

Shotguns, Spray, and Smoke: Regulating Atmospheric Deposition of Pollutants Under the Clean Water Act

*Anil J. Antony**

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* The author is an attorney in Los Angeles, and a former law clerk to Judge Paul C. Huck, United States District Court for the Southern District of Florida. B.A., Dartmouth College; J.D., Washington College of Law—American University. I thank Howard Fox and Steve Roady of Earthjustice for their initial inspiration and guidance. Thank you also to Dr. Charles Driscoll, Syracuse University Professor of Environmental Systems Engineering, for sharing his knowledge and answering my questions regarding atmospheric transport and deposition of mercury. Finally, my eternal gratitude to Alison Collins Antony for her patience, support, and proof-reading.

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I.

INTRODUCTION

I recently watched a fireworks display from the shore of a lake. I looked on with interest as breathtaking fireworks burst over the lake. My interest turned to concern as burning embers of fireworks residue drifted downward to the lake. My concern stemmed from knowing that this particular lake is a source of drinking water for the city of Portland, Maine.¹ Fireworks contain a number of potentially dangerous pollutants, including barium, copper, cadmium, lithium, rubidium, strontium, lead, and others.² Given the lake's use as a source of drinking water, I wondered whether the person shooting the fireworks had obtained a permit to do so pursuant to the Clean Water Act.³ It appeared that the residue falling from the fireworks into the lake should have been regulated under the Clean Water Act. Discharges of pollutants within the purview of the Clean Water Act are those that involve "any addition of any pollutant to navigable waters from any point source."⁴ Courts have held that liquid or misted pollutants released over land from a point source, which

1. *Sebago Lake*, PORTLAND WATER DIST., <http://www.pwd.org/environment/sebago/sebago.php> (last visited June 12, 2011).

2. See Teresa Moreno et al., *Recreational Atmospheric Pollution Episodes: Inhalable Metalliferous Particles from Firework Displays*, 41 *ATMOSPHERIC ENV'T.* 913, 916 tbl.1 (2007); Gar Smith, *Fireworks: Breathtaking . . . and Deadly*, ALTERNET.COM (July 1, 2002), <http://www.alternet.org/story/13501> (last visited July 28, 2011) ("During the Stockholm Water Festival in 1996, air pollutant levels were measured before and after the fireworks display. Levels of airborne arsenic were found to be twice normal, while levels of mercury, cadmium, lead, copper, zinc and chromium were as high as 500 times above normal."); see also *Declare Your Independence from Toxic Fireworks Pollution*, ABOUT.COM, <http://environment.about.com/od/healthenvironment/a/toxicfireworks.htm> (last visited July 28, 2011).

3. The Clean Water Act is formally known as the federal Water Pollution Prevention and Control Act. It is codified at 33 U.S.C. §§ 1251–1387 (2006).

4. 33 U.S.C. § 1362(12) (2006).

then flow into navigable waters, are within the purview of the Clean Water Act.⁵ The same is true for solid pollutants released into or near navigable waters—they too are regulated under the Clean Water Act.⁶ In essence, as long as a solid or liquid is considered a pollutant,⁷ its discharge from a point source to navigable water may be regulated under the Clean Water Act. The common theme is that courts, pursuant to the Clean Water Act, proscribe releases of solid, liquid, and misted pollutants when it is demonstrated with certainty that the pollutant—shortly after release—deposited in navigable waters, even if the pollutant is not released *directly into* navigable waters.⁸ Undoubtedly, then, the fireworks show should have been subject to the regulations of the Clean Water Act, at least for the debris that fell directly into the lake.

I thought about the fireworks episode later that week when I saw a power plant on the shores of a river. The wind that day was pushing smoke and steam from the plant's stack downward, such that it hovered several feet above the surface of the water. I could not tell whether any of the pollutants, such as heavier particulate matter, were depositing directly into the river, but I wondered whether there was a scenario where emissions from the power plant could be regulated under the Clean Water Act. For example, what about particulates or other emissions that landed in the river shortly after their release from the power plant?

5. See *infra* notes 118–150 and 210–226, and accompanying text (discussing Concerned Area Residents for the Env't v. Southview Farm, 34 F.3d 114 (2d Cir. 1994), No Spray Coalition, Inc. v. City of New York (*No Spray II*), No. 00 Civ. 5395 (GBD), 2005 WL 1354041 (S.D.N.Y. June 8, 2005), and League of Wilderness Defenders v. Forsgren, 309 F.3d 1181 (9th Cir. 2002)).

6. See *infra* notes 156–183 and accompanying text (discussing Long Island Soundkeeper Fund, Inc. v. N.Y. Athletic Club, Inc., No. 94 Civ. 0436 (RPP), 1996 U.S. Dist. LEXIS 3383 (S.D.N.Y. Mar. 22, 1996), Stone v. Naperville Park Dist., 38 F. Supp. 2d 651 (N.D. Ill. 1999), and Alaska Community Action on Toxics v. Aurora Energy Servs., LLC, Case No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173 (D. Alaska Jan. 10, 2011)).

