

# ARTICLES

## The Unfulfilled Promise of Effective Air Quality and Emissions Monitoring

ADAM BABICH\*

*“The 1970s were the high point for vast amounts of theory applied to extremely small amounts of data”\*\**

*“[T]he times, they are a-changin’”\*\*\**

### TABLE OF CONTENTS

Introduction . . . . .	569
I. The Problem, New Technology, and Three Court Decisions . . . . .	572
II. The Failure to Attain National Standards . . . . .	578
III. Citizen Enforcement, Agency Forcing, and Title V Petitions . . . . .	582
IV. The Use of “Credible Evidence” to Prove Violations . . . . .	588
V. Monitoring Sufficient to Assure Permit Compliance . . . . .	590
VI. Publicly Accessible Monitoring Reports . . . . .	593
VII. Fugitive Emissions . . . . .	596
VIII. Enforcement or Agreement Based Monitoring Requirements . . . . .	598
IX. Monitoring as a Work-Practice Standard for Hazardous Air Pollutants . . . . .	599
X. Citizen Science and Monitoring . . . . .	601
Conclusion . . . . .	603

### INTRODUCTION

Is extensive, direct monitoring of industrial emissions and air quality too difficult and expensive to be practical? Much of the Clean Air Act regulatory program rests on an assumption that the answer to this question is “yes.”<sup>1</sup> This assumption

---

\* Professor of Law, Tulane Law School. © 2018, Adam Babich. The author thanks those who commented on an earlier draft of this article which was presented as *Legal Impacts of Increased Public Availability of Air Quality Data*, in Air Quality Issues Affecting Oil, Gas, and Mining Development and Operations (Rocky Mt. Min. L. Fdn. 2018).

\*\* NATE SILVER, THE SIGNAL AND THE NOISE, WHY SO MANY PREDICTIONS FAIL—BUT SOME DON’T 7 (2012) (internal quotation marks omitted) (attributed to Paul Krugman).

\*\*\* *Trigon Ins. Co. v. United States*, 215 F. Supp. 2d 687, 733 (E.D. Va. 2002) (quoting Bob Dylan’s famous song).

1. See, e.g., *infra* text accompanying notes 14–15.

has hobbled regulation of air quality by the U.S. Environmental Protection Agency (“EPA”) and the states<sup>2</sup> since enactment of the Clean Air Act Amendments of 1970.<sup>3</sup> Regulators, the regulated community, and courts have all become comfortable with implementation plans, permit limits, and enforcement decisions based on unverified estimates.<sup>4</sup> The result? Air quality and health protection goals that remain unmet.<sup>5</sup> Monitoring technology is changing, however, and as the technology improves, the fallacy of arguments against direct measurement of emissions and air quality becomes more transparent.<sup>6</sup> Achieving the Nation’s air

---

2. See Gary M Lovett et al., *Who Needs Environmental Monitoring?*, 5 FRONTIERS ECOLOGY & ENV’T 253, 259 (2007) (“Fickleness of funding has led to the demise of many good monitoring programs . . . .”). EPA has explained, “Resources for ambient monitoring are limited, and the cost of new types of monitoring to meet new requirements . . . must be offset, at least in part, by reducing resources for lower value types of monitoring.” EPA Revisions to Ambient Air Monitoring Regulations, 71 Fed. Reg. 2710, 2712 (preamble to proposed rule, Jan. 17, 2006); see also *infra* notes 51–69 and accompanying text.

3. “Congress commenced the modern era of federal environmental regulation with the Clean Air Act Amendments of 1970, Pub. L. No. 91–604, 84 Stat. 1676, now codified as amended at 42 U.S.C. §§ 7401 *et seq.* . . . .” U.S. v. Shell Oil Co., 605 F. Supp. 1064, 1070 (D. Colo., 1985).

4. See NAT’L RESEARCH COUNCIL, RETHINKING THE OZONE PROBLEM IN URBAN AND REGIONAL AIR POLLUTION 6 (National Academy Press, 1991) (“EPA’s approach to ozone control, originally developed in 1971, has relied largely upon unverified estimates of reductions in precursor emissions; EPA has not required systematic measurements of ambient precursor concentrations.”). Indeed, more than four decades after enactment of the Clean Air Act Amendments of 1970, EPA continues to designate areas of the country as “unclassifiable.” This means the agency cannot determine whether those areas meet minimum national health protection standards for air pollution “on the basis of available information.” 42 U.S.C. § 7407(d)(1)(A)(iii) (2012). Of course, data needs can change as EPA revises applicable standards. See EPA Data Requirements Rule for the 2010 1–Hour Sulfur Dioxide (SO<sub>2</sub>) Primary National Ambient Air Quality Standard (NAAQS), 80 Fed. Reg. 51,052, 51,083 (preamble to final rule, Aug. 21, 2015) (“The purpose of this rulemaking is to require states to characterize air quality in priority areas throughout the country where existing ambient monitors may not be adequately characterizing peak 1-hour SO<sub>2</sub> concentrations.”). But EPA issued its August 2015 promulgation (cited above) more than five years after the agency’s revision of the applicable SO<sub>2</sub> standard. See EPA Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35,520, 35,592 (June 22, 2010) (codified at 40 C.F.R. pt. 50). EPA’s revision responded to a more than 10-year-old judicial remand in *American Lung Ass’n v. EPA*, 134 F.3d 388 (D.C. Cir. 1998).

5. See LESLEY FLEISCHMAN & MARCUS FRANKLIN, CLEAN AIR TASK FORCE & NAACP, FUMES ACROSS THE FENCE-LINE: THE HEALTH IMPACTS OF AIR POLLUTION FROM OIL & GAS FACILITIES ON AFRICAN AMERICAN COMMUNITIES 30 (Nov. 2017) (arguing, *inter alia*, “The air pollution that plagues communities across the country does not have to and should not exist.”); see also *infra* notes 65–68 and accompanying text.

6. See Emily G. Snyder et al., *The Changing Paradigm of Air Pollution Monitoring*, ENVTL. SCI. & TECH. 11,369, 11,369 (2013) (“Historically, approaches for monitoring air pollution generally use expensive, complex, stationary equipment, which limits who collects data, why data are collected, and how data are accessed. This paradigm is changing with the materialization of lower-cost, easy-to-use, portable air pollution monitors (sensors) that provide high-time resolution data in near real-time.”) (footnotes omitted); Cynthia Giles, *Next Generation Compliance*, ENVTL. F., Sept.–Oct. 2013, at 24. (“It used to be hard to figure out how much pollution was coming from a stack or a pipe. Expensive tests done once a year or less often created huge uncertainty about how much pollution there really was, and whether that amount varied much from day to day.”); Ricardo Piedrahita et al., *The Next Generation of Low-Cost Personal Air Quality Sensors*, 7 ATMOS. MEAS. TECH. 3325, 3334 (2014) (“With help from monitoring agencies and citizen scientists, detailed ground-level pollutant maps will one day help track

quality goals will require that government regulators make decisions based on verifiable data.<sup>7</sup>

This article is about the importance and uses of reliable, publicly available data regarding emissions of pollutants and ambient air quality. Part I describes the problem posed by a regulatory system based, to an excessive degree, on estimates rather than measurements of pollutant concentrations in emissions and ambient air. This part also highlights the role of developing monitoring technology and offers three examples of courts dealing with regulatory and enforcement decisions made without the benefit of—or without regard to—measurements of emissions or air quality. Part II links the lack of reliable data to the repeated failure of Clean Air Act implementation plans to achieve national standards. Part III provides background on the Act's citizen enforcement, agency forcing, and Title V citizen petition provisions, all of which are informed by emissions and environmental quality data. Part IV reviews the principle that any credible evidence—including data from increasingly accessible monitoring technology—may support enforcement. Part V explores the Act's requirement that regulated facilities conduct monitoring that is sufficient to assure compliance, a provision that offers regulators a means to require reliable monitoring on a facility-by-facility basis. Part VI reviews obligations of members of the regulated community to report information about emissions and compliance status. Part VII is about monitoring requirements for fugitive emissions. Part VIII discusses monitoring pursuant to facility-specific orders or agreements. Part IX highlights emerging fence-line and ambient monitoring obligations for oil refineries—an innovative use of a “work practice” standard to gather data on the quality of air available to residents of fence-line communities. Finally, Part X discusses the increasing importance to the regulatory system of citizen science, especially citizen monitoring and aerial surveillance. The bottom line? Implementation of newer technology should make violations of Clean Air Act emission limits more difficult to get away with. Regardless of the enforcement policies of one or another EPA administration,

---

sources, reduce the population's exposure, and improve our knowledge of emissions as well as fate for each species.”). In 2006, EPA amended ambient monitoring regulations, citing “current data needs and opportunities” and noting that “new monitoring technologies have been developed that provide attractive opportunities for obtaining more robust and useful data.” EPA Revisions to Ambient Air Monitoring Regulations, 71 Fed. Reg. 2710, 2712 (preamble to proposed rule, Jan. 17, 2006). EPA revised and finalized the rule, 71 Fed. Reg. 61,236, 61,271 (Oct. 17, 2006) (codified at 40 C.F.R. pts. 53 & 58). EPA based its rule, in part, on a concern about limited resources for ambient monitoring. *See supra* note 2 (citing 71 Fed. Reg. at 2712); *see also* 71 Fed. Reg. at 61,243 (“EPA recognizes that resources always have been and will remain a practical consideration for establishing and operating monitoring programs.”).

7. The Act's goals include “protect[ion] and enhance[ment of] the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population.” 42 U.S.C. § 7401(b)(1) (2012). This includes attainment of national standards that are “requisite to protect the public health” with “an adequate margin of safety.” *Id.* § 7409(b)(1). National health protection standards should be attained “as expeditiously as practicable.” *Id.* § 7502(a)(2)(A).

sources should invest in compliance.<sup>8</sup> Regulators should recognize and employ advances in monitoring technology to improve Clean Air Act implementation.

### I. THE PROBLEM, NEW TECHNOLOGY, AND THREE COURT DECISIONS

The Clean Air Act grants EPA broad authority to require direct emission and environmental quality monitoring.<sup>9</sup> The agency has nonetheless proceeded cautiously, seeking to avoid the perception of “a bias toward instrumental monitoring methods.”<sup>10</sup> In 1997—responding to a 1990 congressional mandate for “enhanced monitoring”<sup>11</sup>—EPA published its Compliance Assurance Monitoring (“CAM”) rule.<sup>12</sup> EPA agreed, in theory, “with incorporating direct emissions and compliance monitoring where the technology is available and feasible, and promoting public disclosure of air pollution emissions information.”<sup>13</sup> But the agency claimed it was “technically unrealistic” to “impose such monitoring requirements across the board in the short term.”<sup>14</sup> EPA did not believe “such a broad, expensive, and technically complex objective” could “be accomplished through a single rulemaking at this time.”<sup>15</sup> EPA therefore backed away from establishing “enhanced monitoring protocol requirements” for fugitive emissions,<sup>16</sup> and adopted an overall approach that “cost significantly less” than the agency’s earlier proposal.<sup>17</sup>

EPA’s 1997 CAM rule was a missed opportunity to reorient the regulatory program toward reliance on direct measurement of emissions and air quality. More than twenty years later—due in part to administrative inertia<sup>18</sup>—regulators and regulated entities still tend to base emission and ambient concentration data on

---

8. See Eric Lipton & Danielle Ivory, *Under Trump, E.P.A. Has Slowed Actions Against Polluters, and Put Limits on Enforcement Officers*, N.Y. TIMES, Dec. 10, 2017 (“An analysis of enforcement data by The New York Times shows that the administration has adopted a more lenient approach than the previous two administrations—Democratic and Republican—toward polluters like those in East Liverpool.”). But just as the pendulum has swung before, it is likely to swing again. See William D. Ruckelshaus, *A Lesson Trump and the E.P.A. Should Heed*, N.Y. TIMES, March 7, 2017.

9. See, e.g., 42 U.S.C. § 7619(a) (2012) (requiring EPA to “establish[ ] an air quality monitoring system throughout the United States”); 42 U.S.C. § 7414(a)(1), (3); *United States v. Louisiana Pac. Corp.*, 908 F. Supp. 835, 843 (D. Colo. 1995) (holding that Clean Air Act § 7414 “grants broad authority to the Administrator and, upon proper delegation, to the state to impose monitoring and reporting requirements on any individual operator of any emission source”); 42 U.S.C. § 7410(a)(2)(F) (2012) (authorizing EPA to “prescribe” requirements for state imposed monitoring and reporting requirements).

10. EPA Compliance Assurance Monitoring, 62 Fed. Reg. 54,900, 54,911 (preamble to final rule, Oct. 22, 1997).

11. 42 U.S.C. § 7414(a)(3) (2012).

12. 62 Fed. Reg. at 54,940 (codified at 40 C.F.R. pt. 64).

13. *Id.* at 54,904.

14. *Id.*

15. *Id.*

16. *Id.* at 54,920.

17. *Id.* at 54,900.

18. See Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1361–62 (1985) (recognizing the “reality of bureaucratic inertia” and suggesting that “every large bureaucratic organization experiences a great deal of difficulty redefining its priorities”).

estimates, or a combination of estimating methodology and parametric monitoring.<sup>19</sup> Not always, however.<sup>20</sup> The Act and regulations provide regulators with myriad opportunities—on a case-by-case and regulation-by-regulation basis—to require direct measurement of emissions and ambient concentrations and/or reliable parametric monitoring.<sup>21</sup>

Direct measurement through monitoring of emissions is not always the only reliable or the most practical method of determining the amount and chemical composition of releases. An alternative—“parametric monitoring”—relies on measuring one or more “process or control device parameter[s]” which in turn allows calculation of emissions based on what is (at least in theory) a “known and consistent relationship . . . between the emissions subject to an applicable limitation or standard and the parameters being monitored.”<sup>22</sup> An example is “fuel sampling and analysis procedures that monitor the sulfur content of fuel to predict SO<sub>2</sub> emissions.”<sup>23</sup> The question, however, is whether the requisite “known and consistent relationship” really exists on a case-by-case basis, or is instead mere conjecture. In EPA’s Compliance Assurance Monitoring Rule, the agency backed off a requirement for regulated parties “to account in detail for all potentially significant parameters when documenting parameter range correlation testing.”<sup>24</sup> Rather, the rule “presumes the appropriateness” of “establish[ing] indicator

---

19. See, e.g., EPA, EPA-454/B-17-003, EMISSIONS INVENTORY GUIDANCE FOR IMPLEMENTATION OF OZONE AND PARTICULATE MATTER NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) AND REGIONAL HAZE REGULATIONS 2–4, tbl. 1 (2017) (providing a list of EPA estimation resources for emissions inventories); EPA, EMISSIONS ESTIMATION PROTOCOL FOR PETROLEUM REFINERIES, VERSION 3 (2015). “Parametric monitoring” is discussed *infra* in text accompanying notes 22–25. A somewhat related concept is regulation (and monitoring) by surrogate. The D.C. Circuit held, “EPA may sometimes regulate a [hazardous air pollutant] indirectly, by controlling a proxy, or ‘surrogate,’ instead of the pollutant itself” provided that the “rules are reasonably calculated to control the relevant [pollutants] to the extent the statute demands.” *Sierra Club v. EPA*, 884 F.3d 1185, 1190 (D.C. Cir. 2018).

20. See, e.g., *infra* notes 144–148 and accompanying text.

21. See *infra* notes 143, 196–99 and accompanying text.

22. See EPA Enhanced Monitoring Program, 58 Fed. Reg. 54,648, 54,666 (preamble to proposed rule, Oct. 22, 1993); see also, e.g., 40 C.F.R. § 64.3(a)(1) (2018) (“Indicators of performance [under EPA’s compliance assurance monitoring rule] may include [*inter alia*] process and control device parameters that affect control device (and capture system) efficiency or emission rates . . . .”); see also D. R. van der Vaart & John C. Evans, *Compliance Under Title V: Yes, No, or I Don’t Know?*, 21 VA. ENVTL. L.J. 1, 24 n.86 (2002) (“[P]arametric monitoring is the general term used to describe any indirect measurement of an emission rate . . . . The measurement of, for example, the operation of a control device would constitute an indirect measurement of the pollutant, as long as an assumption can be made about the efficacy of the properly operated control device.”).

23. 58 Fed. Reg. at 54,666.

