regulatory authority may be a measuring rod for whether a matter is one of “political significance” or an independent, ninth factor. He also agreed with the majority that regulation that affects “a significant portion of the American economy” must be assessed under the MQD,³²⁵ but, again, he appears to have identified a measuring stick for that factor—whether compliance requires ‘billions of dollars in spending’ by private persons

OSHA, Interim Final Rule: Covid–19 Vaccination and Testing, 20 F.4th 264, 272 (6th Cir. 2021) (Sutton, C. J., dissenting from denial of initial hearing en banc) (“We have also been ‘[s]keptical of mismatches’ between broad ‘invocations of power by agencies’ and relatively narrow ‘statutes that purport to delegate that power’”).

³²² *Biden v. Nebraska*, 143 S. Ct. at 2382 (Barrett, J., concurring) (“Another telltale sign that an agency may have transgressed its statutory authority is when it regulates outside its wheelhouse.”).

³²³ *W. Va.*, 142 S. Ct. at 2620 (Gorsuch, J., concurring).

³²⁴ *Id.*

³²⁵ *Id.* at 2621; *see also* *Biden v. Nebraska*, 143 S. Ct. at 2383 (Barrett, J., concurring)

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or entities.”³²⁶ In addition, he added a tenth consideration, stating that the MQD “*may* apply when the agency seeks to ‘intrud[e] into an area that is the particular domain of state law.’”³²⁷

Justice Gorsuch acknowledged that “this list of triggers may not be exclusive,”³²⁸ so the Court itself or the lower courts may identify other triggers. At a minimum, as the forgoing discussion of Justice Gorsuch’s opinion indicates, (8) the degree of controversy over the agency’s regulatory exercise,³²⁹ (9) a calculation of regulated entities’ compliance costs (but, apparently, not of the positive impact of regulation impact on regulatory beneficiaries), and (10) the impact of regulation on federalism values may be relevant to the MQD’s applicability. According to Justice Barrett, “[c]ommon sense tells us that as more indicators from our previous major questions cases are present, the less likely it is that Congress would have delegated the power to the agency without saying so more clearly.”³³⁰

How would a challenge to the initiation of a suit in federal district court or the issuance of an administrative compliance order limiting or halting the issuance by a pollution source³³¹ of

³²⁶ *W. Va.*, 142 S. Ct. at 2621 (Gorsuch, J., concurring) (quoting *King v. Burwell*, 576 U.S. at 485). *Cf. Biden v. Nebraska*, 143 S. Ct. 2355, 2372 (2023) (concluding that the validity of the Biden administration’s loan forgiveness program involves a major question because \$430 billion in student loans were at stake and that “[t]he “economic and political significance” of the Secretary’s action is staggering by any measure”).

³²⁷ *W. Va.*, 142 S. Ct. at 2621 (Gorsuch, J., concurring) (quoting *Alabama Realtors*, 141 S. Ct. at 1486-87); *see also* *Nat’l Fed’n of Indep. Bis. V. Dep’t of Labor, Occupational Safety and Health Admin.*, 143 S. Ct. 661, 668 (2022) (Gorsuch, J., concurring) (noting that OSHA’s COVID-19 vaccination program sought to “regulate not just what happens inside the workplace but [also to] induce individuals to undertake a medical procedure that affects their lives outside the workplace. Historically, such matters have been regulated at the state level by authorities who enjoy broader and more general governmental powers.”)

³²⁸ *W. Va.*, 142 S. Ct. at 2621 (Gorsuch, J., concurring).

³²⁹ *See also* *Biden v. Nebraska*, 143 S. Ct. 2355, 2373-74 (2023) (quoting J. Stein, *Biden Student Debt Plan Fuels Broader Debate Over Forgiving Borrowers*, WASH. POST (Aug. 31, 2022)) (noting that the discussion about the wisdom of forgiving student loans “is not confined to the halls of Congress. Student loan cancellation ‘raises questions that are personal and emotionally charged, hitting fundamental issues about the structure of the economy’”); *id.* at 2374 (referring to “[t]he sharp debates generated by the Secretary’s extraordinary program”).

³³⁰ *Id.* at 2384 (Barrett, J., concurring).

³³¹ Section 303 targets “pollution sources . . . (including moving sources),” so proper targets of § 303 suits or orders include but are not limited to stationary sources. The term “pollution source” is not defined. A “stationary source” “means generally any source of an air pollutant” 42 U.S.C. § 7602(z).

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PFAS fare under the MQD based in the factors enumerated above? The first question would be whether EPA has used the power previously. It has. EPA may not have used § 303 yet against a source emitting PFAS, but it has invoked § 303 more than a dozen times dating back to 1971 (less than a year after the CAA's adoption) against a wide variety of sources emitting myriad pollutants. EPA has issued orders or initiated civil suits using § 303 more than a dozen times since 1970 and has done so nine times since 2000. This factor cuts against application of the MQD.