7. According to the Clean Water Act, pollutants include “dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.” 33 U.S.C. § 1362(6) (2006). Courts have concluded that the “‘broad generic terms’ included in the definition of ‘pollutant’ demonstrate Congress’s intent to capture more than just the items expressly enumerated.” Nat’l Cotton Council of Am. v. Envtl. Prot. Agency, 553 F.3d 927, 935–36 (6th Cir. 2009) (citing United States v. Hamel, 551 F.2d 107, 110 (6th Cir. 1977)).

8. See *infra* note 93 and accompanying text (discussing the definition of “to” in the context of the Clean Water Act).

Even if there had not been wind on that day, it is likely that particulates from the smoke I saw would deposit into the river.⁹ Logically, pollutants released, *e.g.*, from a smokestack into the atmosphere, could be regulated pursuant to the Clean Water Act if it could be proven with certainty that the pollutant would deposit into navigable waters. To paraphrase Sir Isaac Newton's first law of motion,¹⁰ "when pollutants go up, they come down, . . . often depositing in navigable waters."¹¹ Atmospheric deposition of anthropogenic pollutants into lakes, streams, rivers, and oceans is a major environmental problem of our time.¹² For many pollutants, it is difficult to predict the form and location of their deposition, due primarily to long atmospheric residence times.¹³ However, some pollutants, such as mercury released from anthropogenic sources¹⁴—including from power plants and

9. See *infra* notes 42–43, and accompanying text (describing the localized effects of reactive gaseous and particulate mercury).

10. *Isaac Newton's Life*, Isaac Newton Inst. for Mathematical Scis., <http://www.newton.ac.uk/newtlife.html> (last visited July 18, 2011) (summarizing Newton's description of gravitational forces).

11. See *infra* notes 12 and 13, and accompanying text (describing anthropogenic atmospheric deposition of mercury).

12. See, *e.g.*, Charles T. Driscoll et al., *Mercury Contamination in Forest and Freshwater Ecosystems in the Northeastern United States*, 57 *BIOSCI.* 17, 17, 19 (2007) [hereinafter *Mercury Contamination*] ("Mercury (Hg) is a potent neurotoxin of significant ecological and public health concern. . . . [T]he predominant input of Hg to most watersheds is atmospheric deposition."); see also Oliver H. Pattee & Deborah J. Pain, *Lead in the Environment*, in *HANDBOOK OF ECOTOXICOLOGY* 373, 374, 376 (David J. Hoffman et al. eds., 2d ed. 2003) ("Lead (Pb) is a nonessential, highly toxic heavy metal, whose known effects on biological systems are deleterious. . . . Anthropogenic emissions of lead into the environment may be directly into air, water, and soil. . . . Most airborne lead is eventually deposited onto some surface, including plants, soil, bodies of water, artificial surfaces, and the respiratory tracts of animals, by dry or wet deposition processes.").

13. See generally S. Trivikrama Rao et al., *Long-Range Transport of Atmospheric Pollutants and Transboundary Pollution*, in *WORLD ATLAS OF ATMOSPHERIC POLLUTION* 35, 35–45 (Ranjeet S. Sokhi ed., 2008) (discussing regional and hemispheric transport of atmospheric pollution, and methods for analyzing the global spread of that pollution).

14. Mercury enters the global environment through both natural and human sources. The dominant pathway is through airborne emissions and deposition. CHARLES T. DRISCOLL ET AL., HUBBARD BROOK RESEARCH FOUND., *MERCURY MATTERS: LINKING MERCURY SCIENCE WITH PUBLIC POLICY IN THE NORTHEASTERN UNITED STATES* 7 (2007) [hereinafter *MERCURY MATTERS*], available at <http://wren.palwr.org/library/documents/MercuryMatters-HubbardBrook.pdf>. Roughly one-third of the mercury in the global environmental cycle is emitted by natural sources, including volcanoes and the mid-ocean ridge. *Id.*; see *Mercury Contamination, supra* note 12, at 18 ("[A]bout two-thirds of atmospheric Hg emissions are derived from either direct or reemitted anthropogenic sources."). The remaining two-thirds of mercury is produced by human sources. *MERCURY MATTERS, supra*, at 7;

through firework displays—have relatively short residence times in the atmosphere.¹⁵ As scientific knowledge of atmospheric distribution patterns of those airborne pollutants improves, scientists will be able to better predict spread patterns and deposition of these pollutants. It follows logically that when atmospheric deposition can be reliably measured and observed, releases of those pollutants from anthropogenic sources into the atmosphere could also be regulated pursuant to the Clean Water Act.

This Article leaves for the scientists the debate about the scientific certainty regarding distribution and atmospheric deposition of pollutants. Instead, it considers the question whether, assuming that there is scientific certainty about deposition patterns and rates for airborne pollutants, the atmospheric deposition of those pollutants could be regulated pursuant to the Clean Water Act. The concept of atmospheric deposition is essential to watershed health and management because emissions released by land-based point sources, such as factories, power plants, and even fireworks, eventually precipitate into water bodies and onto land, from where the pollutants are washed into water bodies.¹⁶ In many instances, and perhaps in general, the predictability upon which this Article is premised is lacking, because scientists are not yet certain about the atmospheric residence and deposition rates for many pollutants, which vary based on a number of fac-