24. 62 Fed. Reg. at 54,926 (“The Agency has not included a similar explicit requirement in the final rule’s documentation and testing requirements for the establishment of indicator ranges.”). See also *Nat. Res. Def. Council, Inc. v. EPA*, 194 F.3d 130, 134 (D.C. Cir. 1999) (“Under CAM, EPA requires that major source owners ‘establish . . . appropriate range(s) . . . for the selected indicator(s) such that operation within the ranges provides a reasonable assurance of ongoing compliance with emission limitations or standards.”) (quoting 40 C.F.R. § 64.3(a)(2)).

ranges during compliance or performance testing.”<sup>25</sup>

Newer technology provides opportunities for more extensive and accurate inspections, self-monitoring and self-reporting, and for affordable monitoring by other interested people, for example citizen enforcers.<sup>26</sup> A former EPA official explained:

Monitoring devices are becoming more accurate, more mobile, and cheaper, all of which are contributing to a revolution in how we find and fix pollution problems. Through the use of these technologies, some companies have discovered that they greatly underestimated their pollution, sometimes by an order of magnitude. Actual measurements, as opposed to estimates, often show far higher emissions than we [i.e., EPA], or the company, thought.<sup>27</sup>

According to one scientist, “We’re really just now starting to understand what’s actually in our air, and the variety of sources that contribute to urban air quality.”<sup>28</sup> Direct monitoring and publicly accessible data, therefore, have the potential to improve implementation of the Act dramatically.<sup>29</sup>

---

25. *Id.* at 54,927 (emphasis added).

26. See David L. Markell & Robert L. Glicksman, *Next Generation Compliance*, NAT. RES. & ENV’T, Winter 2016, at 22, 23 (“The dramatic increase in the availability of monitoring technology, as purchase prices drop, is likely to increase public use significantly.”); Lucas Satterlee, *Climate Drones: A New Tool for Oil and Gas Air Emission Monitoring*, 46 *Envtl. L. Rep.* (Envtl. Law Inst.) 11069, 11079 (2016) (“Using drones to collect images, measurements, and other resource data offers immense opportunities for environmental groups to learn more about the extent of environmental problems and submit incriminating evidence to government officials.”).

27. Giles, *supra* note 6, at 24; see also TPC Grp. LLC 2102 Spur 136 Port Neches, Jefferson Cty., TX, EPA Docket No. CAA 06-2017-3361, 2017 WL 3720254, at ¶ 74 & ¶ E2(b)(i) (July 12, 2017) (“As a condition of settlement, Respondent shall implement a FLIR Camera Review Program” [using an infra-red gas imaging camera] “to detect fugitive emissions of VOCs [volatile organic compounds] and HRVOCs [highly reactive VOCs] at the PNO facility.”); EXXON MOBIL CORP., *Corporate Citizenship Report, Managing Climate Change Risks, Mitigating Emissions In Our Operations*, <http://corporate.exxonmobil.com/en/community/corporate-citizenship-report/managing-climate-change-risks/mitigating-grehouse-gas-emissions-in-our-operations#/section/1-energy-efficiency> (last visited Oct. 24, 2018) (“we use optical gas imaging cameras to identify leaks for prompt repair”).

28. Adam Allington, *Could Your Shampoo Be the New Car Exhaust?*, ENV’T REP. (BNA) (May 24, 2018) (quoting Brian C. McDonald, Ph.D., as lead author of Brian C. McDonald et al., *Volatile Chemical Products Emerging as Largest Petrochemical Source of Urban Organic Emissions*, 359 *SCI.* 760 (2018)).

29. See EPA, NEXT GENERATION COMPLIANCE: STRATEGIC PLAN 2014–2017 4 (Oct. 2014) (“Advanced emissions/pollutant detection technology can help regulated entities, the government, and the public more easily find pollutant discharges, environmental conditions, and noncompliance.”); EPA, OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE, USE OF NEXT GENERATION COMPLIANCE TOOLS IN CIVIL ENFORCEMENT SETTLEMENTS 2 (Jan. 7, 2015) (emphasizing use in settlements of compliance tools such as “Advanced monitoring, including both point source emission/discharge monitoring and ambient monitoring (e.g., fence-line monitoring of air pollution at the border of a facility) . . . [e]lectronic reporting, and [p]ublic accountability through increased transparency of compliance data”) (withdrawn by EPA, THE APPROPRIATE USE OF COMPLIANCE TOOLS IN CIVIL ENFORCEMENT SETTLEMENTS 2 (April 3, 2018)); see also Madison Condon, *Citizen Scientists, Data Transparency, and the Mining Industry*, NAT. RES. & ENV’T, Fall 2017, at 24, 27 (“Two of the pillars of

Environmental quality monitoring will continue to become less expensive to conduct and the resulting data will become, in general, easier to obtain.<sup>30</sup> This trend will increase opportunities for regulators to require reliable monitoring and for citizens to take their own measurements of air quality.<sup>31</sup> The result should provide regulated entities with an increased incentive to invest in consistent compliance to avoid government and citizen enforcement.<sup>32</sup> Advances in technology will also present an opportunity for regulated companies to strengthen relationships with community members by backing up assertions of compliance with verifiable data.<sup>33</sup> And if backed by reliable information about emissions, improved planning should advance attainment of elusive public health goals, which would benefit members of the regulated community as well as the public.<sup>34</sup>

An example of successful use in court of an argument that data is too expensive to gather is a 2008 U.S. Court of Appeals for the District of Columbia Circuit opinion in *Natural Resources Defense Council v. EPA*.<sup>35</sup> The court upheld an EPA decision to calculate risks to public health based on “industry-supplied data” from an American Chemistry Council questionnaire with only a 44% response rate. Why? In part because EPA’s lawyer told the court that it would

[EPA’s] ‘Next Gen’ compliance are (1) a shift toward electronic reporting, and (2) an increase in public access to monitoring data.”).

30. See *supra* note 6. Even when withdrawing earlier guidance that “tended to suggest that ‘innovative enforcement’ tools such as advanced monitoring and independent third-party verification of settlement obligations should routinely be included in Agency settlements,” EPA noted that “use of infra-red cameras by inspectors” has “become institutionalized.” EPA, THE APPROPRIATE USE OF COMPLIANCE TOOLS IN CIVIL ENFORCEMENT SETTLEMENTS I & n.1 (April 3, 2018).

31. See Snyder et al., *supra* note 6, at 11,373 (“Lower-cost and easy-to-use air pollution sensors provide citizens and communities with opportunities to monitor the local air quality that can directly impact their daily lives . . .”).

32. Before the 1990 Amendments kicked in, the Clean Air Act was notoriously difficult for citizens to enforce. See Hon. Henry A. Waxman, *An Overview of the Clean Air Act Amendments of 1990*, 21 ENVTL. L. 1721, 1747 (1991) (noting that “it was generally not possible—short of hiring engineers and conducting monitoring—for citizens to determine compliance status”); Randy E. Brogdon & Mack McGuffey, *Recent Trends in CAA Citizen Suits: Managing Risk in the Serengeti*, NAT. RES. & ENV’T, Winter 2006, at 17 (“Before the CAA Amendments, citizen suits could only be brought for ongoing violations, could only achieve injunctive relief, and could only be proved through expensive, fairly infrequent stack tests or other U.S. Environmental Protection Agency (EPA) reference methods. These barriers seemed to persuade most environmental groups to stalk other game, namely those sources regulated by the Clean Water Act (CWA), under which self-monitoring and reporting requirements provided readily available evidence of violations.”).

33. See EPA Compliance Assurance Monitoring, 62 Fed. Reg. 54,900, 54,907 (preamble to final rule, Oct. 22, 1997) (suggesting that regulated sources, *inter alia*, “could potentially use CAM monitoring data as credible evidence of . . . compliance”).

34. Failure to attain those standards increases the regulatory burden on major sources of air pollution, see, e.g., 42 U.S.C. § 7503(a)(1)(A) (2012) (requiring emission offsets in nonattainment areas), and can expand the definition of major source to encompass smaller entities, 42 U.S.C. §§ 7511a(b)(1)(A)(ii)(I), 7511a(c), 7511a(d), 7511a(e) (2012) (tightening the definition of “major source” depending on attainment status). Because EPA has determined that these standards are “requisite to protect the public health,” *id.* § 7409(b)(1), attainment would have health benefits.

35. 529 F.3d 1077 (D.C. Cir. 2008).

have been “very costly and time-consuming” for the agency to require members of the regulated community to collect data.<sup>36</sup>

Another D.C. Circuit case, *Mississippi Commission on Environmental Quality v. EPA*,<sup>37</sup> provides an example, circa 2015, of the agency ignoring inconvenient air quality data in favor of embracing uncertainty. The court in that case upheld EPA’s decision to classify the Uinta Basin, Utah, as “unclassifiable”—meaning that more than four decades after enactment of the Clean Air Act Amendments of 1970, EPA lacked enough reliable information to determine whether the area meets minimum national health protection standards for air pollution.<sup>38</sup> In this case, air quality data was available from “private companies working under consent decrees [that were] required to operate ozone air-quality monitors in Uinta Basin since 2009.”<sup>39</sup> Data from these monitors showed ozone levels “significantly exceeding” the health protection standard.<sup>40</sup> Noting the “extreme deference” that the D.C. Circuit affords to EPA decisions within the agency’s technical expertise, the court found it was “non-arbitrary” for EPA to use the private data for some purposes but reject it as insufficiently verifiable when making the “unclassifiable” designation.<sup>41</sup>

A third example, from the U.S. District Court for the Eastern District of Louisiana, illustrates the circular reasoning involved when the government uses emission estimates to calculate permit limits, and also uses such estimates to determine whether the regulated entity is complying with its permit. In *Saint Bernard Citizens for Environmental Quality v. Chalmette Refining, L.L.C.*, the permitting authority—the Louisiana Department of Environmental Quality (“LDEQ”)—had based Chalmette Refining’s permit limits for benzene emissions from tanks on “a mathematical formula, known as the AP42 factors.”<sup>42</sup> Over time, however, EPA modified its AP-42 guidance to include consideration of the “temperature of the liquid in [those] tanks.”<sup>43</sup> Following this modification, the refinery’s calculations showed ongoing violations of the permit limits. Based on

---

36. *Id.* at 1084–85.

37. 790 F.3d 138, 154 (D.C. Cir. 2015).

38. 42 U.S.C. § 7407(d)(1)(A)(iii) (2012).

39. 790 F.3d at 154.

40. *Id.*

41. *Id.* at 156. EPA had explained that it “was unable to perform post-collection quality assurance checks on the data.” *Id.* at 155. But EPA had also represented to a court that “the private monitors would provide data that would be ‘reliable and of good quality’” and, based on the data, EPA had “informed the Forest Service that Uinta Basin ozone concentrations ‘exceed the NAAQS’ and are a ‘serious problem.’” *Id.*

42. 399 F. Supp. 2d. 726, 732 (E.D. La. 2005). For information about the AP-42 factors, see EPA Emissions Factors Program Improvements, 74 Fed. Reg. 52,723, 52,724 (advanced notice of proposed rulemaking, Oct. 14, 2009) (“The EPA-approved emissions factors are contained in an online document called the ‘AP-42 Compilation of Air Pollutant Emissions Factors.’”); EPA, COMPILATION OF AIR EMISSIONS FACTORS, AP-42 (5th ed. 1995); see also EPA, EMISSIONS ESTIMATION PROTOCOL FOR PETROLEUM REFINERIES, VERSION 3 (April 2015).

43. 399 F. Supp. 2d. at 732.



the refinery's report of this information, citizen groups sued and a court held the refinery's owner liable for "violations of benzene . . . emissions limits in its permits."<sup>44</sup> In other words, LDEQ issued a permit, Chalmette Refining submitted compliance documentation, and a court made a liability determination all based on shifting estimates—without consideration of *any* direct measurements of emissions from the tanks at issue.<sup>45</sup>

The use of estimates in this example arguably cut against the refinery's operator, because that operator lost a liability ruling.<sup>46</sup> But assuming that the modification improved AP-42's accuracy, the refinery presumably emitted more benzene than LDEQ had authorized for approximately twenty years,<sup>47</sup> to the potential

---

44. *Id.* at 740.

45. The Court noted:

Defendant argues that these violations are . . . an anomaly that has resulted from a clarification in the AP42 factors used to calculate benzene emissions. In essence, defendant argues that the clarified formula caused its emission numbers to go over permit limits even though the actual amount of benzene emitted would have satisfied its permit requirements under the old formula. Defendant has cited no authority for the proposition that plaintiffs may not sue under the Clean Air Act for permit violations that are reported because the method of calculating emissions has changed. Rather, the import of the relevant authority appears to be to the contrary, as courts regularly reject efforts by defendants to rationalize permit violations under federal environmental laws.

*Id.* at 735. Further,

When it decides whether permit violations have occurred, the Court is . . . "not called upon to itself delve into the complex questions of what quantities of pollutants are safe or what various industries can be expected to accomplish in reducing pollution." *Chesapeake Bay Found. [v. Bethlehem Steel Corp.]*, 608 F. Supp. 440, 452 (D. Md. 1985). Arguments about the substantive content of the permit should be submitted to the agency when the permit is issued or in a request for a modification, and they are not appropriate defenses in an enforcement action. *See Nat'l Resources Def. Council, Inc. v. Outboard Marine Corp.*, 692 F. Supp. 801, 821 (N.D. Ill. 1988) (holding that defendant "cannot contest the substantive restrictions of [a Clean Water Act] permit in an enforcement action") . . . Strict enforcement of applicable permits is in accordance with the legislative history of the Clean Air Act . . . This does not mean, however, that defendant's argument that the reported violations do not in fact represent an increased level of benzene emissions is completely irrelevant to these proceedings. This argument could bear on the propriety of granting injunctive relief in this case.

*Id.* at 736.

46. In defense of the result in this case: When the permitting authority proposed to issue the permit for public comment, it presumably proposed a specific emission limit—not a list of parameters. Community members therefore had an opportunity to object to the permit based on that emission limit. These circumstances illustrate that a permit limit is a three-way commitment, between the regulator, the permittee, and the public. *See, e.g., Proffitt v. Lower Bucks Cty. Joint Mun. Auth.*, No. 86-7220, 1987 WL 28350 (E.D. Pa. Dec. 16, 1987), *rev'd on other grounds*, 877 F.2d 57 (3d Cir. 1989) (A consent order could not lawfully modify Clean Water Act permit limits when "the proper regulatory steps were not taken to effectuate the modification. This determination recognizes the value of public participation in the NPDES permit program. The Court will not permit the [enforcement authority] and [the defendant] to contract that public participation away."). Full disclosure: the author was one of the plaintiffs' lawyers in the *St. Bernard Citizens* case.

47. Chalmette Refining filed an affidavit asserting that LDEQ had calculated permit limits for the benzene tanks in the "early to mid-1980s." Def's Opp. to Pls.' Mot. Summ. J., Ex. A, Aff. of Claudine Gorman at 1, ¶ 3 (May 23, 2005). The refinery did not agree to reduce its emissions until November of 2005, effective January 1, 2006. Stipulated Order, *Saint Bernard Citizens for Env'tl. Quality v. Chalmette Refining, L.L.C.*, No. 4-cv-398 (E.D. La. Nov. 16, 2005), ECF No. 79.

detriment of the refinery's neighbors.<sup>48</sup> Because these emissions were unmeasured, the violations went undetected until "late 2002/early 2003," when the refinery claims to have "initiated a comprehensive review of all emission estimating methodologies and assumptions."<sup>49</sup> As technology for direct measurement of emissions and ambient concentrations of pollutants advances, the circular reasoning of basing both emission limits and compliance determinations on unverified<sup>50</sup> estimates should become harder to maintain.

## II. THE FAILURE TO ATTAIN NATIONAL STANDARDS

The lack of reliable emissions information is linked to repeated misfires of "state implementation plans."<sup>51</sup> These plans are EPA-approved regulatory schemes for attaining national standards that are "requisite to protect . . . public health"<sup>52</sup> from pollution of "ambient air"<sup>53</sup> by six "criteria pollutants."<sup>54</sup> For

---

48. Benzene is "a 'known' human carcinogen by all routes of exposure." EPA Carcinogenic Effects of Benzene: An Update, 63 Fed. Reg. 30,495, 30,495 (notice of availability, June 4, 1998). Benzene is "not considered to have thresholds for cancer effects." National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products, 68 Fed. Reg. 1276, 1297 (preamble to proposed rule, Jan. 9, 2003). In other words, there is no benzene concentration above zero that is unambiguously safe to breathe.