The second factor on our list is the breadth of the power asserted. In *West Virginia*, the Court addressed whether EPA had the power under § 111(d) of the CAA to mandate that all fifty states adopt a plan to regulate all electric generating units within their borders. Thus, the nation's entire electric grid would potentially be affected.³³² Although the exact nature of a challenged exercise by EPA of its emergency powers remains to be seen, § 303 has historically functioned on a much smaller scale than the Clean Power Plan (CPP) that was at issue in *West Virginia*. Most recent uses of § 303 have targeted a single company or facility. EPA's first use of § 303 in 1971 resulted in an order requiring 23 manufacturing facilities in Birmingham Alabama that were suspected of contributing to unhealthy levels of particulate matter level to nearly cease operations.³³³ The order affected a limited geographic area, however, and even 23 emitting sources pales in comparison to the number of electric generating units that would have potentially been affected by the CPP. Even if EPA were to target the largest PFAS

³³² See *W. Va.*, 142 S. Ct at (asserting that the Obama administration's Clean Power Plan would cap CO₂ emissions "at a level that will force a nationwide transition away from the use of coal to generate electricity").

³³³ See Schaeffer Letter, *supra* note 45, at 10-11; *supra* notes 236-245 and accompanying text.

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manufacturers, only three of the top twelve PFAS producers are located in the United States.³³⁴ Thus, it is difficult to imagine how the breadth of EPA's efforts to abate PFAS emissions using its authority to address imminent and substantial endangerments would approach the scope of the CPP or trigger the judicial consternation that led to its invalidation in *West Virginia*.³³⁵ Requiring one or a limited number of sources to limit or cease air emissions of PFAS would pale in comparison to EPA's effort to transform the nature of the nation's electric generating capacity. It is unlikely that EPA's use of § 303 against PFAS manufacturers to abate their emissions would qualify as the use of "*extravagant power over the national economy*."³³⁶ This factor, too, undercuts the argument that the MQD would apply.

The third factor is the economic and political significance of the challenged agency action and the related fourth factor is the degree of the impact on the national economy. It is impossible to monetize the economic significance of PFAS regulation in the absence of a specific source or set of sources that EPA names as defendants in a § 303 action or order. We do know, however, that PFAS production is a tiny sliver of total chemical production worldwide.³³⁷ One source estimates that *global* PFAS profits are about \$4 billion,³³⁸ compared to the \$450 billion in student loans affected by the Biden administration's loan forgiveness program. Accordingly, the economic impact on the national economy would likely be significantly less (perhaps orders of magnitude less) than the \$450 billion at issue in the student loan case or the

³³⁴ *The top 12 PFAS producers in the world and the staggering societal costs of PFAS pollution*, CHEMSEC (May 25, 2023) (3M, Chemours, and Honeywell). 3M "recently announced it would stop producing PFAS in the coming years." *Id.*

³³⁵ California, however, filed a lawsuit naming more than 100 current and historic manufacturers of PFAS based on various state common law and statutory causes of action seeking injunctive relief, damages, penalties, and restitution. *See* California v. 3M Co. et al., 3:2022cv01013 (S.D. Cal. July 13, 2022), <https://dockets.justia.com/docket/california/casdce/3:2022cv01013/737825> (containing the Docket Report).

³³⁶ *W. Va.*, 142 S. Ct. at 2609.

³³⁷ *Id.* (asserting that it is 0.5% of total production).

³³⁸ *See supra* note 334.

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purported more than \$200 billion at stake if the CPP had been approved.³³⁹ Justice Gorsuch's apparent test for political significance would perhaps require analysis of whether EPA's efforts to abate airborne PFAS generated widespread cries of outrage, substantial and recurrent critical coverage in the press, or other evidence of a political firestorm similar to the ones that surrounded adoption of the CAA or of the student loan forgiveness program. Absent further information, it is impossible to reach a final judgment on this factor, but both the economic and political salience of efforts to abate PFAS seem more muted than the controversies surrounding those two executive branch initiatives, as well as the actions at stake in the cases the Court relied on as precedents in the MQD cases.³⁴⁰

As the fifth enumerated factor above indicates, the applicability of the MQD also turns on whether Congress could have anticipated that an agency would exercise the power in question. The answer here is decidedly yes. EPA resorted to its authority under § 303 less than a year after adoption of the 1970 version of the CAA by bringing a suit in federal court against a group of

³³⁹ See *W. Va. v. EPA*, 143 S. Ct. at 2622 (Gorsuch, J., concurring). *But see* Doniger, *supra* note 303, at 10564-65 (pointing to evidence in the record showing that the CPP actually would have been "cost-free"). *Cf. W. Va. v. EPA*, 142 S. Ct. at n.6 (Kagan, J., dissenting) (pointing out that "the 'billions of compliance costs' the majority highlights were vastly outweighed by the [CPP's] projected benefits").