see also James G. Weiner et al., *Ecotoxicology of Mercury*, in HANDBOOK OF ECOTOXICOLOGY 409, 415 (David John Hoffman et al. eds., 2d ed. 2003) (“Anthropogenic emissions have greatly increased the mass of mercury now cycling at the earth’s surface and in the atmosphere . . . [T]wo thirds of the mercury in modern global fluxes is from anthropogenic sources, and the remaining one third is from natural emissions.”). Of these anthropogenic sources, coal-fired power plants are the largest source of mercury emissions. *See Mercury Contamination, supra* note 12, at 18 (summarizing a study finding that “[c]oal-fired power plants are the largest single category of Hg emissions, with 1450 metric tons per year, comprising about 50% of anthropogenic sources.”) (citation omitted); *see also* MERCURY MATTERS, *supra*, at 7 (“Coal-fired power plants are the largest single source of anthropogenic mercury emissions in the United States, followed by industrial boilers and electric arc furnaces.”).

15. *E.g., infra* note 42 (discussing the short residence times of some species of mercury).

16. *See* Env’tl. Prot. Agency, Frequently Asked Questions About Atmospheric Deposition: A Handbook for Watershed Managers 2 (2001), *available at* http://www.epa.gov/oar/oaqps/gr8water/handbook/airdep_sept.pdf (“Atmospheric deposition is now recognized in many areas as a significant cause of water quality problems, acidification of streams and lakes, and toxic contamination of fish and the birds and mammals that eat them. . . . It is something water resource managers are finding they may need to take into account if they are to be effective stewards of their environmental resources.”).

tors.¹⁷ However, for some pollutants, such as mercury, there is a wealth of knowledge about the localized effects of atmospheric releases¹⁸ and an increasing ability to predict the regional spread of the pollutant through probabilistic analyses.¹⁹ These rapid scientific advances in the ability to quantify atmospheric residence and deposition rates counsel that it now is appropriate to consider the legal implications of this advancing scientific knowledge as it pertains to the Clean Water Act.

Part I of this Article examines airborne mercury pollution as a case study for understanding the science of atmospheric deposition, the problems created by atmospheric deposition of pollutants, and the failure of the current regulatory system to address atmospheric deposition of pollutants. Part II examines the two rationales of pollutant discharge—the indirect discharge rationale and the point source rationale—both of which are regulated pursuant to a permitting scheme authorized by the Clean Water Act. Part III examines the potential applicability of the indirect discharge rationale and the point source rationale to atmospheric deposition of pollutants. This part concludes that the indirect discharge rationale is the best fit for regulating atmospheric deposition of pollutants pursuant to the Clean Water Act's permitting system. Moreover, Part III also addresses concerns raised by courts that have addressed factually similar cases, and surmises that the fears raised by courts regarding the regulation of airborne pollutants pursuant to the Clean Water Act derive from a belief that regulating atmospheric pollutants under the Clean Water Act would delimit the scope of the regulatory scheme. However, the Article concludes that rather than resorting to applying arbitrary limitations to decrease the extent to which airborne pollutants are regulated under the Clean Water Act, courts should refocus on the ability of science to prove that atmospheric pollutants discharged from point sources will deposit in navigable waters. This focus on scientific certainty has the advantage of producing predictable application of the regulations that can

17. See *infra* note 36 (discussing the factors affecting dry deposition of airborne pollutants).

18. See *infra* note 42 (discussing the increase in knowledge about the localized effects of mercury atmospheric pollution).

19. See CHARLES T. DRISCOLL, SOURCES AND EFFECTS OF MERCURY DEPOSITION IN NEW YORK at 7–10, (Oct. 13, 2009) (showing improvements in scientific ability using probabilistic analyses to trace the source of mercury deposition through back trajectory analyses) (presented to the N.Y. State Assembly Standing Committee on Environmental Conservation: Hearing on Mercury Exposure, Albany, NY).

adapt to ever-increasing scientific knowledge about atmospheric transport and deposition of pollutants. Thus, a science-based approach would best restore and maintain “the chemical, physical, and biological integrity of the Nation’s waters,” as required by the Clean Water Act.²⁰

II.

ATMOSPHERIC MERCURY POLLUTION AS A CASE STUDY ILLUSTRATING THE SCIENCE OF ATMOSPHERIC DEPOSITION AND THE EXISTING REGULATORY SCHEME

Although the substantive legal analysis of this Article is written without reference to a particular pollutant, the problem of mercury pollution facing the United States serves as an inspiration for this Article. Examining the problems of mercury deposition helps to illustrate and contextualize both the seriousness of the problems that atmospheric deposition creates and shortcomings of the current legal and regulatory framework.

Anthropogenic emissions of mercury are a major environmental and health problem in the United States. Mercury is a potent neurotoxin²¹ that bioaccumulates in the food chain, until it reaches humans and has adverse effects on our health.²² Once atmospheric mercury particles and gases deposit in aquatic environments, they are then methylated.²³ Methylation is the process by which inorganic mercury is converted to methylmercury.²⁴ Although methylation is both a biotic and abiotic process, the

20. *S. Fla. Water Mgmt. Dist. v. Miccosukee Tribe of Indians*, 541 U.S. 95, 102 (2004) (quoting 33 U.S.C. § 1251).