49. Aff. of Claudine Gorman, *supra* note 47, at 2, ¶ 6. Upon discovering the problem, the refinery took the position that "LDEQ would not consider these benzene emissions . . . to be permit violations." Def's Opp. to Pls.' Mot. Summ. J. at 10, No. 4-cv-398 (E.D. La. May 23, 2005), ECF No. 65. As the court noted, however, "[f]or entities regulated under the Clean Air Act, '[t]he burden is clearly on the source to do whatever is necessary to assure compliance.'" 399 F. Supp. 2d at 730 (quoting EPA Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Emission Offset Interpretative Ruling, 45 Fed. Reg. 59,874, 59,877 (preamble to final rule, Sept. 11, 1980). Federal regulations mandate, "It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit." 40 C.F.R. § 70.6(a)(6)(ii) (2018).

50. Exactly what it should take to verify an estimating methodology can be a complex issue. See *supra* notes 22–25 and accompanying text (discussing parametric monitoring).

51. State implementation plans (a.k.a. SIPs) are a central mechanism for implementing the Clean Air Act. 42 U.S.C. § 7410 (2012). States submit these plans to EPA for approval. *Id.* § 7410(a)(2), (k)(3). Once EPA approves, states generally take the lead in carrying out the plans. *Id.* § 7410(a)(2)(E) (requiring that state submissions include "necessary assurances that the State . . . will have adequate personnel, funding, and authority . . . to carry out [the plan]"); see also *id.* § 7509(a)(4) (providing for repercussions if EPA "finds that any requirement of an approved plan . . . is not being implemented"). See generally *S. Coast Air Quality Mgmt. Dist. v. EPA*, 882 F.3d 1138, 1143 (D.C. Cir. 2018) ("States must formally adopt SIPs through state notice and comment rulemaking and then submit the SIPs to the EPA for approval . . . . For those areas designated as 'nonattainment,' SIPs must show how the areas will achieve and maintain the relevant [standards].").

52. 42 U.S.C. § 7409(b)(1) (2012). State implementation plans aim to achieve and maintain compliance with "National Ambient Air Quality Standards" (a.k.a. NAAQS). EPA sets and revises these standards to protect public health (primary standards), *id.* § 7409(b)(1), and welfare (secondary standard), *id.* § 7409(b)(2), from the effects of six "criteria pollutants."

53. "Ambient air means that portion of the atmosphere, external to buildings, to which the general public has access." 40 C.F.R. § 50.1(e) (2018). Thus, National Ambient Air Quality Standards are expressed in terms of pollutant concentrations in the outdoor air that people breathe.

54. See *Berks Cty. v. EPA*, 619 Fed. App'x 179, 181 (3d Cir. 2015) ("Section 108 of the CAA directs the Administrator of EPA to identify 'criteria pollutants,' which are those air pollutants the 'emissions

some locations and pollutants, the state implementation plan process “has repeatedly failed to achieve attainment.”<sup>55</sup> Standards for ground-level ozone pollution (smog) pose particular challenges,<sup>56</sup> to the detriment of public health.<sup>57</sup>

---

of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.]” (quoting 42 U.S.C. § 7408(a)(1)(A)). These are the six pollutants for which EPA has prepared air quality criteria under 42 U.S.C. § 7408 (2012). The criteria pollutant program is arguably the heart of the Clean Air Act’s regulatory scheme. *See, e.g., City of Seabrook v. EPA*, 659 F.2d 1349, 1357 (5th Cir. 1981) (discussing the “heart” of the Act’s 1977 Amendments and quoting *Train v. Nat. Res. Def. Council, Inc.*, 421 U.S. 60, 66 (1975), which discussed the “heart” of the 1970 Amendments). This may seem odd, because EPA has set NAAQS for only six criteria pollutants: “[c]arbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide.” *See, e.g., EPA Approval and Promulgation of Air Quality Implementation Plans; Texas*, 82 Fed. Reg. 29,426, 29,427 (preamble to final rule, June 29, 2017). But “particulates” or particulate matter (PM) are small, respirable particles that may comprise a variety of potentially dangerous chemicals. Also, ozone (a.k.a. smog) results from a chemical reaction in the atmosphere involving sunlight, oxygen, volatile organic compounds (VOCs) and oxides of nitrogen (which EPA calls NOx). *See Arnold W. Reitze, Jr., Ozone National Ambient Air Quality Standards: Should Cost Be a Consideration?*, NAT. RES. & ENV’T, Fall 2015 (“Ozone (O<sub>3</sub>) is used as an indicator of photochemical smog, which is a complex mix of many chemicals. To prevent photochemical reactions, nitrogen oxides (NOx) and reactive hydrocarbons known as volatile organic compounds (VOCs), are regulated by the CAA.”). To implement the ozone standard, EPA and states regulate categories of pollutants (VOCs and NOx) that comprise a broad collection of chemicals. *See S. Coast Air Quality Mgmt. Dist.*, 882 F.3d at 1143 (noting that areas that violate the ozone ambient standard are subject to “progressively more stringent emissions controls for ozone precursors, namely, volatile organic compounds (VOCs) and oxides of nitrogen (NOx)”) (quoting *Nat. Res. Def. Council v. EPA*, 571 F.3d 1245, 1250 (D.C. Cir. 2009)). In addition, the technology required to reduce emissions of some chemicals often reduces emissions of other chemicals as well. Professors Livermore and Revesz explain,

[T]o comply with a regulation, actors might need to change a production process. Such a change is likely to produce secondary consequences. In some cases, they will be negative . . . . But in other cases, they will be positive. In order to meet the NAAQS for one pollutant, an electric utility may switch from burning coal to burning natural gas, thereby also reducing its emissions of other pollutants. It is precisely because of this dynamic that the NAAQS produce such significant ancillary benefits.

Michael A. Livermore & Richard L. Revesz, *Rethinking Health-Based Environmental Standards*, 89 N.Y.U. L. REV. 1184, 1250 (2014).

55. Howard Latin, *Regulatory Failure, Administrative Incentives, and the New Clean Air Act*, 21 ENVTL. L. 1647, 1687 (1991).

56. *See, e.g., NAT’L ACAD. OF SCIS., COMM. ON TROPOSPHERIC OZONE FORMATION AND MEASUREMENT ET AL., RETHINKING THE OZONE PROBLEM IN URBAN AND REGIONAL AIR POLLUTION 4* (Kate Kelly ed., 1991) (“Despite the major regulatory and pollution-control programs of the past 20 years, efforts to attain the National Ambient Air Quality Standard for ozone largely have failed . . . . Since passage of the 1970 Clean Air Act amendments, extensive efforts to control ozone have failed three times to meet legislated deadlines for complying with the ozone NAAQS.”); *S. Coast Air Quality Mgmt. Dist. v. EPA*, 472 F.3d 882, 887 (D.C. Cir. 2006) (“In light of such failures, Congress culminated nearly ten years of hearings and debates by enacting the 1990 Amendments to the Act.”), *decision clarified on denial of reh’g*, 489 F.3d 1245 (D.C. Cir. 2007). EPA continues to designate areas as “nonattainment” for the ozone standard. *See In re Ozone Designation Litig.*, 286 F. Supp. 3d 1082, 1088 (N.D. Cal. 2018) (discussing EPA “attainment and unclassifiable designations [that] became effective” on January 16, 2018).

57. EPA has explained,

When ozone exceeds the air quality standards, otherwise healthy people often have reduced lung function and chest pain, and hospital admissions for people with respiratory ailments like asthma

Developing a state implementation plan requires (1) determining ambient concentrations of the criteria pollutant at issue;<sup>58</sup> (2) establishing an inventory of current emissions of that pollutant or its precursors (the “emissions inventory”);<sup>59</sup> (3) using “a mathematical model to predict how much emissions will have to be reduced” to achieve timely compliance with the standard;<sup>60</sup> and (4) “develop[ing] a control strategy that allocates the required emissions reductions among sources in the area, and then design[ing] programs to carry out the strategy.”<sup>61</sup> To obtain federal approval of their implementation plans, states submit “attainment demonstrations” to EPA to show that the plans are “adequate” to achieve attainment.<sup>62</sup> These demonstrations rely on sophisticated modeling techniques<sup>63</sup> applied to the emissions inventory, i.e., the aggregated estimated emissions from all sources in the area.<sup>64</sup>

---

increase; for longer exposures, permanent lung damage can occur . . . . When either ozone or [particulate matter] air quality problems are present, those hardest hit tend to be children, the elderly, and people who already have health problems.

EPA Control of Air Pollution from New Motor Vehicles, 65 Fed. Reg. 6698, 6705 (preamble to final rule, Feb. 10, 2000).

58. See 42 U.S.C. § 7410(a)(2)(B)(i) (2012) (requiring that state implementation plans provide for “monitor[ing], compil[ing], and analyz[ing] data on ambient air quality”); 40 C.F.R. § 58.10(a) (2018) (requiring state “documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations”). “SLAMS” are “state or local air monitoring stations,” including “ambient air quality monitoring sites.” *Id.* § 58.1.

59. See 42 U.S.C. § 7502(c)(3) (2012) (requiring that state implementation plans for areas that have yet to attain the applicable national standard “include a comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in such area”); see also *Sierra Club v. EPA*, 671 F.3d 955, 968 (9th Cir. 2012) (remanding EPA’s approval of a state implementation plan for California’s San Joaquin Valley because the “agency did not adequately address the staleness of its data and availability of more current data before reaching its conclusion”).

60. U.S. OFFICE OF TECH. ASSESSMENT, U.S. CONG., *CATCHING OUR BREATH: NEXT STEPS FOR REDUCING URBAN OZONE* 31 (1989); see also 40 C.F.R. pt. 51 (2018) (Requirements for Preparation, Adoption, and Submittal of Implementation Plans).

61. OFFICE OF TECH. ASSESSMENT, U.S. CONG., *supra* note 60, at 31.

62. See *El Comité Para el Bienestar de Earlimart v. Warmerdam*, 539 F.3d 1062, 1066 (9th Cir. 2008) (defining “an attainment demonstration” as “a technical analysis that through air quality modeling demonstrates that the ‘control measures’ proposed by the SIP will ensure that these nonattainment areas attain the NAAQS by the applicable deadline”) (citing 42 U.S.C. § 7502(c)(1) (2012)); 40 C.F.R. § 51.112(a) (2018) (“Each plan must demonstrate that the measures, rules, and regulations contained in it are adequate to provide for the timely attainment and maintenance of the national standard that it implements.”); see also *Sierra Club*, 671 F.3d at 958–59 (noting that “all SIPs for nonattainment areas [generally] must include . . . an attainment demonstration, developed from the emissions inventory, consisting of a technical analysis to predict whether the area will attain the NAAQS by the deadline and a control strategy for how the State plans to actually meet the standard”).

63. See 40 C.F.R. § 51.112(b)(4) (2018) (states must provide “description[s] of the dispersion models used to project air quality and to evaluate control strategies”); *BCCA Appeal Grp. v. EPA*, 355 F.3d 817, 835 (5th Cir. 2003) (noting that the Clean Air Act requires that “an attainment demonstration [to support approval of a state implementation plan revision to attain the ozone standard] be ‘based on photochemical grid modeling’”) (quoting 42 U.S.C. § 7511a(c)(2)(A) (2000)); see generally EPA, EPA-454/B-07-002, *GUIDANCE ON THE USE OF MODELS AND OTHER ANALYSES FOR DEMONSTRATING ATTAINMENT OF AIR QUALITY GOALS FOR OZONE, PM<sub>2.5</sub>, AND REGIONAL HAZE* (2007).

64. See 42 U.S.C. § 7502(c)(3) (2012).

Too often these estimates are questionable or flat-out wrong.<sup>65</sup> For example monitoring has demonstrated that “both continuous and episodic” emissions of highly reactive volatile organic compounds in the Houston nonattainment area “were greater than accounted for in emission inventories.”<sup>66</sup> Researchers found, “Regulatory agencies and photochemical models rely on . . . self-reported industrial emission rates, which are often outdated, incomplete, or inaccurate.”<sup>67</sup> Not surprisingly, failure to attain the ozone standard in Houston—due to repeated failures of state implementation plans—has been a persistent problem.<sup>68</sup> When demonstrations that a plan will achieve attainment are based on faulty estimates, those plans tend to “adhere to the inviolable law of data analysis, ‘garbage in; garbage out.’”<sup>69</sup>

---

65. OFFICE OF TECH. ASSESSMENT, U.S. CONG., *supra* note 60, at 33 (“An . . . important step in developing an ozone control strategy is to estimate current emissions of ozone precursors and to project future emissions in the absence of additional controls. Both EPA and State participants at the OTA workshops suggested that incomplete or inaccurate emissions inventories were a very serious problem.”).

66. David T. Allen, *Combining Innovative Science and Policy to Improve Air Quality in Cities with Refining and Chemicals Manufacturing: The Case Study of Houston, Texas, USA*, 11 FRONTIERS CHEMICAL SCI. & ENGINEERING 293, 301 (2017). Dr. Allen reached this conclusion after a study that included deploying “instruments on aircraft, on ships, and at fixed ground sites to make extensive air quality measurements” in the Houston, Texas area. *Id.* at 296. Similarly, the U.S. Department of Commerce has explained:

During the 2000 Texas air quality field study (TexAQS2000), NOAA scientists discovered a major and previously unexpected factor that causes the Houston area to experience the highest ozone levels in the United States. Based on NOAA’s discovery that leaks of reactive gases from the many petrochemical refineries in the area are a much larger factor in Houston’s poor air quality than was previously expected, revisions were made to the state’s air quality management plan.

*By Land, Air, Sea and Satellite, NOAA Seeks Improved and It Links to Climate*, U.S. DEP’T OF COM., <https://www.esrl.noaa.gov/news/2006/texaqs/> (last visited Oct. 7, 2018); *see also* D.D. Parrish et al., *Overview of the Second Texas Air Quality Study (TexAQS II) and the Gulf of Mexico Atmospheric Composition and Climate Study (GoMACCS)*, 114 J. GEOPHYSICAL RES. 1, 13 (2009) (“[D]espite decreases in actual HRVOC emissions and some improvements in inventory estimates since the TexAQS 2000 study, the current Houston area emission inventories still underestimate HRVOC emissions by approximately 1 order of magnitude.”); *see also* NAT’L RESEARCH COUNCIL, RETHINKING THE OZONE PROBLEM IN URBAN AND REGIONAL AIR POLLUTION 6 (1991) (“Current emissions inventories significantly underestimate anthropogenic emissions of VOCs. As a result, past ozone control strategies may have been misdirected.”); Ann E. Carlson, *The Clean Air Act’s Blind Spot: Microclimates and Hotspot Pollution*, 65 UCLA L. REV. 1036, 1059 (2018) (“One major concern about emissions from refineries and chemical plants—which emit some of the most toxic pollutants along with conventional NAAQS pollutants—is that there may be systematic underreporting errors in emissions measurements based on measuring techniques the plants use with approval from EPA.”).

67. Ronald C. Henry et al., *Reported Emissions of Organic Gases Are Not Consistent with Observations*, 94 PROC. NAT’L ACAD. SCI. USA 6596, 6596 (1997).

68. *See, e.g.*, EPA Determination of Nonattainment and Reclassification of the Houston-Galveston-Brazoria 2008 8-hour Ozone Nonattainment Area, 81 Fed. Reg. 90,207, 90,210 (preamble to final rule, Dec. 14, 2016) (noting that the “HGB area has been previously designated nonattainment for both the 1979 1-hour ozone standard and the 1997 8-hour ozone standard, receiving a classification of Severe for both NAAQS”).

69. The quotation is from *Mississippi v. EPA*, 744 F.3d 1334, 1352 (D.C. Cir. 2013). The court in that case was discussing EPA risk and exposure assessments, however, not emission estimates. *See also*

## III. CITIZEN ENFORCEMENT, AGENCY FORCING, AND TITLE V PETITIONS

Monitoring data and emission and compliance reports often form the basis for litigation by both government and non-governmental actors. Given the widespread availability of these data, entities regulated under the Clean Air Act cannot afford to be lulled by government promises to go easy on enforcement and oversight.<sup>70</sup> The Act—like many environmental laws<sup>71</sup>—empowers ordinary citizens to prod government into action<sup>72</sup> and to supplement inadequate government enforcement.<sup>73</sup>

---

Craig N. Oren, *Prevention of Significant Deterioration: Control-Compelling Versus Site-Shifting*, 74 IOWA L. REV. 1, 40 (noting that modeling “is akin to weather forecasting and is subject to similar errors”).