³⁴⁰ See, e.g., *Nat'l Fed'n of Indep. Bus. v. Dep't of Labor, Occupational Safety and Health Admin.*, 142 S. Ct. 661(2022) (invalidating OSHA's COVID-19 vaccination and testing program for large employers). Justice Gorsuch, concurring, identified a "firm rule: "'We expect Congress to speak clearly' if it wishes to assign to an executive agency decisions 'of vast economic and political significance.' We sometimes call this the major questions doctrine." *Id.* at 667 (Gorsuch, J., concurring) (quoting *Alabama Ass'n of Realtors v. Dep't of Health and Human Servs.*, 141 S. Ct. 2485, 2489 (2023)). Justice Gorsuch added OSHA "claims the power to force 84 million Americans to receive a vaccine or undergo regular testing. By any measure, that is a claim of power to resolve a question of vast national significance." *Id.* Justice Gorsuch referred to the MQD in an even earlier case in which he dissented from the Court's decision that the Sex Offender Registration and Notification Act did not violate the nondelegation doctrine. See *Gundy v. United States*, 139 S. Ct. 2116, 2141 (Gorsuch, J., dissenting) ("Although it is nominally a canon of statutory construction, we apply the major questions doctrine in service of the constitutional rule that Congress may not divest itself of its legislative power by transferring that power to an executive agency."). Justice Thomas also seemingly endorsed the MQD before a majority of the Court did so in *Dep't of Homeland Security v. Regents of the University of California*, 140 S. Ct. 1891, 1925 (Thomas, J., concurring in the judgment and dissenting in part) (quoting *Util. Air Regulatory Group v. EPA*, 573 U.S. 203, 324 (2014) (explaining that the MQD "is based on the expectation that Congress speaks clearly when it delegates the power to make 'decisions of vast economic and political significance'").

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sources contributing to dangerous levels of particulate matter.³⁴¹ It has filed similar suits or issued administrative orders in a spate of other contexts since then, and in the face of such activity, Congress twice *expanded* the scope of EPA's authority, adding the authority in 1977, for example, to use administrative in addition to judicial enforcement proceedings.³⁴² The fact that EPA has never used § 303 to attack PFAS emissions is irrelevant.³⁴³ EPA has relied on § 303 to abate emissions of a wide variety of pollutants regulated under various CAA programs, including HAPs regulated under § 112, pollutants listed under the Risk Management Program established by § 112(r), and pollutants for which EPA has adopted NAAQS.

But the statute also envisions application of § 303 to pollutants not yet regulated under other CAA programs. Section 303 authorizes actions to halt emissions of “air pollutants causing or contributing” to an imminent and substantial endangerment.³⁴⁴ The statute defines an “air pollutant” “capaciously”³⁴⁵ as “*any* air pollutant agent or combination of such agents, including *any* physical, chemical, biological . . . substance or matter which is emitted into or otherwise enters the ambient air.”³⁴⁶ As the D.C. Circuit once noted, “the Supreme Court has drawn upon the word ‘any’ to give the word it modifies an ‘expansive meaning’ when there is ‘no reason to contravene the clause’s obvious meaning.’” Indeed, the Court has read the word ‘any’ to signal expansive reach when construing the Clean Air Act.”³⁴⁷

³⁴¹ See *supra* notes 236-245 and accompanying text.

³⁴² See *supra* section IVA – IVB.

³⁴³ See Schaeffer Letter, *supra* note 45, at 18.

³⁴⁴ 42 U.S.C. § 7603.

³⁴⁵ *Massachusetts v. EPA*, 549 U.S. 497, 532 (2007).

³⁴⁶ 42 U.S.C. § 7602(g) (emphasis added).

³⁴⁷ *New York v. EPA*, 443 F.3d 880, 885 (D.C. Circuit 2006) (citing *Norfolk S. Rwy. Co. v. Kirby*, 543 U.S. 14, 31–32 (2004); *Dep’t of Housing and Urban Dev. v. Rucker*, 535 U.S. 125, 130–31 (2002); *United States v. Gonzales*, 520 U.S. 1, 5, (1997); *Harrison v. PPG Indus., Inc.*, 446 U.S. 578, 588–89 (1980) (the CAA case).

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Legislators have introduced bills to list PFAS as HAPs and have failed to do so,³⁴⁸ so one might consider that a strike against the validity of use of § 303 to address airborne PFAS pursuant to the sixth enumerated factor. But § 303 applies, as just noted, well beyond the realm of HAPs. It applies to *any* air pollutant causing or contributing to the requisite endangerment. Congress has not addressed any legislation focusing on whether or not EPA can use § 303 to control PFAS emissions. At worst, then, this sixth factor is neutral.

The seventh enumerated factor indicates that the ability to characterize the challenged exercise of executive branch authority as “a ‘fundamental revision of the statute, changing it from [one sort of] scheme of . . . regulation’ into an entirely different kind” strongly favors application of the MQD.³⁴⁹ Initiation of a civil suit or issuance of an administrative compliance order against PFAS manufacturers or other emitters would do no such thing. The CAA’s purpose is “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare. . . .”³⁵⁰ The Act includes an array of options, regulatory and nonregulatory, for achieving that goal, and the programs EPA is authorized to administer has expanded over time. The program to prevent significant deterioration of clean air resources, for example, began as an EPA regulatory program that Congress endorsed and codified in the 1977 amendments.³⁵¹ Federal pollution control statutes included abatement provisions similar (though narrower than) § 303 long before the adoption of the CAA, and versions of federal air quality legislation have done so as far back as 1963.³⁵² An effort by EPA to abate PFAS would be distinguishable from the Court’s characterization of the CPP as a program that would revamp the electric utility

³⁴⁸ See *supra* note 199.