21. *Mercury Contamination*, *supra* note 12, at 17.

22. See James G. Weiner, et al., *supra* note 14, at 421–22; N.J. MERCURY TASK FORCE, N.J. DEP’T OF ENVTL. PROT., VOLUME II: IMPACTS OF MERCURY IN NEW JERSEY 18, 21, 24, available at http://www.statè.nj.us/dep/dsr/mercury_task_force.htm; see Editorial, *Tuna Troubles*, N.Y. TIMES, Jan. 24, 2008, at A22 (discussing the levels of mercury in bluefin tuna and generally describing how mercury is released from anthropogenic sources, settles into water as methylmercury, is absorbed by bacteria, and passes up the food chain to humans). For general information on the mercury cycle, and environmental and health problems posed by mercury, see generally *The Mercury Problem*, NAT’L ATMOSPHERIC DEPOSITION PROGRAM, <http://nadp.sws.uiuc.edu/MDN/why.aspx> (last visited Oct. 20, 2010).

23. See Weiner et al., *supra* note 14, at 416 (noting that RGM is “considered to be available for methylation once deposited” in aquatic and terrestrial environments, and observing that methylation is more prevalent in aquatic than terrestrial ecosystems).

24. *Id.* at 418. Both reactive gaseous mercury and particulate mercury methylates into methylmercury. *Id.* at 416, 418. The methylation process, primarily done by microbes, takes place once the inorganic particulate mercury deposits into aquatic environments. *Id.* at 419.

most common pathway is through conversion of inorganic mercury to methylmercury by sulfate-reducing bacteria.²⁵ One expert notes that “[t]he methylation of inorganic mercury Hg(II)” is “the most toxicologically significant transformation in the environmental mercury cycle because it greatly increases the bioavailability and toxicity of mercury and increases the exposure of wildlife and humans to methylmercury.”²⁶ Animal species easily ingest the methylized form of mercury from food, water, and sediment.²⁷ That accumulation of methylmercury is dangerous because organisms eliminate methylmercury from their systems at a much slower rate than they take it in—a process known as bioaccumulation.²⁸ As methylmercury bioaccumulates in organisms, it also biomagnifies up the food chain.²⁹ Otherwise-edible organisms, including fish and mollusks, that ingest other mercury-containing organisms cannot process mercury, and thus it accumulates in their bodies, putting humans—who eat fish and mollusks, and who also cannot process mercury—at risk of mercury poisoning.³⁰

Methylmercury poisoning poses grave risks of neurological damage to humans.³¹ Scientists estimate that eight percent of

25. *Id.* at 419.

26. *Id.* at 419.

27. *Id.* at 421–22.

28. *See id.*

29. *See id.* at 422. Biomagnification is a description of the process where the concentration of a contaminant increases as it travels up trophic levels in a food web. *Id.*; see David C. Evers & Charles T. Driscoll, *The Danger Downwind*, N.Y. TIMES, Apr. 26, 2007, at A25 (“As it moves up the foodchain methylmercury increases in concentration as much as 10 million times.”). In general, predatory fish, such as tuna and swordfish, contain the highest concentrations of mercury because they consume a large number of smaller fish that have quantities of methylmercury in their systems. Weiner et al., *supra* note 14, at 422. Because the methylmercury remains in the fishes’ systems for a long time, when humans eat these fish, they receive a high dose of methylmercury. *See id.* at 421–22. For a general discussion of methylmercury bioaccumulation and biomagnification in food webs, see *id.* at 421–28.

30. N.J. MERCURY TASK FORCE, *supra* note 22 at 21, 24; see Diane Cardwell, *City Finds High Levels of Mercury in One-Fourth of Adults*, N.Y. TIMES, July 24, 2007, at B5 (discussing how one quarter of adult New Yorkers have elevated levels of mercury in their blood, mainly from eating fish that is contaminated with anthropogenic mercury); cf. David C. Evers & Charles T. Driscoll, *supra* note 29 (“Animals at the top of the chain that consume lots of tainted fish – common loons, bald eagles, river otters and some humans – are exposed to methylmercury in amounts high enough to cause neurological damage, behavioral abnormalities and reproductive problems.”). *See generally* N.J. MERCURY TASK FORCE, *supra* note 22 at 18–28 (discussing the travel of mercury, in its various forms, within the environment and human food chains).

31. *See supra* note 22 accompanying text.

women of childbearing age in the United States have blood concentrations of mercury at levels higher than those deemed safe by the U.S. Environmental Protection Agency.³² As a result, more than 400,000 children born every year are exposed to toxic levels of mercury, specifically methylmercury, while in the womb.³³ Methylmercury poisoning is associated with a host of neurological problems in newborns and children.³⁴

Mercury that is released from industrial sources such as coal-fired power plants³⁵ is wet- and dry-deposited in lakes and rivers

32. *Mercury Contamination*, *supra* note 12, at 17.

33. *Id.*; see also Cardwell, *supra* note 30 (“Nationally, . . . research showed that about 10 percent of women of childbearing age had blood mercury levels at or above five micrograms per liter, the threshold considered the low end for potential health risks.”); Evers & Driscoll, *supra* note 29 (“Children are particularly at risk for mercury poisoning. Some 200,000 to 400,000 children born in the United States each year have been exposed to mercury levels in their mothers’ wombs high enough to impair neurological development . . .”).