70. See *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2445 (2014) (noting that “EPA’s enforcement discretion” cannot protect regulated entities from being “subject to citizen suits” because “the ‘independent enforcement authority’ furnished by the citizen-suit provision cannot be displaced by a permitting authority’s decision not to pursue enforcement”) (quoting 78 Fed. Reg. 12,477, 12,486–87 (2013)). An example of a governmental expression of an intent to go easy is EPA’s 2017 announcement, in the context of new source review applicability determinations, that the agency “does not intend to substitute its judgement for that of the owner or operator by ‘second guessing’ the owner or operator’s emissions projections.” EPA, NEW SOURCE REVIEW PRECONSTRUCTION PERMITTING REQUIREMENTS: ENFORCEABILITY AND USE OF THE ACTUAL-TO-PROJECTED-ACTUAL APPLICABILITY TEST IN DETERMINING MAJOR MODIFICATION APPLICABILITY 8 (Dec. 7, 2017). As this EPA guidance document explains, “The NSR [i.e., new source review] provisions of the [Act] and of the EPA’s implementing regulations require new major stationary sources and major modifications at existing major stationary sources to, among other things, obtain an air quality permit before beginning construction.” *Id.* at 2. These NSR provisions only apply when the project’s “potential to emit” (a.k.a. PTE) will result in an increase in emissions that exceeds significance thresholds. 40 C.F.R. § 51.165(a)(1)(v)(A) (2018) (defining “major modification” as “any physical change in or change in the method of operation of a major stationary source that would result in: (1) A significant emissions increase of a regulated NSR pollutant . . . and (2) A significant net emissions increase of that pollutant from the major stationary source”); see also *id.* § 51.166(a)(7)(iv)(a); § 52.21(a)(2)(iv)(a) (2017). EPA regulations set emissions thresholds (in tons per year) for determining when a source is “major.” *Id.* § 51.165(a)(1)(iv)(A). They also set thresholds for determining whether an emissions increase is significant. *Id.* § 51.165(a)(1)(x). “Regulated NSR pollutant” is defined in 40 C.F.R. § 51.165(a)(1)(xxxvii).

71. See 15 U.S.C. § 2619 (2012) (the citizen enforcement provision of the Toxic Substances Control Act); 16 U.S.C. § 1540(g) (2012) (the Endangered Species Act); 33 U.S.C. § 1365 (2012) (the Clean Water Act); 33 U.S.C. § 1415(g) (2012) (the Marine Protection, Research, and Sanctuaries Act); 33 U.S.C. § 1515 (2012) (the Deepwater Port Act); 42 U.S.C. § 300j-8 (2012) (the Safe Drinking Water Act); 42 U.S.C. § 4911 (2012) (the Noise Control Act); 42 U.S.C. § 6972 (2012) (the Resource Conservation and Recovery Act); 42 U.S.C. § 9659 (2012) (the Comprehensive Environmental Response, Compensation, and Liability Act); 42 U.S.C. § 11046 (2012) (the Emergency Planning and Community Right-to-Know Act); 30 U.S.C. § 1270 (2012) (the Surface Mining Control and Reclamation Act); 43 U.S.C. § 1349 (2012) (the Outer Continental Shelf Lands Act); 49 U.S.C. § 60121 (2012) (the Hazardous Liquid Pipeline Safety Act).

72. *Proffitt v. Rohm & Haas*, 850 F.2d 1007, 1011 (3d Cir. 1988) (Congress intended citizen enforcement “to both goad the responsible agencies to more vigorous enforcement of the anti-pollution standards and, if the agencies remained inert, to provide an alternative enforcement mechanism.”) (quoting *Baughman v. Bradford Coal Co.*, 592 F.2d 215, 218 (3d Cir. 1979)).

73. *Gwaltney of Smithfield, Ltd. v. Chesapeake Bay Found., Inc.*, 484 U.S. 49, 60 (1987) (explaining that “the citizen suit is meant to supplement rather than to supplant governmental action”).

Beginning with the Clean Air Act Amendments of 1970, the Act has provided for “citizen suits.”<sup>74</sup> It authorizes “any person” to file suit in federal court “against any person” who is violating or has repeatedly violated the Act.<sup>75</sup> This provision essentially allows ordinary citizens to step into the shoes of government enforcers—acting as “private attorneys general.”<sup>76</sup> The Act’s citizen-suit provision reflects a congressional concern that governmental “initiative in seeking enforcement under the Clean Air Act has been restrained.”<sup>77</sup> Congress thus offered citizens an opportunity “to participate in the effort to prevent and abate air pollution.”<sup>78</sup> The D.C. Circuit held that the Act’s legislative history reflects “a deliberate choice by Congress to widen citizen access to the courts, as a supplemental and effective assurance that the Act would be implemented and enforced.”<sup>79</sup> The Second Circuit held, “In enacting [the Clean Air Act’s citizen enforcement provision], Congress made clear that citizen groups are not to be treated as nuisances or troublemakers but rather as welcomed

---

74. The term “citizen” in this context is not completely accurate. See M. Isabel Medina, *Exploring the Use of the Word “Citizen” in Writings on the Fourth Amendment*, 83 Ind. L.J. 1557, 1567 (2008) (“Substitution of the word ‘citizen’ for the word ‘person’ or ‘individual’ erects a barrier between classes of persons . . .”). Environmental protection benefits not only citizens, but anyone who happens to reside in, or visit, the United States, as well as corporate, governmental and other interests. Antipollution laws’ citizen-suit provisions are not limited to citizens but generally authorize suits by any “person” with legal standing. See 42 U.S.C. § 7604(a) (2012). The term “citizen” or “American,” however, can pack a rhetorical punch that the phrase “person having an interest” seems to lack. See, e.g., 116 CONG. REC. 32,901 (Sept. 21, 1970) (statement of Sen. Muskie) (“This bill states that all Americans in all parts of the Nation should have clean air to breathe . . .”).

75. 42 U.S.C. § 7604(a) (2012). Among other things, the provision allows lawsuits “against any person who proposes to construct or constructs any new or modified major emitting facility without a [required] permit or who is alleged to have violated (if there is evidence that the alleged violation has been repeated) or to be in violation of any condition of such permit.” *Id.* Congress amended this provision in 1990 to clarify that the Act authorizes citizen enforcement for repeated violations even if those violations are in the past. See *Env’t Tex. Citizen Lobby, Inc. v. ExxonMobil Corp.*, 824 F.3d 507, 529 n.18 (5th Cir. 2016) (“This amendment has been viewed as a direct response to [*Gwaltney of Smithfield, Ltd. v. Chesapeake Bay Found., Inc.*, 484 U.S. 49 (1987)], and indeed, neither party in this case disputes that the ‘to have violated’ language authorizes citizen suits based on wholly past violations of the CAA.”) (citing *Atl. States Legal Found. v. United Musical Instruments, U.S.A., Inc.*, 61 F.3d 473, 477 (6th Cir. 1995) as acknowledging that Congress amended the Act “explicitly to allow citizen suits for purely historical violations . . .”).

76. See *Bennett v. Spear*, 520 U.S. 154, 165 (1997) (discussing analogous citizen enforcement authority in the Endangered Species Act, 16 U.S.C. § 1540(g)(1) (2012)). Dissenting in *Friends of the Earth, Inc. v. Laidlaw Environmental Services (TOC), Inc.*, Justice Scalia objected to “place[ing] the immense power of suing to enforce the public laws in private hands,” 528 U.S. 167, 215 (2000) (Scalia, J., dissenting).

77. See *Pennsylvania v. Del. Valley Citizens’ Council for Clean Air*, 478 U.S. 546, 560 (1986) (citations and internal quotation marks omitted); see also 116 CONG. REC. 32,901 (Sept. 21, 1970) (statement of Sen. Muskie) (“[N]o level of government has implemented the existing law to its full potential. On all levels, the air pollution control program has been underfunded and undermanned.”).

78. *Del. Valley Citizens’ Council for Clean Air*, 478 U.S. at 560 (citations and internal quotation marks omitted).

79. *Nat. Res. Def. Council, Inc. v. Train*, 510 F.2d 692, 700 (D.C. Cir. 1974, as modified 1975).

participants in the vindication of environmental interests.”<sup>80</sup>

Potentially available remedies in citizen enforcement cases include mandatory court orders,<sup>81</sup> civil penalties of up to \$95,284 per day per violation,<sup>82</sup> and an award of attorney and expert witness fees.<sup>83</sup> Payments of civil penalties go to the U.S. Treasury,<sup>84</sup> except that the court has discretion to apply up to \$100,000 in civil penalties to “beneficial mitigation projects which . . . enhance the public health or the environment.”<sup>85</sup>

There are, of course, limitations. Citizen enforcers must prove their “standing to sue.”<sup>86</sup> Diligent state or federal prosecution in court precludes citizen

80. *Friends of the Earth v. Carey*, 535 F.2d 165, 172 (2d Cir. 1976); *see also Del. Valley Citizens' Council for Clean Air*, 478 U.S. at 560 (“Congress . . . urged the courts to ‘recognize that in bringing legitimate actions under this section citizens would be performing a public service . . . .’”) (citation omitted).

81. 42 U.S.C. § 7604(a) (2012).

82. 42 U.S.C. § 7413(b) (2012) provides for maximum penalties of “\$25,000 per day for each violation,” but EPA adjusts this amount for inflation under amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990. Pub. L. 114-74 (2015) (set out as a note under 28 U.S.C. § 2461 (2012)); *see also* EPA Civil Monetary Penalty Inflation Adjustment Rule, 82 Fed. Reg. 3633, 3634 (preamble to final rule, Jan. 12, 2017) (noting that the adjustment’s purpose “is to maintain the deterrent effect of civil penalties by translating originally enacted statutory civil penalty amounts to today’s dollars”). As of this writing, the daily maximum per Clean Air Act violation is \$95,284. 40 C.F.R. § 19.4 (2017).

83. 42 U.S.C. § 7604(d) (2012).

84. *Id.* § 7604(g)(1).

85. *Id.* § 7604(g)(2). The Court’s authority to direct money to mitigation projects can bolster plaintiffs’ standing-to-sue arguments. A claim for relief that is limited to civil penalties for wholly past violations arguably does not offer sufficient redress of plaintiffs’ injuries to meet the Court’s standing-to-sue test. *Steel Co. v. Citizens for a Better Env’t*, 523 U.S. 83, 106–07 (1998). The *Steel Co.* Court explained that—because civil penalties are “payable to the United States Treasury” rather than to the plaintiffs—a plaintiff requesting only penalties for wholly past violations “seeks not remediation of its own injury . . . but vindication of the rule of law—the ‘undifferentiated public interest’ in faithful execution of [the law].” 523 U.S. at 106 (quoting *Lujan v. Def’s. of Wildlife*, 504 U.S. 555, 577 (1992)). “This does not suffice.” *Id.* Later, however, the Court limited this *Steel Co.* holding to cases in which the violations stop before the Plaintiff files suit. *Friends of the Earth, Inc. v. Laidlaw Environmental Services (TOC), Inc.*, 528 U.S. at 167, 169 (2000) (noting that *Steel Co.* “did not address standing to seek penalties for violations ongoing at the time of the complaint . . .”). In any event, 42 U.S.C. § 7604 (g)(2) allows plaintiffs to ask the court to apply some penalties to “beneficial mitigation projects” to redress injury to the affected community, including the plaintiffs. Rather than mere vindication of the rule of law, such a remedy can provide redress to specific plaintiffs’ injuries.

86. *Laidlaw*, 528 U.S. at 181. An organization has “standing” to bring an environmental citizen suit “on behalf of its members when [the] members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization’s purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit.” *Id.* Individual members have standing to sue when (1) they have suffered an actual or threatened “injury in fact” that is (2) “fairly traceable to the challenged action,” and (3) “it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision.” *See id.* at 180–81. In general, individuals prove injury by showing that “they use the affected area and are persons for whom the aesthetic and recreational values of the area will be lessened by the challenged activity.” *Id.* at 183 (internal quotation marks and citation omitted).

Standing to sue is rooted in Article III of the U.S. Constitution. Under Article III, Section 2, the judicial power extends only to “Cases” and “Controversies,” and—according to the U.S. Supreme



enforcement suits.<sup>87</sup> Government settlements may moot or preclude such suits.<sup>88</sup> The Clean Air Act provides for a “permit shield” which allows states to issue permits that, under some circumstances, “provide that compliance with the permit shall be deemed compliance with other applicable provisions of [the Act] that relate to the permittee.”<sup>89</sup> Citizen enforcement, however, remains a powerful tool.<sup>90</sup>

The Act also provides for “agency forcing.”<sup>91</sup> This provision allows people

Court—there is no case or controversy unless the plaintiff meets the Court’s test for standing. *See Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560 (1992) (holding that “the core component of standing is an essential and unchanging part of the case-or-controversy requirement of Article III”). Accordingly, if the plaintiff does not have standing, the Court has no subject matter jurisdiction. *Whitmore v. Arkansas*, 495 U.S. 149, 154–55 (1990) (holding that courts may only consider the merits of cases when “the person seeking to invoke the jurisdiction of the court” establishes standing to sue because “Article III . . . gives the federal courts jurisdiction over only ‘cases and controversies,’ and the doctrine of standing serves to identify those disputes which are appropriately resolved through the judicial process”).

87. 42 U.S.C. § 7604(b)(1)(B) (2012); *see Louisiana Env’tl. Action Network v. City of Baton Rouge*, 677 F.3d 737, 749 (5th Cir. 2012) (holding that the “diligent prosecution” bar is a nonjurisdictional limitation on citizen suits) (internal quotations omitted).

88. The circuits are not on the same page with respect to how government settlements affect the rights of citizens to pursue litigation against alleged violators. *See Env’tl. Conservation Org. v. City of Dallas*, 529 F.3d 519, 528, 530–31 (5th Cir. 2008) (holding that an EPA consent decree mooted a citizen suit where the plaintiff could not prove that there is a “realistic prospect that the violations alleged in its complaint will continue” after the “consent decree has been fully implemented in accordance with reasonable timetables”); *but see City of Baton Rouge*, 677 F.3d at 745 (holding that an EPA consent decree did not moot a *subsequently filed* citizen suit); *see also Texans United for a Safe Econ. Educ. Fund v. Crown Cent. Petroleum Corp.*, 207 F.3d 789, 794 (5th Cir. 2000) (allowing a citizen suit to continue after a violator signed an Agreed Order with the state enforcement authority when summary judgment evidence supported the premise that the order “does not go far enough to ensure that [the defendant] will not violate federal emissions standards in the future”); *but see EPA v. City of Green Forest, Ark.*, 921 F.2d 1394, 1403–04 (8th Cir. 1990) (holding that “citizens’ claims brought prior to a government action are properly dismissed when a consent decree is entered in a later-filed EPA action” pursuant to the doctrines of “*parens patriae*” and “*res judicata*,” i.e., because the government, as sovereign, represents its citizens, those citizens are bound as privies to government consent decrees); *see also Friends of Milwaukee’s Rivers v. Milwaukee Metro. Sewerage Dist.*, 382 F.3d 743, 759 (7th Cir. 2004) (holding that *res judicata* only applies if the government’s consent decree qualifies as “a diligent prosecution,” in other words if it is “‘capable of requiring compliance’ with the Act and is ‘calculated to do so,’” in which case “the citizens’ suit will be barred”) (quoting Jeffrey G. Miller, *Overlooked Issues in the ‘Diligent Prosecution’ Citizen Suit Preclusion*, 10 WID. L. SYMP. J. 63, 84, 85 (2003)).

89. 42 U.S.C. § 7661c(f) (2012).

90. *See, e.g., Env’t Tex. Citizen Lobby, Inc. v. ExxonMobil Corp.*, No. CV H-10-4969, slip op. at \*31, 2017 WL 2331679 (S.D. Tex. Apr. 26, 2017) (awarding \$19,951,278 in civil penalties after a remand in *Env’t Tex. Citizen Lobby, Inc. v. ExxonMobil Corp.*, 824 F.3d 507 (5th Cir. 2016)), *appeal docketed*, No. 17-20545 (5th Cir. Aug 28, 2017).