³⁴⁹ *W. Va.*, 142 S. Ct at 2373 (quoting *MCI Telecomm’n Corp. v. Am. Tel. & Tel. Co.*, 512 U.S. 218, 231(1994)).

³⁵⁰ 42 U.S.C. § 7401(b)(1).

³⁵¹ See ROBERT L. GLICKSMAN ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY 428-29 (9th ed. 2023).

³⁵² See *supra* notes 223-229 and accompanying text.

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industry rather than one to limit emissions on a source-by-source basis.³⁵³ That effort would be squarely within EPA's "wheelhouse."³⁵⁴

If we turn to Justice Gorsuch's annotations to the MQD as the majority described it in *West Virginia*, the first additional factor (the eight enumerated factor, which could simply be viewed as a measure of political significance) is the degree of controversy over the agency's regulatory exercise. As indicated above, we do not anticipate that an effort to abate PFAS pollution from a limited number of sources under § 303 would generate anything close to the political pushback that faced the CPP, the loan forgiveness program, or OSHA's COVID-19 vaccination and testing mandate.³⁵⁵ Similarly, we have already assessed how regulatory compliance costs, which we have numbered the ninth relevant factor but which also basically elaborates on the economic significance and breadth of power factors, should affect the analysis.³⁵⁶

Finally, Justice Gorsuch identified as a tenth factor the impact on state and local authority and potential intrusion on federalism values. This factor, too, cuts against application of the MQD. To begin with, even though EPA is no longer required to refrain from taking action in the face of appropriate state or local action, it is still required to consult with state and local officials in an attempt to "confirm the accuracy of the information on which the action proposed to be taken [under § 303] is based."³⁵⁷ State and local officials will therefore have an opportunity to convince EPA, for example, that its finding of an imminent and substantial endangerment is

³⁵³ *W. Va. v. EPA*, 142 S. Ct. at 2611.

³⁵⁴ *Biden v. Nebraska*, 143 S. Ct. at 2382 (Barrett, J., concurring).

³⁵⁵ See *supra* notes 338-340 and accompanying text. For that matter, we think it is unlikely that such an exercise of power would approach the heated debate and rhetoric that accompanied EPA's interpretation of the term "waters of the United States" under the CAA, which the Court invalidated in *Sackett* without applying the MQD.

³⁵⁶ See *supra* notes 338-340 and accompanying text.

³⁵⁷ 42 U.S.C. § 7603.

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mistaken or that EPA has not properly targeted the responsible sources. It is of course possible that during these consultations, state or local officials will be able to convince EPA to stay its hand for other reasons, such as the prospect of promised action by those officials. Moreover, those officials can forestall or eliminate federal action altogether by addressing the endangerment themselves in the first instance.

More importantly, any action taken by EPA under § 303, or under the vast majority of CAA provisions, acts as a regulatory floor, not a ceiling. Section 116 provides that, with the exception of EPA's adoption of EPA's emission standards for new mobile sources,³⁵⁸ "nothing in the CAA shall preclude or deny the right of any State or political subdivision therefor to adopt or enforce" regulatory standards that are more stringent than those adopted by EPA.³⁵⁹ It is true that state and local governments have had the power to abate public nuisances for centuries. But a Senate report on what became the 1980 amendments to RCRA explained that the imminent and substantial endangerment provision of that statute,

Like other imminent and substantial endangerment provisions in environmental statutes, (e.g., . . . section 303 of the Clean Air Act, . . .), section 7003 [of RCRA] is essentially a codification of common law public nuisance remedies. . . .

However, section 7003 should not be construed solely with respect to the common law. Some terms and concepts, such as persons "contributing to" disposal resulting in a substantial endangerment, are meant to be more liberal than their common law counterparts.³⁶⁰

Thus, legislators intended to occupy and extend beyond the same terrain that the states had, without preempting or limiting that authority. The CAA provides a model of "cooperative federalism" and the federal government has long been involved in environmental and natural

³⁵⁸ See 42 U.S.C. § 7543 (preempting state and local adoption or enforcement of new motor vehicle emission standards, with limited exceptions for California).

³⁵⁹ *Id.* § 7416.

³⁶⁰ S. Rep. No. 96-172, at 5 (1979), reprinted in 1980 U.S.C.C.A.N. 5019, 5023.

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resource protection, so that the CAA as whole, and § 303 in particular, cannot be regarded as an intrusion into areas of traditional state prerogative.³⁶¹ The extent to which EPA's authority interferes with state or local authority over PFAS emission sources is negligible.

2. Application of the MQD

Even though almost all (if not all) of the ten enumerated factors suggest that the MQD would not apply to EPA's abatement efforts against airborne PFAS under § 303, the recent vintage and uncertain parameters of the MQD make it impossible to state with certainty that a court would never apply the doctrine in this context. Assuming it decides to do so, would EPA's use of § 303 in the form of a civil suit or the issuance of an administrative order survive application of the MQD?