34. See Env’tl. Prot. Agency, EPA-452/R-97-005, 5 Mercury Study Report to Congress ES-4 (1997), available at <http://www.epa.gov/mercury/report.htm> (“Offspring born of women exposed to methylmercury during pregnancy have exhibited a variety of developmental neurological abnormalities, including the following: delayed onset of walking, delayed onset of talking, cerebral palsy, altered muscle tone and deep tendon reflexes, and reduced neurological test scores.”); Cardwell, *supra* note 30 (“The elevated mercury levels . . . may increase the risk of neurological damage in fetuses and infants whose mothers pass on the mercury through their bloodstreams during pregnancy or through breast milk. . . . ‘These are really issues for the developing brain and nervous system.’”); see also Emissions of Mercury, Deposition of These Mercury Emissions in New York and Effects of Atmospheric Deposition Mercury on Forests and Freshwaters in New York: Hearing on Mercury Exposure Before the State Assembly Standing Committee on Environmental Conservation (N.Y. Oct. 13, 2009) (testimony of Charles T. Driscoll) [hereinafter Emissions of Mercury] (“Children exposed to high concentrations of methyl mercury can experience decreased ability to perform in school, declines in visual and spatial functions, delays in ability to recall and process information, and a general diminishment in intelligence.”).

35. Coal-fired power plants and other industrial sources produce gaseous elemental mercury, reactive gaseous (“RGM”), and particulate mercury. See *Mercury Contamination*, *supra* note 12, at 18 (“Mercury is emitted to the atmosphere from point sources in three forms: elemental Hg (Hg⁰), . . . reactive gaseous mercury . . . , and particulate Hg . . .”). Although the relative proportions of each mercury species released from a source depend on a number of factors, RGM and particulate mercury are generally accepted to make up a majority of the mercury emitted from coal-fired power plants. See David C. Evers et al., *Biological Mercury Hotspots in the Northeastern United States and Southeastern Canada*, 57 *BIOSCI.* 29, 35 (2007) (“Gaseous divalent Hg and Hg(p) make up 50% to 90% of the Hg emitted from coal-fired electric utilities in the northeastern United States.”). The actual ratios of the types of mercury released—the emission speciation profile—varies depending on the type of coal used and the air pollution control technology. *Mercury Contamination*, *supra* note 12, at 18. Generally speaking, gaseous elemental mercury is roughly 50% of emissions from coal combustion, while RGM is 40% and particulate mercury is 10%. *Id.* at 4 tbl.2.

across the United States.³⁶ The atmospheric residence time of mercury varies based on a number of factors, including the speciation of the element. Mercury has three primary atmospheric-borne species³⁷—gaseous elemental mercury,³⁸ reactive gaseous

The majority of mercury emissions in the United States result from coal-fired power plants, municipal waste incinerators, and industrial processes. Driscoll, *Emissions of Mercury*, *supra* note 35; see Revital Bookman et al., *Local to Regional Emission Sources Affecting Mercury Fluxes to New York Lakes*, 42 *ATMOSPHERIC ENV'T* 6088, 6089 (2008) (“In the northeast US in 2002, the major emission sources are municipal waste combustion (23%) and utility coal burners (16%).”). Emissions from coal-fired power plants represent the largest source of emissions in the United States, and therefore “can play a disproportionately important role in local mercury deposition.” Driscoll, *Emissions of Mercury*, *supra*, at 1.

36. Atmospheric deposition occurs either through wet or dry deposition. *ENVTL. PROT. AGENCY*, *supra* note 16, at 6. “Anyone who has dusted a room or washed a car has encountered the effects of atmospheric deposition. Pollutants in the atmosphere can deposit on all of the solid surfaces of a watershed and then be washed off by rain, becoming part of the storm water runoff that reaches rivers, lakes, and coastal waters. Pollutants may also be deposited directly from the atmosphere onto the surface of a water body.” KEITH D. STOLZENBACH, *SOUTHERN CALIFORNIA ENVIRONMENTAL REPORT CARD 2006: ATMOSPHERIC DEPOSITION 21* (2006), *available at* <http://www.ioe.ucla.edu/media/files/Atmospheric-Deposition-2006.pdf>. Wet deposition describes the precipitation of pollutants through rain, snow, clouds, or fog, while dry deposition occurs when particles naturally filter out of the atmosphere. *Id.* The American Meteorological Society defines wet deposition as the “removal of atmospheric gases or particles through their incorporation into hydrometeors, which are then lost by precipitation.” *Glossary of Meteorology*, *AM. METEOROLOGICAL SOC'Y*, <http://amsglossary.allenpress.com/glossary/search?id=wet-deposition1> (last visited July 27, 2011). In other words, “wet deposition occurs when raindrops drag molecules of gases and particles down with them as they fall.” STOLZENBACH, *supra*, at 23.