91. 116 CONG. REC. 33,102 (Sept. 22, 1970) (staff memorandum in the record as per statement of Sen. Muskie) (“The concept of compelling bureaucratic agencies to carry out their duties is integral to democratic society . . . . The concept in the bill is that administrative failure should not frustrate public policy and that citizens should have the right to seek enforcement where administrative agencies fail.”); E. Donald Elliott, *U.S. Environmental Law in Global Perspective: Five Do’s and Five Don’ts from Our Experience*, 5 NAT’L TAIWAN U. L. REV. 143, 153 (2010) (“We sometimes find . . . that agencies might be reluctant to implement or enforce the law . . . because of the fear of political backlash. In response,

with constitutional standing<sup>92</sup> to compel EPA to “perform any act or duty under this chapter which is not discretionary.”<sup>93</sup> Nondiscretionary duties are “legally required acts or duties of a specific and discrete nature that precludes broad agency discretion.”<sup>94</sup> Thus, Congress generally imposes these duties via commands phrased in terms of “shall,” backed by statutory deadlines.<sup>95</sup> The Act allows citizens to enforce against specific violations of such duties, but does not provide a remedy to a general failure to comply with congressional deadlines.<sup>96</sup> The Clean Air Act, however, is replete with nondiscretionary duties.<sup>97</sup> In addition,

---

the Congress eventually developed something that my colleague Bruce Ackerman at Yale named the ‘Agency Forcing Statute.’” (citing BRUCE A. ACKERMAN & WILLIAM T. HASSLER, *CLEAN COAL/DIRTY AIR* (1981)); Daniel P. Selmi, *Jurisdiction to Review Agency Inaction Under Federal Environmental Law*, 72 *IND. L.J.* 65, 68 (1996) (noting the importance of environmental laws’ “empowerment of citizens to force a recalcitrant EPA to act”).

92. In addition to constitutional standing, discussed in note 86, *supra*, courts sometimes require plaintiffs to demonstrate “prudential standing,” for example because their injury falls within the “zone of interest” that Congress intended to protect. *See* *Envtl. Integrity Project v. McCarthy*, 139 *F. Supp.* 3d 25, 37–38 n.6 (D.D.C. 2015) (discussing “‘zone of interest’ and ‘causation’ tests previously characterized as ‘prudential standing’”). Clean Air Act citizen suits, however—including agency-forcing suits—require only constitutional standing since they authorize suit by “any person.” *See* *Bennett v. Spear*, 520 *U.S.* 154, 164–66 (1997) (holding that Congress removed the zone-of-interests barrier to suits brought under the Endangered Species Act by including a citizen-suit provision that authorizes “any person” to sue).

93. 42 *U.S.C.* § 7604(a)(2) (2012). The Act, however, “does not allow district courts to address the content of EPA’s conduct, issue substantive determinations of its own, or grant other forms of declaratory relief.” *Sierra Club v. Browner*, 130 *F. Supp.* 2d 78, 90 (D.D.C. 2001). Instead, courts “can only order EPA to take nondiscretionary actions required by the statute itself.” *Id.*

94. *Murray Energy Corp. v. EPA*, 861 *F.3d* 529, 535 (4th Cir. 2017).

95. *See* *Zen-Noh Grain Corp. v. Jackson*, 943 *F. Supp.* 2d 657, 661 (E.D. La. 2013) (holding that “nondiscretionary duties are statutory obligations with an explicit deadline for the EPA to act”).

96. Thus, the D.C. District Court has denied “far-reaching injunctive relief that would force the EPA to perform future nondiscretionary duties in a timely fashion.” *N.Y. Pub. Interest Research Grp., Inc. v. Whitman*, 214 *F. Supp.* 2d 1, 1 (D.D.C. 2002). The court explained, “[i]n effect, plaintiffs ask this Court to intrude upon the agency’s discretionary domain to organize its operations with respect to Title V petitions; however, the Court lacks jurisdiction to provide such a remedy. ‘[T]he district court has jurisdiction, under Section 304, to compel the Administrator to perform purely ministerial acts, not to order the Administrator to make particular judgmental decisions.’” *Id.* at 3 (quoting *Envtl. Def. Fund v. Thomas*, 870 *F.2d* 892, 899 (2d Cir. 1989)).

97. *See, e.g., In re Ozone Designation Litig.*, 286 *F. Supp.* 3d 1082, 1085 (N.D. Cal. 2018) (holding that because EPA does “not dispute that the Administrator violated [42 *U.S.C.*] § 7407(d)(1)(B)(i) by failing to promulgate by October 1, 2017 initial area air quality designations under the 2015 ozone NAAQS for all areas of the country . . . summary judgment in favor of Plaintiffs is appropriate”); *N.Y. Pub. Interest Research Grp., Inc. v. Whitman*, 214 *F. Supp.* 2d at 3 (noting that EPA “appear[s] to have conceded liability [with respect to violation of the sixty-day deadline for granting or denying petitions to object to state-issued permits] as to the petitions that are still outstanding”); *Sierra Club v. Browner*, 130 *F. Supp.* 2d at 90–92 (enforcing “EPA’s duty to determine, pursuant to 42 *U.S.C.* § 7511(b)(2)(A), whether the St. Louis [nonattainment area] failed to meet the ozone standard by its attainment date”); *Sierra Club v. Johnson*, 444 *F. Supp.* 2d 46, 49 (D.D.C. 2006) (ruling on “three mandatory duties imposed on EPA by the 1990 Clean Air Act amendments, which the agency admits it has failed to discharge fully”). The *Sierra Club v. Johnson* court ruled:

The history of regulation under [42 *U.S.C.* §§ 7412(c) and 7511b(e)] shows that EPA has fulfilled its statutory duties only when forced by litigation to do so. By all appearances, EPA’s failure to

the Act's citizen-suit provision empowers citizens to seek to compel agency action that is "unreasonably delayed," even when there is no statutory deadline.<sup>98</sup>

Finally, the Clean Air Act provides a unique mechanism for citizen involvement in the permitting process by authorizing "any person" to petition EPA for an objection to a state-issued "Title V"<sup>99</sup> permit and by requiring an EPA response.<sup>100</sup> Assuming that the petition is timely<sup>101</sup> and is based on objections raised during the state administrative process,<sup>102</sup> the Act commands that EPA "grant or deny such petition within 60 days after the petition is filed."<sup>103</sup> Further,

---

promulgate the required standards owes less to the magnitude of the task at hand than to "the footdragging efforts of a delinquent agency," *NRDC v. Train*, 510 F.2d [692,] 713 [(D.C. Cir. 1974)], or an attempt by EPA to prioritize its own regulatory agenda over that set by Congress in the 1990 Clean Air Act amendments. It is emphatically not within an agency's authority to set regulatory priorities that clearly conflict with those established by Congress.

*Id.* at 58.

98. 42 U.S.C. § 7604(a) (2012); *Zen-Noh Grain Corp.*, 943 F. Supp. 2d at 661 ("Unreasonable delay claims concern statutory obligations that give the EPA discretion over when it will act.").

99. Title V of the Clean Air Act created a state-implemented federal operating permit program. 42 U.S.C. §§ 7661–7661f (2012). Until then, the Act did not provide for one overarching permit that would contain all requirements applicable to a source of pollution. *See* Hon. Henry A. Waxman, *An Overview of the Clean Air Act Amendments of 1990*, 21 ENVTL. L. 1721, 1805 (1991) (noting that before the 1990 amendments, the federal Clean Air Act required permits in limited circumstances). Most states, however, already had requirements for operating permits "of varying stringency." ARNOLD W. REITZE, JR., *STATIONARY SOURCE AIR POLLUTION LAW* 227 (Envtl. Law Inst. 2005).

100. 42 U.S.C. § 7661d(b)(2) (2012).

101. First, EPA has 45 days to object on its own "after receiving a copy of the proposed permit." *Id.* § 7661d(b)(1). If the agency fails to object during this period, citizens have "60 days after the expiration of the 45-day review period" to petition for an EPA objection. *Id.* § 7661d(b)(2). Because the Act does not provide for public notice of EPA's receipt of proposed permits or of the expiration of EPA's 45-day review periods, citizens wishing to submit timely petitions must pay careful attention.

102. *Id.* § 7661d(b)(2) ("The petition shall be based only on objections . . . raised with reasonable specificity during the [state] public comment period . . . (unless the petitioner demonstrates . . . that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period)."). Because EPA's 45-day period (and thus the citizen petitioner's 60-day period for action) is triggered by EPA's receipt of a "proposed permit," it is possible that a petition may be due to EPA before expiration of the state public comment period.

103. *Id.* EPA seldom complies with this deadline. *See* N.Y. Pub. Interest Research Grp., Inc. v. Whitman, 214 F. Supp. 2d 1, 2 (D.D.C. 2002) ("While there can be no doubt that timely responses to citizen suits . . . further the public good, the Court is constrained in its ability to remedy the systemic problem that plaintiffs have identified of EPA failing to respond within 60 days."). Citizens may sue EPA under 42 U.S.C. § 7604(a)(2) (after appropriate notice) for EPA's failure "to perform any act or duty under this chapter which is not discretionary," i.e., failure to grant or deny the petition within 60 days. So far, EPA has usually negotiated a schedule for ruling on the petition. Generally, plaintiffs tend to agree to schedules longer than 60 days because (1) it would most likely take more than 60 days to obtain a district court judgment, and (2) it might be poor tactics to push EPA to decide before the agency has had time to analyze the petition. Of course, an agreed-upon schedule for EPA to grant or deny a petition does not resolve the merits of the petition. If the citizens are unhappy with the substance of EPA's response, their remedy is to challenge that response in federal appellate court. 42 U.S.C. § 7661d(b)(2) (2012). The settlement process described above, however, is subject to change. An EPA guidance document states,

In the past, outside groups have sued EPA for failing to act by a deadline prescribed under the law. EPA would then sign a consent decree agreeing to take a particular action ahead of other Agency actions that the public and other public officials considered to be higher priorities. We should not

EPA “shall” object if the petitioner “demonstrates . . . that the permit is not in compliance with the [Act’s] requirements.”<sup>104</sup> If EPA fails to object, the petitioner (assuming he, she, or it has standing to sue) may appeal in the applicable U.S. Court of Appeals.<sup>105</sup> If EPA issues an objection, however, the permittee may not appeal (at least not immediately).<sup>106</sup> Once the state or EPA issues a permit or permit modification to conform to the objection, however, the permittee may appeal that decision.<sup>107</sup>

#### IV. THE USE OF “CREDIBLE EVIDENCE” TO PROVE VIOLATIONS

Before the 1990 Clean Air Act Amendments,<sup>108</sup> defendants in Clean Air Act citizen suits had a fighting chance to limit evidence of violations to data from “reference test methods” that their permits or state regulations specified.<sup>109</sup> State-issued Clean Air Act regulations and permits often specified a particular method of determining compliance.<sup>110</sup> In *United States v. Kaiser Steel Corp.*, the district court limited evidence for proving an opacity violation to such a method.<sup>111</sup> Rejecting this approach, U.S. District Court Judge Lewis T. Babcock explained:

I am concerned that the owner or operator of the stationary source has no duty to permit the representative of the citizen group onto its premises. If I accept defendants’ argument that only Method 9 observations may be used to prove violations of the Clean Air Act, it follows that the alleged violator is afforded a large measure of control over enforcement of the Act by citizens groups. The alleged

---

readily cede our authority and discretion by letting the federal judiciary dictate the priorities of the Administration and the Agency.

EPA, ADHERING TO THE FUNDAMENTAL PRINCIPLES OF DUE PROCESS, RULE OF LAW, AND COOPERATIVE FEDERALISM IN CONSENT DECREES AND SETTLEMENT AGREEMENTS 4 (Oct. 16, 2017).

104. 42 U.S.C. § 7661d(b)(2) (2012). Thus, it is the petitioner’s burden to prove in the petition that the permit is illegal. *See, e.g.*, *ExxonMobil Corp. Baytown Olefins Plant*, Petition No. VI-2016-12 at 3 (March 1, 2018) (EPA order) (arguing that “CAA § 505(b)(2) contains both a ‘discretionary component,’ to determine whether a petition demonstrates to the Administrator that a permit is not in compliance with the requirements of the Act, and a nondiscretionary duty to object where such a demonstration is made”).

105. 42 U.S.C. § 7661d(b)(2) (2012) (“Any denial of such petition shall be subject to judicial review under section 7607 of this title.”).

106. *Id.* § 7661d(c) (“No objection shall be subject to judicial review until the Administrator takes final action to issue or deny a permit under this subsection.”); *see also Louisiana Dep’t of Env’tl. Quality v. EPA*, 730 F.3d 446, 450 (5th Cir. 2013) (holding that the appellate court “lacks subject matter jurisdiction to review the [EPA] Objection”).

107. 42 U.S.C. § 7661d(c) (2012).

108. Pub. L. No. 101-549, 104 Stat. 2399.

109. *See Clean Air Implementation Project v. EPA*, 150 F.3d 1200, 1205 (D.C. Cir. 1998).

110. *See Sierra Club v. Tenn. Valley Auth.*, 430 F.3d 1337, 1351 (11th Cir. 2005) (“The command is that only Method 9 data may be used to determine opacity violations, and that command governed until Alabama’s credible evidence rule.”); *see also Appalachian Power Co. v. EPA*, 208 F.3d 1015, 1023 (D.C. Cir. 2000) (noting that for many petitioners “the applicable standard specifies EPA Method 9 (a visual observation method) as the compliance method”) (internal quotation marks and citation omitted).

111. No. CV 82-2623-IH, 1984 WL 186690, at \*4 (C.D. Cal. Feb. 8, 1984); *see also REITZE, supra* note 99, at 266 & nn.203–07.

violator can either deny access to the citizen group or it can permit the Method 9 inspection at a time when it can meet the emission standard. Such a result would be contrary to the Act's purpose and undermine congressional intent.<sup>112</sup>

In the 1990 Clean Air Act Amendments, Congress specified that a violation's duration could be "established by any credible evidence (including evidence other than the applicable test method)."<sup>113</sup> In 1997, EPA followed up with its "credible evidence rule" to remove "what some have construed to be a regulatory bar to the admission of non-reference test data to prove a violation of an emission standard."<sup>114</sup> EPA has explained, "a title V permit may not preclude any entity, including the EPA, citizens or the state, from using any credible evidence to enforce emissions standards, limitations, conditions, or any other provision of a title V permit."<sup>115</sup>

The credible evidence rule, however, was not necessarily effective in every state until each state with a contrary rule amended its program to allow proof of a violation by any credible evidence.<sup>116</sup> Further, the D.C. Circuit left open potential defenses based on challenges to the rule in *Clean Air Implementation Project v. EPA*.<sup>117</sup> In that 1998 case, the court determined "it would be premature" to resolve the challengers' arguments that use of the rule "alters" the underlying standards and that the rule "illegally converts 'periodic' standards to 'continuous' ones."<sup>118</sup> As states have amended permits in light of the credible evidence rule, however, the utility of such arguments presumably has diminished (since, in general, an amended permit may legally alter applicable standards). Because the Clean Air Act limits the terms of permits to five years, states by now should have replaced every permit that was in place when the court decided *Clean Air Implementation Project*.<sup>119</sup>

112. *Sierra Club v. Pub. Serv. Co. of Colo.*, 894 F. Supp. 1455, 1460 (D. Colo. 1995).

113. 42 U.S.C. § 7413(e)(1) (2012).

114. EPA Credible Evidence Revisions, 62 Fed. Reg. 8314, 8315 (preamble to final rule, Feb. 24, 1997) (rule codified, *inter alia*, at 40 C.F.R. § 51.212(c)).

115. *Sw. Elec. Power Co. H.W. Pirkey Power Plant Harrison Cty.*, Petition No. VJ-2014-01, 2016 WL 1664552, at \*14 (Feb. 3, 2016) (EPA Order) (citing EPA Compliance Assurance Monitoring, 62 Fed. Reg. 54,900, 54,907–08 (preamble to final rule, Oct. 22, 1997)).

116. *See Sierra Club v. Tenn. Valley Auth.*, 430 F.3d 1337, 1351 (11th Cir. 2005) ("COMS [i.e., continuous opacity monitor system] data cannot be used to determine whether pre-May 20, 1999 emissions violated the opacity limitation, at least not so far as Alabama's regulations are concerned.").