Once the MQD applies, the question becomes how to apply it. Under what circumstances, if any, can an agency prevail against a challenge to an exercise of its authority that triggers the MQD? The Court in *West Virginia* stated that a "colorable" or "merely plausible textual basis" for the agency action will not suffice to sustain the challenged authority.³⁶² Rather, "something more" is necessary³⁶³—the agency must identify "clear congressional authorization."³⁶⁴ It is not clear what an agency must do to clear that hurdle because the Supreme Court has not yet ruled in favor of an agency in any case in which it has applied the MQD.

Nevertheless, it is clear that the CAA provides the necessary authorization. Section 303 requires certain findings before abatement authority kicks in. As indicated above, it is perfectly clear that a targeted stationary source of PFAS emissions into the ambient air would qualify as a

³⁶¹ See generally Robert L. Glicksman, *From Cooperative to Inoperative Federalism: The Perverse Mutation of Environmental Law and Policy*, 41 WAKE FOREST L. REV. 719 (2006).

³⁶² *W. Va.*, 142 S. Ct. at 2609.

³⁶³ See *id.*

³⁶⁴ *Id.* at 2609, 2614.

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“pollution source” that is emitting “air pollutants.”³⁶⁵ Even if the PFAS at issue were not regulated under any other provision, § 303 would provide authority for EPA to seek abatement. Section 303 applies “[n]otwithstanding any other provision of [the CAA].”³⁶⁶ Indeed, in an important sense, that is the whole point of a provision such as § 303. In reviewing the scope of RCRA’s imminent and substantial endangerment provision, which was largely modeled on § 303 of the CAA,³⁶⁷ the Fourth Circuit noted

the indication of Congress that section 7003 remedies exist apart from the other provisions in the Act’s structure. . . . Its application ‘notwithstanding any other provision of this chapter’ indicates a congressional intent to include a broadly applicable section dealing with the concerns addressed by the statute as a whole. . . . [I]t is designed to deal with situations in which the regulatory schemes break down or have been circumvented.³⁶⁸

Thus, RCRA’s emergency powers provisions were designed to cover problematic environmental activities that either were not being regulated under other provisions of the statute or were being regulated inadequately. Section 303’s inclusion of the same “notwithstanding” clause evokes a similar intention.

The substantive content of the “imminent and substantial endangerment” trigger for EPA’s exercise of its emergency powers under the CAA and other statutes has been the subject of much judicial scrutiny, and the overwhelmingly clear consensus is that Congress intended that the triggers be interpreted expansively, which is exactly what the courts have done. For example, the courts have established that Congress intended that statutory references to “endangerments”

³⁶⁵ See *supra* notes 208-209, 345-347 and accompanying text.

³⁶⁶ 42 U.S.C. § 7603.

³⁶⁷ See *Middlesex Cnty. Bd. of Chosen Freeholders v. New Jersey, Dep’t of Env’t Prot.*, 645 F. Supp. 715, 721-22 (D.N.J. 1986); *United States v. Stringfellow*, No. CV-83-2501-MM, 1984 WL 3206, at *6 (C.D. Cal. Apr. 5, 1984).

³⁶⁸ *United States v. Waste Indus., Inc.*, 734 F.2d 159, 164 (4th Cir. 1984).

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in the CAA and other environmental statutes³⁶⁹ be used “in a precautionary or preventive sense, and, therefore, evidence of potential harm as well as actual harm comes within the purview of that term.”³⁷⁰ This characterization is important because the D.C. Circuit has concluded that:

Where a statute is precautionary in nature the evidence difficult to come by, uncertain, or conflicting because it is on the frontiers of scientific knowledge, the regulations designed to protect the public health, and the decision that of an expert administrator, we will not demand rigorous step-by-step proof of cause and effect. Such proof may be impossible to obtain if the precautionary purpose of the statute is to be served.³⁷¹

To the same effect, a House Report on the 1977 amendments to the CAA, which strengthened EPA’s emergency powers, stated that “[a]dministrative and judicial implementation of this authority must occur early enough to prevent the potential hazard from materializing.”³⁷² The courts have also held that the use of the term “imminent and substantial endangerment” in analogous provisions of other environmental statutes does not limit EPA action to actual emergencies.³⁷³

³⁶⁹ The D.C. Circuit has explained that it is appropriate to apply interpretations of the CWA’s use of the term “endangering” when interpreting CAA provisions, and vice versa. *Ethyl Corp. v. Env’t Prot. Agency*, 541 F.2d 1, 17 (D.C. Cir. 1976) (citing *Natural Res. Def. Council, Inc. v. Train*, 510 F.2d 692, 701-02 (D.C. Cir. 1975) (stating that “interpretations of provisions of one Act have frequently been applied to comparable provisions of the other”).

³⁷⁰ *Id.* (citing *Reserve Min. Co. v. EPA*, 514 F.2d 492, 528 (8th Cir. 1975).

³⁷¹ *Ethyl Corp.*, 541 F.2d at 28.