In contrast, dry deposition is “[t]he process by which atmospheric gases and particles are transferred to the surface as a result of random turbulent air motions.” *Glossary of Meteorology*, *supra*. Dry deposition is analogous to the process of dust collecting on a table—with larger particles often settling out of the atmosphere due to gravitational forces. *ENVTL. PROT. AGENCY*, *supra*, at 16. Generally speaking, dry deposition “results from the combination of molecular diffusion, impaction, and gravitational settling.” STOLZENBACH, *supra*, at 22. Rates of dry deposition also are affected by a number of factors, including the particular chemical substance and the “stickiness” of the surface on which the substance lands. *ENVTL. PROT. AGENCY*, *supra* note 16, at 6.

37. *MERCURY MATTERS*, *supra* note 14, at 9.

38. Gaseous elemental mercury, which is also known by the chemical symbol ‘Hg⁰’, is “relatively inert” and not particularly water soluble. Because of this, it is often transported great distances around the Earth, often over the course of one year, before it deposits. See *Mercury Emissions: State of the Science and Technology: Hearing Before the H. Subcomm. on Environment, Technology, and Standards*, 108th Cong. (Nov. 5, 2003) (statement of Dr. David P. Krabbenhoft, Research Hydrologist (Geochemist), U.S. Geological Survey) [hereinafter *Krabbenhoft Testimony*], *available at*, http://www.usgs.gov/congressional/hearings/testimony_krabbenhoft05nov03.asp; Weiner et al., *supra* note 14, at 416. Recent studies, however, question the accuracy of previous reports that gaseous elemental mercury has a mean residence time

mercury,³⁹ and particulate mercury⁴⁰—each having their individual properties and atmospheric residence times. Despite these differences, recent studies⁴¹ suggest that scientists are coming

of one year, suggesting instead that it is less than that. See Ian M. Hedgecock & Nicola Pirrone, *Chasing Quicksilver: Modeling the Atmospheric Lifetime of Hg⁰ (g) in the Marine Boundary Layer at Various Latitudes*, 38 ENVTL. SCI. & TECH. 69 (2004) (reporting that at latitudes between the equator and 60°N, in summer, the mean atmospheric residence time of gaseous elemental mercury in the marine boundary layer was a mere 10 days, which is much shorter than generally accepted estimates of 1 year or more); see also Driscoll et al., *supra* note 12, at 19 (noting that recent studies have shown that the “atmospheric lifetime of [elemental mercury] is probably closer to 0.5 year than to 2 years”); Francesca Sprovieri et al., *Spatial Coverage and Temporal Trends of Over-Water, Air-Surface Exchange, Surface and Deep Sea Water Mercury Measurements*, in *MERCURY FATE AND TRANSPORT IN THE GLOBAL ATMOSPHERE* 324 (Nicola Pirrone & Robert Mason eds., 2009) (“Elemental Hg (Hg⁰), on the other hand, is thought to have an average atmospheric residence time of approximately one year, [] although there is considerable uncertainty on this point, with estimates ranging from 0.2 to 2 years.” (citation omitted)); Peter Weiss-Penzias et al., *Gaseous Elemental Mercury in the Marine Boundary Layer: Evidence for Rapid Removal in Anthropogenic Pollution*, 37 ENVTL. SCI. & TECH. 3755 (2003) (estimating the average residence time of gaseous elemental mercury in the marine boundary layer to be slightly more than 7 months).

39. Reactive gaseous mercury—also known as divalent mercury or Hg(II)—is water soluble and more chemically reactive than elemental mercury. See Weiner et al., *supra* note 14, at 416; *MERCURY MATTERS*, *supra* note 14, at 9; see also sources cited *supra* note 36 (describing other factors affecting dry deposition of mercury, including meteorological variables, surface variables, and the chemical properties of the element). Due to these properties, RGM deposits through precipitation (wet deposition) and contact (dry deposition) close to its source. *MERCURY MATTERS*, *supra* note 14, at 9. Therefore, RGM has a very short atmospheric residence time; it often deposits within hours of release. See *Mercury Contamination*, *supra* note 12, at 19 (describing RGM as having an atmospheric residence time of 0.5 to 2 days, leading to deposition within tens of kilometers); see also Weiner et al., *supra* note 14, at 416 (observing that RGM is “rapidly removed from the atmosphere via both wet and dry deposition”).

40. Likewise, particulate mercury, or Hg(p), has a short atmospheric residence time because it dry deposits quickly through processes such as gravitational settling, impaction, and adsorption. Mass. Dep’t of Env’tl. Prot., *Chapter 2—Mercury: Forms, Fate & Effects*, MASSDEP, <http://www.mass.gov/dep/toxics/stypes/hgch2.htm> (last visited July 30, 2011). Particulate mercury also can be ‘washed out’ of the atmosphere by rain. Thus, particulate mercury generally deposits within a short time of emission. See *Mercury Contamination*, *supra* note 12, at 19 (observing that particulate mercury has a relatively short residence time of 0.5 to 3 days).