117. 150 F.3d 1200, 1205–06 (D.C. Cir. 1998).

118. *Id.* *See* Robert M. Howard, Patricia Guerrero, & Jason M. Ohta, *Test Methods Matter: Representative Sampling and Clean Air Act Test Methods Can Survive EPA's Credible Evidence Rule*, 25 J. ENVTL. L. & LITIG. 37, 53 (2010) ("Post-1997 Credible Evidence Rule Case Law Is Mixed for Industry and Enforcement.").

119. 42 U.S.C. § 7661a(b)(5)(B) (2012) (providing that state programs must provide for issuance of permits "for a fixed term, not to exceed 5 years"). In the real world, Clean Air Act permits are often effective for somewhat longer than five years. 40 C.F.R. § 70.4(b)(10) (2018) requires that state Title V permit programs include:

A requirement under State law that, if a timely and complete application for a permit renewal is submitted, consistent with § 70.5(a)(2), but the State has failed to issue or deny the renewal permit before the end of the term of the previous permit, then: (i) The permit shall not expire until the

### V. MONITORING SUFFICIENT TO ASSURE PERMIT COMPLIANCE

The Clean Air Act's Title V operating permit program provides opportunities for regulators to require actual measurement of emissions and/or employment of proven parametric monitoring techniques on a facility-by-facility basis. Congress added Title V in the 1990 Clean Air Act Amendments in part to allow "better tracking of compliance."<sup>120</sup> The drafters based this new program on "essential features of the Clean Water Act's permit program" which Congress believed had "successfully imposed pollution controls on large numbers of sources in a readily enforceable and administratively flexible manner."<sup>121</sup>

Among the essential features of the Clean Water Act's permit program is its reliance on self-monitoring and self-reporting of violations. For years, that program had generated data to fuel robust citizen enforcement.<sup>122</sup> In contrast, under the pre-1990 Clean Air Act, "in some cases, the source [was] not required under the SIP [i.e., state implementation plan] or other Clean Air Act provisions to submit periodic compliance reports to EPA or the States. As a result, there [was] no ready way to identify the extent of a source's compliance and noncompliance."<sup>123</sup> Congress intended Title V to "enable the State, EPA, and the public to better determine the requirements to which the source is subject, and whether the source is meeting those requirements."<sup>124</sup> This would spark "[b]etter enforcement . . . for all air pollution requirements."<sup>125</sup>

The key Title V provision in this regard requires that "[e]ach permit issued under this subchapter shall set forth inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions."<sup>126</sup> EPA implementation of this provision has had a tortured history. The provision has the potential, however, to help fill the gap left by EPA's failure to fully implement the monitoring provisions of 42 U.S.C. § 7414(a).<sup>127</sup>

First, under the Clinton administration, EPA interpreted 42 U.S.C. § 7661c(c) as requiring that "[a]ll title V permits . . . contain sufficient monitoring, including periodic monitoring, to assure compliance with the applicable requirements in

---

renewal permit has been issued or denied and any permit shield that may be granted pursuant to § 70.6 (f) may extend beyond the original permit term until renewal; or (ii) All the terms and conditions of the permit including any permit shield that may be granted pursuant to § 70.6(f) shall remain in effect until the renewal permit has been issued or denied.

See David P. Novello, *The New Clean Air Act Operating Permit Program: EPA's Final Rules*, 23 *Envtl. L. Rep.* (Envtl. Law Inst.) 10080, 10085 (1993).

120. See SEN. REP. NO. 101-228 (1990), *reprinted in* 1990 U.S.C.C.A.N. 3385, 3729.

121. *Id.* at 3730.

122. See Brogdon & McGuffey, *supra* note 32.

123. 1990 U.S.C.C.A.N. at 3730.

124. *Id.*

125. *Id.*

126. 42 U.S.C. § 7661c(c) (2012).

127. See *supra* notes 10–17 and accompanying text.

the permit.”<sup>128</sup> Thus, according to this (now superseded) guidance, “Periodic monitoring is required for each emission point at a source subject to title V of the Act that is subject to an applicable requirement, such as a Federal regulation or a SIP emission limitation.”<sup>129</sup> Moreover, “Where the applicable requirement does not contain adequate monitoring, reporting, or record keeping to provide a reasonable assurance of compliance for the anticipated range of operations, periodic monitoring must be added to fulfill the requirements of 40 C.F.R. sections 70.6 and 71.6 [which implement 42 U.S.C. § 7661c].”<sup>130</sup>

In a 2000 case, *Appalachian Power Co. v. EPA*, the D.C. Circuit set aside this guidance, noting:

The phenomenon we see in this case is familiar. Congress passes a broadly worded statute. The agency follows with regulations containing broad language, open-ended phrases, ambiguous standards and the like. Then as years pass, the agency issues circulars or guidance or memoranda, explaining, interpreting, defining and often expanding the commands in the regulations. One guidance document may yield another and then another and so on. Several words in a regulation may spawn hundreds of pages of text as the agency offers more and more detail regarding what its regulations demand of regulated entities. Law is made, without notice and comment, without public participation, and without publication in the Federal Register or the Code of Federal Regulations.<sup>131</sup>

EPA’s guidance document qualified as a regulatory amendment, in part because, “It commands, it requires, it orders, it dictates. Through the Guidance, EPA has given the States their ‘marching orders’ and EPA expects the States to fall in line . . . .”<sup>132</sup> The court vacated the guidance because of EPA’s failure to comply “with the rulemaking procedures required by 42 U.S.C. § 7607(d),” i.e., notice and comment.<sup>133</sup> Along the way, the D.C. Circuit seemed to doubt EPA’s legal authority to bolster monitoring requirements in Title V permits. “EPA’s approach,” the court noted, “raises serious issues, not the least of which is whether EPA possesses the authority it now purports to delegate [to the states].”<sup>134</sup> The court concluded that “State permitting authorities therefore may not, on the basis of EPA’s Guidance or 40 C.F.R. § 70.6(a)(3)(i)(B), require in permits that the regulated source conduct more frequent monitoring of its emissions than that provided in the applicable State or federal standard,

---

128. EPA, PERIODIC MONITORING GUIDANCE FOR TITLE V OPERATING PERMITS PROGRAMS 3 (Sept. 15, 1998).

129. *Id.* at 5.

130. *Id.* at 11.

131. 208 F.3d 1015, 1020 (D.C. Cir. 2000).

132. *Id.* at 1023.

133. *Id.* at 1028.

134. *Id.* at 1026.

unless that standard requires no periodic testing, specifies no frequency, or requires only a one-time test.”<sup>135</sup>

In 2004, EPA—under the George W. Bush administration—reversed course.<sup>136</sup> The agency issued a final rule to require that “title V permits contain monitoring required under applicable requirements” and that “such monitoring will constitute monitoring sufficient to assure compliance as required by the Act.”<sup>137</sup> In other words, under the new rule, Title V would not be a mechanism for supplementing the obligations of regulated companies to monitor emissions. Again, however, EPA neglected to provide notice and an opportunity for public comment. In 2005, the D.C. Circuit vacated the rule.<sup>138</sup>

In 2006, EPA tried again with a new iteration of the George W. Bush administration approach, this time providing notice and comment.<sup>139</sup> Now, however, the D.C. Circuit took a different view, limiting the reach of its prior *Appalachian Power* opinion to the issue of whether EPA had “follow[ed] proper procedures.”<sup>140</sup> The court held that the Act unambiguously precluded EPA’s new approach because, “[b]y its terms, [Title V’s] mandate means that a monitoring requirement insufficient ‘to assure compliance’ with emission limits has no place in a permit unless and until it is supplemented by more rigorous standards.”<sup>141</sup> The court explained, “EPA’s about-face means that some permit programs currently in place do not comply with Title V because the agency failed to fix inadequate monitoring requirements before new permits issued, and prohibited state and local authorities from doing so.”<sup>142</sup> The bottom line: “We read Title V to mean that somebody must fix these inadequate monitoring requirements.”<sup>143</sup>

---

135. *Id.* at 1028.

136. EPA Revisions to Clarify the Scope of Certain Monitoring Requirements for Federal and State Operating Permit Programs, 69 Fed. Reg. 3202, 3204 (preamble to final rule, Jan. 22, 2004) (asserting that the law does not “require or authorize a new and independent type of monitoring in permits in order for the permits to contain monitoring to assure compliance as required by the Act”).

137. *Id.* at 3202.

138. *Envtl. Integrity Project v. EPA*, 425 F.3d 992, 998 (D.C. Cir. 2005) (“EPA argues that . . . its final interpretation was . . . mentioned (albeit negatively) in [a] proposal . . . [A logical outgrowth of the proposal] does not include the Agency’s decision to repudiate its proposed interpretation and adopt its inverse. We therefore hold EPA’s final rule violated the APA’s notice-and-comment requirements.”).

139. EPA Final Rule Interpreting the Scope of Certain Monitoring Requirements for State and Federal Operating Permits Programs, 71 Fed. Reg. 75,422, 75,422 (preamble, Dec. 15, 2006) (asserting that “the operating permits regulations do not provide an independent basis for requiring or authorizing review and enhancement of existing monitoring in title V permits”).

140. *See Sierra Club v. EPA*, 536 F.3d 673, 676 (D.C. Cir. 2008).

141. *Id.* at 677.

142. *Id.*

143. *Id.* at 678. The court left “for another day the question of who wins when EPA and state and local permitting authorities conflict over whether a given requirement is sufficient ‘to assure compliance’ because the question is not presented in this case.” *Id.* at 678–79. *Alaska Dep’t of Env’tl. Conservation v. EPA* arguably answers that question, however, since it applied an “arbitrary or capricious” standard to review an EPA order overruling a state permitting decision, albeit a decision under the Act’s “prevention of significant deterioration” program. 540 U.S. 461, 496–97 (2004).



EPA resumed objecting to state issued operating permits that fail to contain monitoring requirements sufficient to assure compliance.<sup>144</sup> Similarly, EPA has objected under Title V to “minor source”<sup>145</sup> permits that limit emissions to create “synthetic minor sources”<sup>146</sup> when monitoring requirements are insufficient to render those limits enforceable as a practical matter.<sup>147</sup> And of course, citizens may use the Title V petition process discussed in Part III above to seek an EPA objection when state permits fail to include monitoring that is sufficient to assure compliance.<sup>148</sup>

## VI. PUBLICLY ACCESSIBLE MONITORING REPORTS

Clean Air Act requirements provide that reports to regulatory agencies and data from required monitoring are generally available to the public.<sup>149</sup> For

---

144. *See, e.g.*, *Piedmont Green Power, LLC*, No. IV-2015-2, 2016 WL 7489674, at 15 (Dec. 13, 2016) (EPA order); *Consol. Envtl. Mgmt., Inc.–Nucor Steel*, Nos. VI-2010-05, VI-2011-06 & VI-2012-07, 2014 WL 4292232, at 46–51 (Jan. 30, 2014) (EPA order).

145. *See Texas v. EPA*, 690 F.3d 670, 675 (5th Cir. 2012):

Minor sources are facilities that emit less than a pre-identified amount, usually 100 tons per year, of a regulated contaminant after construction or modification. All SIPs must contain a Minor NSR [new source review] program, regardless of whether the area has achieved NAAQS. Understandably, Congress and the EPA have devoted much less attention to Minor NSR. The EPA’s regulations of Minor NSR span only two pages of the Code of Federal Regulations.

146. “Synthetic minor sources are those sources that have the potential to emit regulated NSR pollutants at or above the major source thresholds, but that have taken enforceable limitations to restrict their potential to emit below such thresholds.” EPA Revisions to Public Notice Provisions in Clean Air Act Permitting Programs, 81 Fed. Reg. 71,613, 71,627 n.32 (preamble to final rule, Oct. 18, 2016). NSR or “new source review” refers to analyses under the Clean Air Act’s prevention of significant deterioration (a.k.a. PSD) program (to protect air in “attainment areas” that already meet national ambient air quality standards), 42 U.S.C. §§ 7470–7492 (2012), or nonattainment new source review (a.k.a. NNSR) program (to improve air quality in “nonattainment areas” that fail to meet such standards), 42 U.S.C. §§ 7501–7515 (2012). *See generally* REITZE, *supra* note 99, at 159–224.

147. *See, e.g.*, *Yuhuang Chemical Inc. Methanol Plant*, No. VI-2015-03, 2014 WL 4292232, at 16 (Aug. 31, 2016) (EPA order).

148. *See ExxonMobil Corp. Baytown Olefins Plant*, Petition No. VI-2016-12, at 5 n.10 (Mar. 1, 2018) (EPA order) (“The EPA does view monitoring, recordkeeping, and reporting to be part of the title V permitting process and will therefore continue to review whether a title V permit contains monitoring, recordkeeping, and reporting provisions sufficient to assure compliance with the terms and conditions established in the preconstruction permit.”).

149. *See, e.g.*, 42 U.S.C. § 7410(a)(2)(F) (2012); 40 C.F.R. § 51.230(e) & (f) (2018) (requiring that each state implementation plan show that the state has authority to “[o]btain information necessary to determine whether air pollution sources are in compliance” and to require owners or operators “to install, maintain, and use emission monitoring devices and to make periodic reports . . . on the nature and amounts of emissions from such stationary sources; also authority for the State to make such data available to the public”); 42 U.S.C. § 7410(a)(2)(F)(iii) (2012) (authorizing EPA to require “correlation of [emissions] reports by the State agency with any emission limitations or standards established pursuant to this chapter, which reports shall be available at reasonable times for public inspection”); 40 C.F.R. § 51.15(d) (2018) (providing that any data that states “submit to EPA under [part 51, subpart A] will be considered in the public domain and cannot be treated as confidential”); *see also* Nat. Res. Def. Council, *Project on Clean Air v. EPA*, 478 F.2d 875, 893 (1st Cir. 1973) (holding that EPA should have disapproved parts of Massachusetts’ state implementation plan that “allow emission reports to be held

example, 40 C.F.R. § 70.6 sets forth the minimum elements that each Title V permit “shall include.” Accordingly, each such permit must require “[p]rompt reporting of deviations from permit requirements” including “the probable cause of such deviations, and any corrective actions or preventive measures taken.”<sup>150</sup> Operators must also submit compliance certifications that specify whether “compliance with the terms and conditions of the permit for the period covered by the certification . . . was continuous or intermittent.”<sup>151</sup> Compliance certifications “shall identify each deviation and . . . also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance . . . occurred.”<sup>152</sup> These certifications are due at least annually.<sup>153</sup>

Specific regulatory standards, for example for hazardous air pollutants, carry their own monitoring and reporting obligations.<sup>154</sup> EPA’s state implementation plan requirements also mandate that states require reports from major sources.<sup>155</sup> Further, other statutes command owners and operators to submit reports to regulatory agencies, where they are then available to the public. Examples are the Emergency Planning and Community Right to Know Act (EPCRA)<sup>156</sup> and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA or Superfund).<sup>157</sup>

Under 42 U.S.C. § 7414, EPA developed its Compliance Assurance Monitoring (“CAM”) program.<sup>158</sup> CAM applies to an emission unit (1) at a major source, (2) if the unit uses a control device to achieve compliance with (3) an applicable emission standard, and (4) the unit has the potential to emit enough of the applicable pollutant to exceed the threshold for a source to be classified as a

confidential”); EPA, GUIDANCE ON SIP ELEMENTS REQUIRED UNDER SECTIONS 110(A)(1) AND (2) FOR THE 2006 24-HOUR FINE PARTICLE (PM<sub>2.5</sub>) NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) 8 (Sept. 25, 2009) (“The Act . . . requires SIPs to establish a system to monitor emissions from stationary sources, to submit periodic emissions reports, to correlate the emissions reports with the corresponding SIP emission limits and standards, and to make emissions reports available to the public.”); *see generally* Arnold W. Reitze, Jr. & Steven D. Schell, *Self-Monitoring and Self-Reporting of Routine Air Pollution Releases*, 24 COLUM. J. ENVTL. L. 63 (1999).

150. 40 C.F.R. § 70.6(a)(3)(iii)(B) (2018). *See generally* EPA, CLEAN AIR ACT STATIONARY SOURCE COMPLIANCE MONITORING STRATEGY (Oct. 2016).

151. 40 C.F.R. § 70.6(c)(5)(iii)(C) (2018).

152. *Id.*

153. 40 C.F.R. § 70.6(c)(5)(i) (2018).