³⁷² H.R. Rep. No. 95-294, at 328 (1977). *See also* Logan Senack, Note, *Forty Years Later, Revising the Idea of a Single Emergency Authority Provision*, 8 GEO. WASH. J. ENERGY & ENV’T L. 213, 216 (2018).

³⁷³ *See, e.g.*, *Davis v. Sun Oil Co.*, 148 F.3d 606, 609-10 (6th Cir. 1998) (concluding that one of RCRA’s imminent and substantial endangerment provisions, 42 U.S.C. § 6972(a)(1)(B), “is not specifically limited to emergency-type situations”); *see also* *Conservation Law Found., Inc. v. Shell Oil Co.*, 628 F. Supp. 3d 416, 446 (D. Conn. 2022) (citing *White Plains Housing Auth. v. BP Prod. N. Am. Inc.*, 482 F. Supp. 3d 95, 116 (S.D.N.Y. 2020) (interpreting § 6972(a)(1)(B) the same way); *Apalachicola Riverkeeper v. Taylor Energy Co., LLC*, 954 F. Supp. 448, 459 (E.D. La. 2013) (same); *B.F. Goodrich Co. v. Murtha*, 697 F. Supp. 89, 96 (D. Conn. 1988), *aff’d*, 958 F.2d 1192 (2d Cir. 1992) (“The “imminent and substantial endangerment” language of § 9606(a) [of CERCLA] is not limited to emergency situations”); *United States v. Valentine*, 856 F. Supp. 621, 626 (D. Wyo. 1994) (citation omitted) (interpreting RCRA’s imminent and substantial endangerment provision and stating that “[a]n endangerment need be neither immediate nor tantamount to an emergency to be imminent and warrant relief. Rather, an endangerment is imminent if factors giving rise to it are present, even though the harm may not be realized for years.”). *But see* *Tennessee Valley Auth. v. Whitman*, 336 F.3d 1236, 1249 (11th Cir. 2003) (“It is clear from the text of section 7603 that Congress enabled the EPA to issue orders with the status of law, but only in an extremely narrow context. There must be an emergency rising to the point of an “imminent and substantial endangerment.”). *TVA* seems to be an outlier on this issue, although it did interpret CAA § 303 rather than the other statutory provisions interpreted in the other cases cited in this note.

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The legislative history of the 1970 act similarly posits that the emergency powers provision was meant to allow EPA to address the cause before an emergency occurs, at a point when the emissions can be reasonably predicted to reach a level of substantial endangerment.³⁷⁴ The courts have also determined that “[i]mminence does not require an existing harm, only an ongoing threat of future harm.”³⁷⁵ According to EPA, this preventive orientation “permits the Agency, for example, to act to seek abatement of emissions reasonably believed to be carcinogenic, even though it is uncertain how long it would take for the emissions to result in actual harm to individuals.”³⁷⁶ Given that some PFAS have the potential to cause cancer,³⁷⁷ this interpretation, if accepted by the courts, would trigger EPA’s emergency powers in the face of human exposure to cancer even if the disease would not manifest itself in exposed individuals for decades.

Ultimately, whether EPA has properly determined that airborne PFAS present an imminent and substantial endangerment to health, welfare, or the environment will likely depend more on an assessment of the evidence relied on and the validity of EPA’s reasoning under the

³⁷⁴ S. Rep. No. 91-1196, at 36 (1970).

³⁷⁵ *Liebhart v. SPX Corp.*, 917 F.3d 952, 958 (7th Cir. 2019) (quoting *Albany Bank & Trust Co. v. Exxon Mobil Corp.*, 310 F.3d 969, 973 (7th Cir. 2002); *Cox v. City of Dallas*, 256 F.3d 281, 299 5th Cir. 2001)) (interpreting one of RCRA’s endangerment provisions, 42 U.S.C. § 6972(a)(1)(B)).

³⁷⁶ Schaeffer Letter, *supra* note 45, at 9; *cf.* *Trinity Am. Corp. v. Env’t Prot. Agency*, 150 F.3d 389, 399 (4th Cir. 1998) (quoting H.R. Rep. no 93-1185 (1974), 1974 U.S.C.C.A.N. at 6488) (“EPA, therefore, may invoke its powers under [the SWDA’s emergency powers provision, 42 U.S.C. § 1431] even if there is only an ‘imminent likelihood of the introduction into drinking water of contaminants that may cause health damage after a period of latency’”).

³⁷⁷ *See, e.g.*, PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18638, 18562, 18656-67 (Mar. 29, 2023) (noting that EPA’s Science Advisory Board deems PFOA to be a likely carcinogen and stating that “[t]he available evidence indicates that PFOA has carcinogenic potential in humans and at least one animal species”); (Am. Cancer Soc’y, Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonate (PFOS), and Related Chemicals, <https://www.cancer.org/cancer/risk-prevention/chemicals/teflon-and-perfluorooctanoic-acid-pfoa.html#:~:text=IARC%20has%20classified%20PFOA%20as,cause%20cancer%20in%20lab%20animals> (last revised Mar. 21, 2023) (noting that the International Agency for Research on Cancer has classified PFOA as a possible human carcinogen).