41. See, e.g., Seth J. Lyman et al., *Estimation of Dry Deposition of Atmospheric Mercury in Nevada by Direct and Indirect Methods*, 41 ENVTL. SCI. & TECH. 1970 (2007) (describing results of an experiment using new methods to measure dry deposition rates of gaseous elemental mercury, RGM, and particulate mercury); David C. Evers et al., *supra* note 35, at 37 (using an industrial source complex short-term air dispersion model to find that biological mercury hotspots in New Hampshire and Massachusetts received “considerable [mercury] input from local and regional sources” due to the “predominant wind direction” and location of major mercury sources); see also Bookman et al., *supra* note 35 (noting that samples taken downwind of emissions sources show more mercury deposition, and that analysis of sedi-

closer to pinpointing the localized effects⁴² of atmospheric deposition of anthropogenic mercury species that can have a relatively short atmospheric residence time.⁴³

Atmospheric deposition of mercury continues to be an environmental and human health problem in the United States that is not adequately remediated by current application of environmental statutes and regulations.⁴⁴ The EPA primarily regulates

ments from a lake “suggests that about 80% of the total Hg deposition was derived from local and regional sources”). In 2009, the Atmospheric Mercury Network established a network of monitoring stations with a specific objective of “offer[ing] high-quality measurement data to estimate dry and total deposition of atmospheric mercury.” *Atmospheric Mercury Network (AMNet)*, NAT’L. ATMOSPHERIC DEPOSITION PROGRAM, <http://nadp.sws.uiuc.edu/amn/> (last visited July 29, 2011).

42. Mercury has long been considered a pollutant that travels far across the globe before depositing. See *MERCURY MATTERS*, *supra* note 14, at 9; see *supra* note 41 and accompanying text. That picture, however, is changing as scientists learn more about mercury speciation—“Emerging science has changed the dominant view of mercury from a strictly global pollutant to a global *and* regional pollutant.” *MERCURY MATTERS*, *supra* note 14, at 9. As previously discussed, the distance mercury travels depends largely on its oxidation state, or speciation. Evers et al., *supra* note 35, at 34. Because of their short atmospheric residence times, RGM and particulate mercury can be responsible for a “significant fraction of total deposition.” Evers et al., *supra* note 35, at 35; see also Sprovieri et al., *supra* note 38, at 324 (“The oxidized (mercuric) forms [RGM] . . . have short residence times in the atmosphere, and are deemed responsible for most of the Hg contamination close to point sources.”); *Krabbenhoft Testimony*, *supra* note 39 (“[M]ercury deposited near emission sources is likely to be released as particulate mercury or RGM.”); see also Weiner et al., *supra* note 14, at 416 (“Particulate and reactive gaseous mercury have relatively short travel distances (up to tens of kilometers) and residence times in the atmosphere . . .”).

43. See E-mail from Dr. Charles T. Driscoll, Syracuse Univ. Professor of Envtl. Sys. Eng’g, to author (Nov. 9, 2010, 17:23 EDT) (on file with author) (“Both reactive gaseous and particulate mercury are the oxidized form[s] of mercury and indeed they both fall out close to the source.”); *Mercury Contamination*, *supra* note 12, at 19 (describing RGM as having an atmospheric residence time of 0.5 to 2 days, leading to deposition within tens of kilometers, while particulate mercury also has a relatively short residence time of 0.5 to 3 days); *Atmospheric Transport*, ENV’T CAN., <http://www.ec.gc.ca/mercure-mercury/default.asp?lang=En&n=54E48CBE-1> (last visited July 30, 2010) (“Particulate forms of mercury (Hg(p)) tend to fall out closer to the source of emissions, with larger particles falling out faster than smaller ones. The site-specific deposition of mercury is variable, and is affected by conditions like meteorology, temperature and humidity, solar radiation and emission characteristics (speciation, source, stack height, etc.).”).

44. See Robin Kundis Craig, *Climate Change, Regulatory Fragmentation, and Water Triage*, 79 U. Colo. L. Rev. 825, 857–61 (2008) (noting that atmospheric deposition of mercury still accounts for more than 90 percent of existing mercury pollution in some lakes and rivers, and discussing the inability of current input-based regulation to remedy many environmental problems, such as atmospheric deposition of mercury, that require comprehensive and cohesive solutions that address the affected resource on an ecosystem or watershed level). While Professor Craig undoubtedly is correct that many of today’s environmental crises are too broadly-

mercury emissions under the Clean Air Act, but not under the Clean Water Act.⁴⁵ Nevertheless, many of the impediments to controlling atmospheric mercury have been more political than structural. In 2005, the EPA issued a Clean Air Mercury Rule (“CAMR”),⁴⁶ part of former-President Bush’s Clear Skies initiative, which instituted a cap and trade program for mercury emissions from coal-fired power plants.⁴⁷ The EPA simultaneously revised its prior finding that it was “appropriate and necessary” to regulate coal- and oil-fired power plants under section 112⁴⁸—addressing hazardous air pollutants—of the Clean Air Act.⁴⁹ These concurrent decisions, as well as the Clear Skies initiative, were greatly criticized by many sides in the press, including by the Government Accountability Office⁵⁰ (“GAO”), environmen-

reaching to be effectively and completely addressed by environmental laws based on antiquated input-based regulation, it is possible that expanding the applicability of input-based regulations might provide impetus for interested parties to address environmental problems through ecosystem-based regulation. If atmospheric deposition of mercury was to be regulated under the NPDES permitting scheme of the Clean Water Act, in addition to the Clean Air Act, affected parties, such as power plants, might then have the incentive to work together with opposing interests (environmentalists) to affect new ecosystem-based legislation that would centralize the regulations in one predictable place. Industry interests might deem it prudent to reach across the table to produce ecosystem-based regulations, rather than reactively applying for NPDES permits for individual atmospheric pollutants as scientific knowledge about the deposition patterns and rates of pollutants improves, such that they become regulated under the NPDES permitting scheme of the Clean Water Act in a piecemeal manner.