154. *See, e.g.*, 40 C.F.R. § 63.7550 (2018) (setting forth reporting obligations with respect to National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters).

155. *See, e.g., id.* §§ 51.165 (relating to new source review), 60.107 (reporting and recordkeeping requirements for petroleum refineries, new sources), 61.275 (periodic reporting requirements for owners and operators of benzene storage vessels under the hazardous air pollutants program).

156. *See, e.g.*, 42 U.S.C. § 11004 (2012) (emergency notification); *id.* § 11023 (toxic chemical release forms).

157. 42 U.S.C. § 9603 (2012) (notification requirements respecting released substances).

158. 40 C.F.R. pt. 64 (2018); *see also supra* notes 10–17 and accompanying text.

major source.<sup>159</sup> In general, CAM requires site-specific preparation of monitoring plans and, potentially, quality improvement plans.<sup>160</sup> CAM, of course, includes reporting and recordkeeping requirements.<sup>161</sup>

Emission monitoring reports can provide admissible and persuasive evidence of violations.<sup>162</sup> For example, such reports may often be subject to judicial notice.<sup>163</sup> Alternatively, if certified, these reports may be “self-authenticating”<sup>164</sup> public records,<sup>165</sup> or records of a regularly conducted activity.<sup>166</sup>

An obvious question is whether the Clean Air Act’s self-monitoring and self-reporting system leaves the fox “guarding the hen house.”<sup>167</sup> Nobody can say for sure how many members of the regulated community file false reports or fail to report at all.<sup>168</sup> Congress, however, “made the penalties severe for abusing th[e] self-monitoring function.”<sup>169</sup>

159. *Id.* § 64.2(a); see Gary E. Parish, Charla Beth Mobley & Patrick H. Zaepfel, *Emissions Monitoring and Any Credible Evidence*, 2000A ROCKY MT. MIN. L. INST. 12 (2000).

160. 40 C.F.R. §§ 64.3, 64.8 (2018).

161. *Id.*; 40 C.F.R. § 64.9 (2018).

162. *St. Bernard Citizens for Env'tl. Quality, Inc. v. Chalmette Ref., L.L.C.*, 354 F. Supp. 2d 697, 707 (E.D. La. 2005) (“Because Chalmette documented the 34 violations on which plaintiffs move for summary judgment as ‘preventable’ unauthorized discharges, there is no genuine issue of fact as to the existence of those violations.”); *Sierra Club v. Pub. Serv. Co. of Colorado*, 894 F. Supp. 1455, 1458 (D. Colo. 1995) (“CEM data [are] competent evidence of . . . violations.”).

163. Compliance reports may be available on agency web pages and often may be admissible under Fed. R. Evid. 201(b)(2), which provides for judicial notice of facts that can be “readily determined from sources whose accuracy cannot reasonably be questioned.” See *Daniels-Hall v. Nat’l Educ. Ass’n*, 629 F.3d 992, 998 (9th Cir. 2010) (taking judicial notice of information on government entities’ web sites); *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 702 (10th Cir. 2009) (same); *Coleman v. Dretke*, 409 F.3d 665, 667 (5th Cir. 2005) (explaining “we fail to see any merit to an objection to the panel taking judicial notice of the state agency’s own website”); *St. Clair v. JPMorgan Chase Bank, N.A.*, No. 13-CV-01317, 2014 WL 4661956, at \*1 n.1 (E.D. Cal. Sept. 18, 2014) (taking notice of a document “available on the FDIC official website” because the court “may verify the accuracy of the [document] by visiting the FDIC’s official website”).

164. Fed. R. Evid. 902(4)(a) (providing that evidence which “require[s] no extrinsic evidence of authenticity in order to be admitted” includes a “copy of an official record—or a copy of a document that was recorded or filed in a public office as authorized by law—if the copy is certified as correct by the custodian or another person authorized to make the certification”).

165. Fed. R. Evid. 803(8) (providing that “public records” are not excluded by the rule against hearsay).

166. Fed. R. Evid. 803(6) (providing that “records of a regularly conducted activity” are not excluded by the hearsay rule).

167. See D. R. van der Vaart & John C. Evans, *Compliance Under Title V: Yes, No, Or I Don’t Know?*, 21 VA. ENVTL. L.J. 1, 10 (2002).

168. Clearly, such cheating is not unheard of. See Bill Vlasic, *Volkswagen Engineer Gets Prison in Diesel Cheating Case*, N.Y. TIMES, Aug. 25, 2017 (reporting that the engineer “was sentenced . . . to 40 months in prison for his role in the German automaker’s decade-long scheme to cheat on federal emissions tests for diesel-powered cars sold in the United States.”).

169. See van der Vaart & Evans, *supra* note 167, at 10; see also Press Release, U.S. Dep’t of Justice, *Volkswagen AG Agrees to Plead Guilty and Pay \$4.3 Billion in Criminal and Civil Penalties and Six Volkswagen Executives and Employees Are Indicted in Connection with Conspiracy to Cheat U.S. Emissions Tests* (Jan. 11, 2017) (reporting, *inter alia*, on a guilty plea as to “three criminal felony counts”). The Act provides, *inter alia*, that anyone who “makes any false material statement . . . omits

## VII. FUGITIVE EMISSIONS

Unmonitored fugitive emissions skew the accuracy of government emission estimates.<sup>170</sup> “Fugitive emissions” are emissions that “could not reasonably pass through a stack, chimney, vent, or . . . equivalent opening.”<sup>171</sup> EPA regulation of these emissions has been inconsistent.<sup>172</sup> The Act gives EPA discretion to decide when fugitive emissions count in determining whether emissions from a source exceed the threshold for a “major source.”<sup>173</sup> For many facilities, EPA has chosen to largely ignore fugitive emissions.<sup>174</sup>

material information from, or knowingly alters, conceals, or fails to file or maintain [a required report] . . . or falsifies, tampers with, renders inaccurate, or fails to install any monitoring device or method required to be maintained or followed” may be imprisoned for up to two years for a first offense. 42 U.S.C. § 7413(c)(2) (2012).

170. See HENRY et al., *supra* note 67, at 6599 (explaining that the Houston area’s emissions inventory fails “to compare with the observation-based results” in part because “the emissions from refineries and chemical plants are notoriously hard to determine. Most of the emissions are so-called fugitive emissions from leaking valves, pipes, or connectors, of which there are tens of thousands in a large facility.”).

171. See 40 C.F.R. § 52.21(b)(20) (2018). EPA has explained that when “emissions are not actually collected at a particular site, the question of whether the emissions are fugitive or nonfugitive should be based on a factual, case-by-case determination made by the permitting authority” about whether such collection would be reasonable. EPA, INFORMATION TRANSFER AND PROGRAM INTEGRATION DIVISION, INTERPRETATION OF THE DEFINITION OF FUGITIVE EMISSIONS IN PARTS 70 AND 71 2 (Feb. 10, 1999).

172. See EPA, CONSIDERATION OF FUGITIVE EMISSIONS IN MAJOR SOURCE DETERMINATIONS 5 (Mar. 8, 1994) (“EPA has revised its interpretation of the Act . . . . EPA now believes the Act does not require fugitives to be considered for purposes of determining major source status in these nonattainment areas, except as provided pursuant to rulemaking under section 302(j) [i.e., 42 U.S.C. § 7602(j)].”); see also EPA Reconsideration of Inclusion of Fugitive Emissions, 76 Fed. Reg. 17,548, 17,550 (preamble to interim rule, Mar. 30, 2011):

On December 19, 2008, EPA issued a final rule [that] required fugitive emissions to be included in determining whether a physical or operational change results in a major modification only for sources in industries that have been designated through rulemaking under [Clean Air Act] section 302 (j) . . . . Previously, EPA rules required that fugitive emissions be included in major modification applicability determinations for all source categories . . . . On April 24, 2009, we responded to [a petition for reconsideration by, *inter alia*,] granting a 3-month administrative stay of the [new] rule . . . . This action clarifies the regulations to accurately reflect EPA’s intent to revert back to the regulation text that existed prior to the [December 19, 2008] amendments to the Federal NSR regulations.

173. See *Alabama Power Co. v. Costle*, 636 F.2d 323, 370 (D.C. Cir. 1979) (“EPA has authority by rulemaking to incorporate fugitive emissions, including fugitive dust, in the calculation of tonnage thresholds required to qualify a stationary source as a major emitting facility.”); see also 42 U.S.C. § 7602(j) (2012) (defining the terms “major stationary source” and “major emitting facility” for purposes of the Act); see also *id.* § 7479(a) (setting a higher threshold—250 rather than 100 tons a year—for some source categories for purposes of part C of the Act, i.e., the prevention of significant deterioration provisions (*id.* §§ 7470–7479)). Other, more narrowly applicable thresholds appear in 42 U.S.C. § 7511a(b)(1)(A)(ii)(I) (for “moderate” ozone nonattainment areas), § 7511a(c) (for “serious” ozone nonattainment areas), § 7511a(d) (for “severe ozone nonattainment area”), and § 7511a(e) (for “extreme” ozone nonattainment areas).

174. See 40 C.F.R. § 70.2 (2018) (clarifying that fugitive emissions are ignored when determining whether a stationary source is “major” under 42 U.S.C. § 7602(j) “unless the source belongs to one of the following categories of stationary source [listing 26 source categories and incorporating by reference

When approving a State of Pennsylvania monitoring plan for ambient concentrations of lead without regard to fugitives, EPA explained:

[F]ugitive emissions are extremely difficult to quantify, there is no standard way to do so, and inclusion in the modeling would have added to uncertainty already inherent in the model. Additionally, ground-level fugitive emissions do not travel far from the source and stay inside or very near the property fenceline.<sup>175</sup>

EPA, however, did not cite support for its statement that such emissions remain, for some reason, “inside or very near the property fenceline.”<sup>176</sup> The statement’s accuracy is questionable.<sup>177</sup>

EPA’s most prominent approach to controlling fugitive emissions is found in the agency’s leak detection and repair (a.k.a. LDAR) programs.<sup>178</sup> EPA guidance states, “a typical refinery or chemical plant can emit 600–700 tons per year of [volatile organic compounds] from leaking equipment, such as valves, connectors, pumps, sampling connections, compressors, pressure-relief devices, and open-ended lines.”<sup>179</sup> According to the guidance, “Emissions from equipment leaks [from petroleum refineries and chemical manufacturing facilities] exceed emissions from storage vessels, wastewater, transfer operations, or process vents.”<sup>180</sup> A 1999 EPA “enforcement alert” estimated that “failure to identify and repair leaks at petroleum refineries could be resulting in additional VOC emissions of 80 million pounds annually.”<sup>181</sup>

As a practical matter, essentially all valves, connectors, pumps, compressors, etc., leak.<sup>182</sup> Thus, leak detection and repair regulations must define “leak.” For example, “If an instrument reading of 10,000 ppm [parts per million] or greater is

most source categories regulated under 42 U.S.C. § 7411 or § 7412]”); *but see* 40 C.F.R. § 51.165(a)(1)(xxviii)(B) (2018) (“In determining the projected actual emissions [to determine whether a modification triggers new source review] “the owner or operator of the major stationary source . . . (2) Shall include fugitive emissions to the extent quantifiable, and emissions associated with startups, shutdowns, and malfunctions”).

175. *Berks County v. EPA*, 619 Fed. Appx. 179, 185 (3d Cir. 2015) (quoting EPA Approval and Promulgation of Air Quality Implementation Plans, 79 Fed. Reg. 19,009, 19,011 (Apr. 7, 2014)).

176. 79 Fed. Reg. at 19,011.

177. *See* Milagros Santacatalina et al., *Impact of Fugitive Emissions in Ambient PM Levels and Composition: A Case Study in Southeast Spain*, 408 SCI. TOTAL ENV’T 4999, 5007 (2010) (concluding that anthropogenic fugitive emissions of mineral dust have a high impact on air quality in some areas of Europe on a regional scale).

178. Leak detection and repair requirements are found in the New Source Performance Standard program that implements 42 U.S.C. § 7411 and the Hazardous Air Pollutant program that implements 42 U.S.C. § 7412. *See* 40 C.F.R. pts. 60, 61, & 63 (2018).

179. EPA, EPA-305-D-07-001, LEAK DETECTION AND REPAIR—A BEST PRACTICES GUIDE 3 (Oct. 2007).

180. *Id.* at 2.

181. EPA, EPA 300-N-99-014, ENFORCEMENT ALERT: PROPER MONITORING ESSENTIAL TO REDUCING ‘FUGITIVE EMISSIONS’ UNDER LEAK DETECTION AND REPAIR PROGRAMS (Oct. 1999).

182. *See, e.g.*, Suggestions in Support of Motion for Summary Judgment, *Pharmacia Corp. v. Clayton Chem. Acquisition L.L.C.*, No. 302-cv-00428, 2004 WL 5613383, n.9 (S.D. Ill., Dec. 3, 2004)

measured, a leak is detected.”<sup>183</sup> In a different context, “[i]f an instrument reading of 500 ppm or greater is measured, a leak is detected.”<sup>184</sup> In general, leak detection and repair regulations require a monitoring program and repair of leaking equipment.<sup>185</sup>

#### VIII. ENFORCEMENT OR AGREEMENT BASED MONITORING REQUIREMENTS

Consent decrees, administrative orders on consent, good neighbor agreements, and other facility-specific orders or contracts present additional opportunities for regulators and/or citizens to impose monitoring and reporting obligations.

EPA has used consent decrees to supplement regulatory requirements such as leak detection and repair regulations, and to establish additional, source-specific monitoring requirements.<sup>186</sup> For example, the consent decree that resolved a government enforcement action against Murphy Oil USA contains a section entitled “Requirements for Leak Detection and Repair (‘LDAR’) Program Enhancements.”<sup>187</sup> This section’s provisions include monitoring and reporting of information about leaks from valves and pumps at two oil refineries, as well as “leak definitions” for valves and pumps that are generally tighter than those in the regulations.<sup>188</sup> In addition, the consent decree provides for “Enhanced Community Information and Outreach” as a “supplemental environmental project.”<sup>189</sup> This project includes a “Community Air Monitoring Station” to measure ambient levels

(putting in context an expert statement that “all valves leak” when the expert had said “it depends upon what you mean by leak. I always say all valves leak.”).

183. 40 C.F.R. § 60.483-1(c)(2). This regulation applies to facilities in the synthetic organic chemicals manufacturing industry that “commence[d] construction, reconstruction, or modification after January 5, 1981, and on or before November 7, 2006,” *id.* § 60.480(a)–(b).

184. *Id.* § 60.483-1a(c)(2). This regulation applies to facilities in the synthetic organic chemicals manufacturing industry “that commence[d] construction, reconstruction, or modification after November 7, 2006,” *id.* § 60.480a(a)–(b).

185. *See, e.g., id.* § 60.482-7(a)–(e).

186. *See* EPA, COMPENDIUM OF NEXT GENERATION COMPLIANCE EXAMPLES IN CLEAN AIR ACT PROGRAMS 14–15 (Sept. 2016); EPA, APPENDIX TO COMPENDIUM OF NEXT GENERATION COMPLIANCE EXAMPLES IN CLEAR AIR ACT PROGRAMS (Sept. 2016); EPA, NEXT GENERATION ENFORCEMENT SETTLEMENT HIGHLIGHTS (Jan. 12, 2015); Robert L. Glicksman et. al., *Technological Innovation, Data Analytics, and Environmental Enforcement*, 44 *Ecology L.Q.* 41, 73 (2017) (“Recent EPA enforcement actions, settlements, and regulations have included requirements that regulated parties monitor at their facility fencelines.”).

187. Consent Decree at ¶¶ 112–143, *United States v. Murphy Oil USA*, No. 3:10-cv-00563-bbc (W.D. Wis., Feb. 16, 2011), ECF No. 9.