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arbitrary and capricious test³⁷⁸ that it demonstrates an imminent and substantial endangerment than on the clarity of the language delegating to EPA the authority to seek abatement of those emissions.

V. Conclusion

PFAS were manufactured, used, and discarded with minimal if any federal regulation for decades. They are still used in commonplace products and people are exposed to them in the food they eat, the water they drink, the products they use, and the air they breathe. Studies show that the more thoroughly studied PFAS pose serious human health and environmental risks.³⁷⁹ EPA has committed to addressing PFAS through a whole-of-agency approach and has taken steps towards regulating PFAS through multiple statutes.³⁸⁰ While airborne PFAS emissions pose a serious health and environmental threat, EPA has taken no actions to regulate them under the CAA.

Section 303 of the CAA is an appropriate vehicle for addressing the health and environmental risks posed by the manufacture and use of PFAS. Although EPA has other vehicles for addressing the risks posed by airborne PFAS emissions, including adoption of new source performance standards or national emission standards for HAPs, EPA has not yet resorted to those authorities in an effort to control PFAS emissions from stationary sources. Even if it chooses to do so, it will likely take a considerable amount of time to negotiate the rulemaking

³⁷⁸ 5 U.S.C. § 706(2)(A). *Compare* United States v. Ottati & Goss, Inc., 900 F.2d 429, 434-35 (1st Cir. 1990) (discussing the standard of review that applies when EPA brings a civil suit for injunctive relief under § 106 of CERCLA and refusing to apply the arbitrary and capricious test in the absence of an administrative hearing that resulted in an endangerment finding). That reasoning would apparently not apply if a court were reviewing a § 303 order issued after an administrative proceeding.

³⁷⁹ *See supra* § IIA.

³⁸⁰ *See supra* Section IIB.

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process.³⁸¹ In the interim, § 303 provides authority to implement protective mechanisms more quickly, and Congress has endorsed the use of the emergency authority that the environmental statutes provide for precisely that purpose.³⁸²

One potential obstacle to EPA's invocation of § 303 to limit or halt PFAS emissions is the major questions doctrine, which the Supreme Court has already exercised to limit EPA's rulemaking authority under the CAA to curtail greenhouse gas emissions from electric generating units.³⁸³ It has also applied the newly minted MQD to preclude other regulatory efforts.³⁸⁴ As the analysis in Part IV indicates, the MQD should not be applied to EPA efforts to use the authority delegated to it under § 303 to minimize the health risks associated with PFAS exposure. Even if the MQD were to apply, EPA's expansive authority under § 303 is clear enough to allow EPA to proceed.

The analysis that supports these conclusions provides a structured approach for agencies to use in rebutting claims that their regulatory efforts are beyond the scope of delegated statutory authority due to application of the MQD. That approach is based on careful extrapolation from the cases in which the Supreme Court has applied the MQD thus far to its triggering components, notwithstanding the lack of clarity that surrounds the scope of this authority-narrowing device.

The delegation to EPA of the authority to seek abatement of imminent and substantial endangerments “[n]otwithstanding any other provision of the [CAA]”³⁸⁵ is indicative of Congress' intent to prioritize protection of health, welfare, and environmental resources that are at risk due to the activities of air pollution sources and to vest in EPA broad discretionary

³⁸¹ See *supra* note 42 and accompanying text.

³⁸² See *supra* notes 369-376 and accompanying text.

³⁸³ *West Virginia v. EPA*, 142 S. Ct. 2587 (2022).

³⁸⁴ See *supra* note 299 and accompanying text.

³⁸⁵ 42 U.S.C. § 7603.

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authority to EPA to determine when such risks demand immediate regulatory action. The expansive nature of the key terms in § 303 as interpreted by both congressional committees that prepared reports on various iterations of the CAA, and by the courts applying similar terminology under related emergency power provisions of other statutes, points in the same direction. So does the reference to “stop[ping]” the emissions that are causing or contributing to an endangerment.³⁸⁶

Despite affording EPA broad discretionary authority to apply its expertise in forming judgments on how best to tackle air pollution-related endangerments, Congress did not sacrifice accountability. EPA must consult with state and local officials to ensure the accuracy of its factual determinations before initiating abatement actions under § 303. If challenged, the courts ultimately decide whether EPA is correct in its determination that an imminent and substantial endangerment exists, and, if so, the courts decide what relief “may be necessary.”³⁸⁷ EPA may issue an administrative compliance order under § 303, but only if “it is not practicable to assure prompt protection of public health or welfare or the environment by commencement of . . . a civil action.”³⁸⁸ EPA abatement orders are limited in duration. And judicial review of such orders is available in the appellate courts.³⁸⁹

One additional factor suggests that the balance of affording broad discretionary authority to EPA to form judgments about the steps needed to provide public health protection and

³⁸⁶ *Id.*

³⁸⁷ *Id.*

³⁸⁸ *Id.* Examples of determinable impracticability include oil droplets raining from the sky, Limetree Bay Order, *supra* note 216; potential ammonia exposure of an entire building complex and surrounding community, RBF Frozen Desserts Order, *supra* note 214; and generally high emissions of pollutants. City of Detroit Order, *supra* note 214; Total Petroleum Order, *supra* note 214; New Indy Catawba Order, *supra* note 218.