188. *Id.* at ¶¶ 124–26. These paragraphs define leaks as “500 ppm VOCs for all of the Refineries’ valves, excluding pressure relief devices” and “2,000 ppm VOCs for all of the Refineries’ pumps,” although they allow for reporting based on the “applicable regulatory leak definition.” *Id.*

189. *Id.* at ¶ 156C. A “supplemental environmental project” or SEP is an “environmentally beneficial project[ ] which a defendant/respondent agrees to undertake in settlement of an enforcement action, but which the defendant/respondent is not otherwise legally required to perform.” EPA Supplemental Environmental Projects Policy Issued, 63 Fed. Reg. 24,796, 24,797–98 (notice, May 5, 1998). “All else being equal, the final settlement penalty will be lower for a violator who agrees to perform an acceptable SEP compared to the violator who does not agree to perform a SEP.” *Id.* at 24,797.

of hydrogen sulfide, sulfur dioxide, volatile organic compounds, and particulate matter of ten microns or less.<sup>190</sup> The decree provides for reporting of the resulting data on the internet.<sup>191</sup>

Two additional examples: On May 24, 2005, Chalmette Refining, LLC and the Louisiana Department of Environmental Quality (“LDEQ”) entered into a consent order that created a “St. Bernard Parish Enhanced Ambient Air Monitoring Program,” including six monitoring stations to monitor “criteria pollutants, volatile organic compounds, toxic air pollutants and particulate[s].”<sup>192</sup> An October 31, 2017 consent decree between ExxonMobil, the United States, and LDEQ provides for “a set of ambient air monitors that will sample for benzene along the fenceline perimeter of the Baytown Chemical Plant, Baytown Olefins Plant, Beaumont Chemical Plant, and Baton Rouge Chemical Plant.”<sup>193</sup>

Other types of agreements can provide for monitoring of emissions or ambient concentrations and reporting of data. Madison Condon has described private contracts, known as “good neighbor agreements,” in which—for example—community members will agree to drop opposition to a project in return for concessions that can include environmental quality monitoring and reporting.<sup>194</sup>

#### IX. MONITORING AS A WORK-PRACTICE STANDARD FOR HAZARDOUS AIR POLLUTANTS

On December 1, 2015, EPA promulgated its “Petroleum Refinery Sector Risk and Technology Review” rule.<sup>195</sup> The rule broke new ground by creating a “work practice standard” consisting of fenceline monitoring of benzene concentrations in ambient air.<sup>196</sup> EPA promulgated the rule under 42 U.S.C. § 7412, which—in general—provides for emission standards rather than ambient standards.<sup>197</sup> Section 7412, however, also authorizes “work practice” standards.<sup>198</sup> EPA’s innovation in the Petroleum Refinery Sector Risk and Technology Review rule is to

190. Consent Decree at ¶ 156C(a), *United States v. Murphy Oil USA*, No. 3:10-cv-00563-bbc (W.D. Wis., Feb. 16, 2011), ECF No. 9.

191. *Id.* at ¶ 156C(b).

192. Administrative Order on Consent, Tracking No. AE-AOA-05-0109, Appendix B (May 24, 2005) (attached to Defendant’s Motion for Leave to Supplement Opposition, Affidavit of Claudine Gorman, Exhibit A, *St. Bernard Citizens for Environmental Quality v. Chalmette Refining, L.L.C.*, No. 04-398 (E.D. La., filed June 7, 2005), ECF No. 66).

193. Consent Decree at ¶ 48, *United States v. Exxon Mobil Corp.*, No. 17-CV-3302 (S.D. Tex., filed Oct. 31, 2017), ECF No. 23.

194. Madison Condon, *Citizen Scientists, Data Transparency, and the Mining Industry*, NAT. RES. & ENV’T, Fall 2017, at 24, 24–26.

195. EPA Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards, 80 Fed. Reg. 75,178 (Dec. 1, 2015) (codified at 40 C.F.R. pts. 60 & 63).

196. See 40 C.F.R. § 63.658 (2018); see Ralph Smith, *Detect Them Before They Get Away: Fenceline Monitoring’s Potential to Improve Fugitive Emissions Management*, 28 TUL. ENVTL. L.J. 433 (2015).

197. 42 U.S.C. § 7412(d)(2) (2012). For information about emission and ambient standards, see *infra* note 210 and *supra* note 53.

198. *Id.* § 7412(d)(2)(D).

use a work-practice standard as a step toward ensuring that emissions are sufficiently controlled—in the context of emissions from other sources, meteorological conditions, and other site-specific characteristics—to protect nearby residents. The easiest way to do this? Measure ambient concentrations at the fenceline.

EPA finalized “a compliance schedule for fenceline monitoring, which will require refinery owners or operators to have the fenceline monitors in place and collecting benzene concentration data” by February 1, 2018<sup>199</sup>—that is, two years after the rule’s effective date.<sup>200</sup> Owners and operators must submit the resulting data electronically, and EPA will store it where “it will be easily accessible to everyone and will provide a user-friendly interface that any stakeholder could access.”<sup>201</sup>

The rule sets an “action level” for benzene concentrations of “9 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) on an annual average basis.”<sup>202</sup> If the action level is exceeded, the owner or operator must “initiate a root cause analysis to determine the cause of such exceedance and to determine appropriate corrective action.”<sup>203</sup> EPA considers “the fenceline monitoring requirement to be a work practice standard that will ensure sources take corrective action if monitored benzene levels (as a surrogate for HAP [i.e., hazardous air pollutant] emissions from fugitive emissions sources) exceed the . . . action level.”<sup>204</sup> As of this writing, litigation about the rule is on hold pending completion of an EPA reconsideration process.<sup>205</sup>

In the preamble to the final rule, EPA noted that communities with “vulnerable populations (minority, low income and indigenous communities)” are likely to benefit “as this rulemaking for the first time ever requires fenceline monitoring, and reporting of fenceline data.”<sup>206</sup> Similarly, in an article written after leaving EPA, two former agency officials linked the fenceline monitoring requirement to environmental justice concerns:

In this country’s environmental justice communities, pollution often remains painfully visible. In parts of Louisiana and Texas, for example, clusters of chemical plants and refineries too often have visible emissions that are a fact of life for people living in adjacent housing developments.<sup>207</sup>

---

199. 80 Fed. Reg. at 75,191; 40 C.F.R. § 63.655(h)(8) (2018).

200. *See* 80 Fed. Reg. at 75,178 (setting the rule’s effective date).

201. *Id.* at 75,185.

202. 40 C.F.R. § 63.658(f)(3) (2018).

203. *Id.* § 63.658(g).

204. 80 Fed. Reg. at 75,193.

205. *See* EPA Status Report, *American Fuel & Petrochemical Manufacturers v. EPA*, No. 16-1033 (D.C. Cir., filed July 6, 2018) (Doc. #1739450).

206. 80 Fed. Reg. at 75,226.

207. Gina McCarthy & Janet McCabe, *Foreword*, 41 HARV. ENVTL. L. REV. 321, 322–23 (2017).



## X. CITIZEN SCIENCE AND MONITORING

As monitoring technology has improved, “citizen volunteer monitoring programs have become popular across North America.”<sup>208</sup> For example, “Bucket brigades are campaigns in which local citizens living along the fence lines of industrial emitters use inexpensive bucket samplers, often provided by state or national environmental NGOs [i.e., non-governmental organizations] and sometimes provided through EPA grants, to measure air quality near industrial operation sites.”<sup>209</sup>

Given the practicalities of data gathering, and the lack of citizen access to private industrial facilities, Bucket Brigade data generally are measurements of ambient concentrations, and thus rarely offer direct proof of violation of emission limitations.<sup>210</sup> Such data could be useful in court, however,<sup>211</sup> for example to support standing-to-sue arguments.<sup>212</sup> Ambient data may also help in choosing a focus for research into publicly available emission data, which may reveal violations. Moreover, some state implementation plans or other state laws may impose liability on polluters who cause a violation of an ambient standard.<sup>213</sup> For

---

208. Christine Overdeest & Brian Mayer, *Harnessing the Power of Information Through Community Monitoring: Insights from Social Science*, 86 TEX. L. REV. 1493, 1509 (2008).

209. *Id.* at 1510. Reportedly:

Bucket brigades were created in northern California in 1994 to gather information for a civil lawsuit following an industrial accident. Attorney Edward Masry [of *Erin Brockovich* fame] . . . hired an engineering firm to create a low-cost air-quality monitoring system designed to provide accurate sampling. The engineering company reduced the cost of an air-quality monitoring device from \$2,000 to \$250, by using a common plastic bucket instead of a steel cylinder to hold a standard Tedlar air-sampling bag. Masry then gave these buckets to citizens who sampled around the refinery whenever they encountered unusual odors, vapors, or flares.

*Id.* at 1510–11.

210. In general, National Ambient Air Quality Standards are not emission limitations that citizens may enforce. *See* *Coal. Against Columbus Ctr. v. City of New York*, 967 F.2d 764, 769 (2d Cir. 1992) (“A cornerstone of this Court’s interpretation of the citizen-suit provision is the principle that an air quality standard established under the Clean Air Act is not an ‘emission standard or limitation.’”) (citations omitted); *League to Save Lake Tahoe, Inc. v. Trounaday*, 598 F.2d 1164, 1173 (9th Cir. 1979) (holding that ambient air quality standards “are not emission limitations”). An emission limitation is “a requirement . . . which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. § 7602(k) (2012). *See, e.g.,* *Sierra Club v. EPA*, 551 F.3d 1019, 1028 (D.C. Cir. 2008) (vacating an EPA provision for an exemption for “startups, shutdowns, and malfunctions” based on the definition of “emission limitation”).

One section of the Act, 42 U.S.C. § 7511d, does, in effect, hold polluters directly responsible for failures to attain ambient standards under some circumstances. Under that provision, state implementation plans must require major sources of volatile organic compounds in severe and extreme ozone nonattainment areas to “pay a fee . . . as a penalty” if the state’s implementation fails to achieve timely attainment with the applicable ambient standard. *Id.*

211. *See supra* note 114 (discussing the credible evidence rule).

212. *See supra* note 86 (discussing standing requirements).

213. *See* *Marblehead Lime Co. v. Pollution Control Bd.*, 355 N.E.2d 607, 612, 42 Ill. App. Ct. 3d 116, 122 (1976) (upholding a liability determination under Illinois law that emissions “unreasonably interfere with the enjoyment of life and property”).

example, the State of Louisiana’s air quality regulations provide, “No person or group of persons shall allow particulate matter or gases to become airborne in amounts which cause the ambient air quality standards to be exceeded.”<sup>214</sup>

Citizen-monitoring data can be a powerful organizing and political tool.<sup>215</sup> Sociology Professors Christine Overdeest and Brian Mayer report:

Anne Rolfes, director of the Louisiana Bucket Brigade, remembers when sampler Dorothy Jenkins of New Sarpy, La., confronted a manager of Orion Refining: “That was one of the great moments of my life,” says Rolfes. “He was so smug and rude, insisting that there wasn’t a problem, and she just slammed her air sample results down on the table and said, ‘Then why did you violate the state benzene standard?’” Ms. Rolfes also noted, “It changes a very vague complaint, like ‘It smelled bad last week,’ to ‘You violated the state benzene standard.’<sup>[216]</sup> That’s the beauty of it.” Or as Denny Larson suggests, “Just by introducing that very scientific piece of data, facilities and agencies are now in the position where the only way to refute that data is to actually take a test, too.”<sup>217</sup>

The Orion Refining situation described above resulted in a Clean Air Act citizen suit, but the plaintiffs based their complaint in that matter on publicly available emission monitoring data rather than on citizen-gathered ambient air quality data.<sup>218</sup>

---

214. LA. ADMIN CODE tit. 33, pt. III, § 929.

215. See NAT’L ADVISORY COUNCIL FOR ENV’T POLICY AND TECHN., EPA 219-R-16-001, ENVIRONMENTAL PROTECTION BELONGS TO THE PUBLIC: A VISION FOR CITIZEN SCIENCE AT EPA vii (Dec. 2016) (“Citizen science is much more than collecting data. It provides a way to . . . build an informed population that can advocate successfully for environmental protection, and more effectively protect human health and the environment.”); Eric Biber, *The Problem of Environmental Monitoring*, 83 U. COLO. L. REV. 1, 58 (2011) (“Individual citizens in ‘bucket brigades’ use inexpensive technology to measure air quality in their community . . . . This monitoring can be a potent media and political tool that influences regulators or regulated industry.”); Robert L. Glicksman et. al., *Technological Innovation, Data Analytics, and Environmental Enforcement*, 44 ECOLOGY L.Q. 41, 81 (2017) (“Because quality control over citizen science is unlikely to match an environmental agency’s own information-gathering efforts, agencies have used data from nongovernmental sources as a signal warranting their own further inquiries into compliance status or ambient conditions.”); Snyder et al., *supra* note 6, at 11,373 (“As [citizens and communities] gather this information, they become more educated and informed about air quality in their community, which allows them to become more conversant on potential air quality issues and better positions them to develop community-based strategies to reduce air pollution exposures to protect their health.”).

216. Louisiana has promulgated standards for “8-hour” and “annual” average concentrations of toxics in ambient air. LA. ADMIN. CODE tit. 33, pt. III, § 5112, tbl. 51.2.

217. Christine Overdeest & Brian Mayer, *Harnessing the Power of Information Through Community Monitoring: Insights from Social Science*, 86 TEX. L. REV. 1493, 1513–14 (2008) (internal footnotes omitted) (citing Michelle Nijhuis, *Passing the Bucket*, GRIST, July 23, 2003, and Eliza Strickland, *To Clean the Air, Communities Grab a Bucket*, CHRISTIAN SCI. MONITOR, Apr. 1, 2004, at 14).

218. See Complaint at ¶¶ 20–27, *Concerned Citizens of New Sarpy v. Orion Refining Corp.*, 2:01-cv-03704-AJM (filed Dec. 11, 2001), ECF No. 1. The case eventually settled. See Order of Dismissal

The world of citizen science keeps changing. On August 4, 2013, a Washington Post Sunday magazine cover proclaimed, “Eye in the Sky—Warning to Environmental Evildoers: John Amos may be watching you.” The article asserts:

Amos is, by many accounts, reshaping the postmodern environmental movement. He is among the first, if not the only, scientist to take the staggering array of satellite data that have accumulated over 40 years, turn it into maps with overlays of radar or aerial flyovers, then fan it out to environmental agencies, conservation nonprofit groups and grass-roots activists. This arms the little guys with the best data they’ve ever had to challenge oil, gas, mining and fishing corporations over how they’re changing the planet.<sup>219</sup>

By analyzing satellite imagery, a group such as SkyTruth can discover environmental problems that a decade or so ago would have escaped notice. As explained in 2013 by members of EPA’s Offices of Research and Development, Air and Radiation, and Enforcement and Compliance Assurance, such groups can use social media to expand the power of their citizen science:

While the concept of citizen science is not new, the movement has been growing due to the Internet and the use of hand-held devices such as cell phones with cameras. Citizen science activities take advantage of community-based participatory monitoring and “*crowd sourcing*” where many individuals voluntarily collect large amounts of data that is compiled and analyzed.<sup>220</sup>

Similarly, nonprofits such as Southwings offer potential citizen enforcers the opportunity to view pollution sources from aircraft.<sup>221</sup> A Clean Water Act citizen-enforcement lawsuit about spills from a coal-loading terminal into the Mississippi rested largely on aerial photography from such flights.<sup>222</sup>

### CONCLUSION

Government enforcement of environmental regulations and permits can wax and wane.<sup>223</sup> The increase in publicly available environmental quality data, however, is likely to continue. Enforcement actions based on such data can come

Pursuant to Settlement, *Concerned Citizens of New Sarpy v. Orion Refining Corp.*, 2:01-cv-03704-AJM (filed Dec. 30, 2002), ECF No. 104.

219. Neely Tucker, *SkyTruth, The Environment and the Satellite Revolution*, WASH. POST MAG., Aug. 4, 2013.

220. Snyder *et al.*, *supra* note 6, at 11,373 (footnotes omitted; emphasis in original).

221. About South Wings, SOUTHWINGS.COM, <http://www.southwings.org/about/> (last visited Oct. 5, 2018).

222. See Complaint at ¶ 35, *Gulf Restoration Network v. United Bulk Terminals Davant, LLC*, No. 14-cv-00608-LMA-SS (E.D. La. March 18, 2014), ECF No. 1. The case eventually settled. Consent Decree, *Gulf Restoration Network v. United Bulk Terminals Davant, LLC*, No. 14-cv-00608-LMA-SS (E.D. La. Oct. 7, 2015), ECF No. 125.

223. See *supra* note 8.

from unexpected quarters.<sup>224</sup> For members of the regulated community, therefore, caution, compliance, and good community relations remain the best policies. For regulators, improved technology provides an opportunity to revise old assumptions and use verifiable data to bring regulatory and enforcement decisions into better alignment with real-world conditions.

---

224. *See supra* notes 74–90 and accompanying text.