³⁸⁹ 42 U.S.C. § 7607(b)(1) (authorizing review of “any other final action of the Administrator . . . which is locally or regionally applicable”).

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providing mechanisms to ensure governmental accountability tips toward adequate protection in connection with EPA's exercise of its § 303 powers. When EPA initiates either a civil suit or proceedings to issue an administrative compliance order under § 303, it is choosing from one of many available tools for promoting the CAA's objectives. The alternatives at its disposal include issuing regulations under provisions such as §§ 111 or 112 or, if a stationary source's emissions require it to get a permit under Title V of the CAA,³⁹⁰ adjudication in the form of review by EPA of state-issued permits.³⁹¹ Judicial review of agency mechanism choice has traditionally been deferential.³⁹²

Moreover, choosing to act under § 303 in lieu of (or in anticipation of) the use of rulemaking or permit review authority constitutes a choice to use enforcement as an abatement device. The choice of whether and how to exercise enforcement authority entails the exercise of prosecutorial discretion. As one of us has noted elsewhere, “[i]n view of resource constraints, courts generally accord agencies broad ‘prosecutorial discretion’ to decide whether and how to investigate and prosecute potential violations of the law.”³⁹³ The Supreme Court recently confirmed in *United States v. Texas* that courts must tread lightly in reviewing agency decisions to resort to enforcement. It stated that “[i]n light of inevitable resource constraints and regularly changing public-safety and public-welfare needs, the Executive Branch must balance many

³⁹⁰ *Id.* §§ 7661a(b), 7661b(a) (requiring permits from specified stationary sources).

³⁹¹ *Id.* § 7661d(b) (authorizing EPA to object to state-issued permits).

³⁹² See Robert L. Glicksman & David L. Markell, *Unraveling the Administrative States: Mechanism Choices, Key Actors, and regulatory Tools*, 36 VA. ENV'T L.J. 318, 333-35 (2018). The court in *Jarkesy v. Securities and Exchange Comm'n*, 34 F.4th 446, 459-63 (5th Cir. 2022), *reh'g en banc denied*, 51 F.4th 644 (5th Cir. 2022), *cert. granted*, No. 22-991, 2023 WL 4278466 (U.S. June 30, 2023), however, held that provisions of the federal securities laws delegating to the SEC standardless discretion to seek enforcement in federal court or to adjudicate the matter before an agency administrative law judge violated the nondelegation doctrine and was therefore unconstitutional. The Supreme Court agreed to hear the case to decide issue and others relating the constitutionality of administrative adjudication.

³⁹³ ROBERT L. GLICKSMAN & RICHARD E. LEVY, *ADMINISTRATIVE LAW: AGENCY ACTION IN LEGAL CONTEXT* 1037 (3d ed. 2020).

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factors when devising arrest and prosecution policies. That complicated balancing process in turn leaves courts without meaningful standards for assessing those policies.”³⁹⁴ Although the Court in *Texas* dealt with the exercise of discretionary authority involving alleged criminal violations of the immigration laws, the exercise of civil enforcement authority is also a core executive branch function.³⁹⁵ Further, the case involved a decision to refrain from enforcement, which lacks the coercive effects of a decision to proceed.³⁹⁶ Still, judicial review of the merits of the charges promotes executive branch accountability even if the decision of whether to proceed through enforcement, including whether the requisite statutory conditions for doing so have been met, reflects the need to accommodate a core executive function.

EPA’s accelerated recent resort to its emergency powers under § 303 suggests that suits to abate imminent and substantial endangerments may be a key component of its strategy to protect the public health and the environment from chemicals of emerging concern for which the agency currently lacks the full information and regulatory infrastructure to address through mechanisms such as rulemaking or permitting. Section 303 provides ample authority for EPA to take prompt action in the absence of which harm to public health and the environment may be impossible to avoid.

³⁹⁴ *United States v. Texas*, 143 S. Ct. 1964, 1972 (2023) (citing *Heckler v. Chaney*, 470 U.S. 821, 830-32 (1985)).

³⁹⁵ *See, e.g.*, David Freeman Engstrom & Daniel E. Ho, *Algorithmic Accountability in the Administrative State*, 37 *YALE J. ON REG.* 800, 830 (2020) (“In the doctrine’s standard formulation, a federal agency’s decision to initiate a civil enforcement action is, like a criminal prosecutor’s charging decision, insulated from judicial review as a core executive responsibility committed to agency discretion by law.”); *cf.* *Comm. for Consideration of Jones Falls Sewage Sys. v. Train*, 387 F. Supp. 526, 529 (D. Md. 1975) (stating, in dismissing a complaint seeking to require EPA to use its emergency powers under the CWA that “[t]he decision of whether or not to prosecute has traditionally been considered as within the discretion of the Executive Branch”).

³⁹⁶ *See Heckler*, 470 U.S. at 832 (“[W]hen an agency refuses to act it generally does not exercise its coercive power over an individual’s liberty or property rights, and thus does not infringe upon areas that courts often are called upon to protect.”).

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