45. See *Clean Air Mercury Rule: Basic Information*, ENVTL. PROT. AGENCY, <http://www.epa.gov/CAMR/> (last updated Mar. 16, 2011) (describing the EPA’s Clean Air Mercury Rule).

46. Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28, 606 (May 18, 2005).

47. ENVTL. PROT. AGENCY, *supra* note 45.

48. 42 U.S.C. § 7412 (2006).

49. Revision of December 2000 Regulatory Finding, 70 Fed. Reg. 15,994 (Mar. 29, 2005); see also ENVTL. PROT. AGENCY, *supra* note 45 (claiming, somewhat vaguely, that EPA reversed its previous decision that regulation of coal- and oil-fired power plants under section 112 was appropriate and necessary,” because “recent information demonstrates that it is not appropriate or necessary to regulate coal- and oil-fired utility units under section 112”).

50. See Shankar Vedantam, *EPA Distorted Mercury Analysis, GAO Says*, WASH. POST, Mar. 8, 2005, at A09, available at <http://www.washingtonpost.com/wp-dyn/articles/A15244-2005Mar7.html> (reporting that a GAO study concluded that “the EPA had failed to fully document the toxic impact of mercury on brain development, learning, and neurological functioning,” and also reporting that EPA’s inspector general revealed that the agency’s scientists had been pressure to back the Bush initiative by industry interest groups).

tal groups,⁵¹ and others⁵² for understating the adverse health and developmental effects of mercury, and overstating the environmental benefits of the plans while concealing science- and economics-based critiques of them. In February 2008, the United States Court of Appeals for the District of Columbia Circuit, in *New Jersey v. Environmental Protection Agency*,⁵³ issued a critical blow to the EPA's regulatory scheme when it vacated both of the EPA's 2005 mercury regulations.⁵⁴ Ruling on a challenge to the EPA's regulatory scheme by fifteen states and various environmental organizations,⁵⁵ the D.C. Circuit concluded that the regulation removing coal- and oil-fired power plants from the list of sources regulated under section 112 of the Clean Air Act was contrary to the plain text and structure of the statute.⁵⁶ As such, the court also vacated the CAMR regulations⁵⁷ and undid President Bush's controversial⁵⁸ Clean Air Act mercury regulation scheme. Recently, the EPA finalized maximum achievable control technology ("MACT") standards for coal- and oil-fired power plants, which are designed to reduce mercury emissions

51. See, e.g., Shankar Vedantam, *Mercury Emissions to Be Traded: EPA Criticizes on Pollution Rule*, WASH. POST, Mar. 15, 2005, at A01, available at <http://www.washingtonpost.com/wp-dyn/articles/A35072-2005Mar14.html?sub=AR> (quoting John Walke, Clean Air Director for the Natural Resources Defense Council, calling the Clean Air Mercury Rule "the most dishonest, dangerous and illegal rule I have ever seen come out of the EPA"); Vedantam, *supra* note 50 (quoting Angela Ledford, Director of *Clean the Air*, as saying: "Their cap-and-trade system for mercury involves trading in toxic chemicals, which has never been done before. . . . The agency's mercury rule first failed the public health test. It then failed the science test. Now, it's clear that EPA cooked the books."). But see Vedantam, *supra* note 50 (quoting Scott Segal, director of the Electric Reliability Coordinating Council, an industry group, as saying: "Only in Washington would someone have the temerity to tell you a mandated 70 percent reduction constitutes a rollback. . . . It takes a unique brand of moxie to say the next generation of air pollution controls reduces air pollution controls.").

52. See Shankar Vedantam, *New Mercury Rule Omits Conflicting Data: Study Called Stricter Limits Cost-Effective*, WASH. POST., Mar. 22, 2005, at A01, available at <http://www.washingtonpost.com/wp-dyn/articles/A55268-2005Mar21.html> (revealing that EPA stripped its public documents of the results of a Harvard University study finding that the proposal put forth by environmentalists was cost effective and had health benefits more than one hundred times greater than EPA estimated it had).

53. 517 F.3d 574 (D.C. Cir. 2008).

54. *Id.* at 583.

55. *Id.* at 581.

56. *Id.* at 581, 583.

57. *Id.* at 583.

58. See *supra* notes 50–52 and accompanying text (describing highly critical reaction to the Clean Air Mercury Rule and President Bush's Clear Skies initiative).

from power plants; the rule does not address mercury from other sources.⁵⁹

The EPA long has recognized the importance of atmospheric deposition as a source of mercury,⁶⁰ and thus the EPA has already created an extensive handbook for watershed managers, alerting the managers to the significance of atmospheric deposition as a source of pollution, including mercury deposition.⁶¹ Under the Clean Water Act, states must define designated uses and acceptable pollutant levels for waters within the state.⁶² Section 303(d) of the Clean Water Act requires that states develop total maximum daily loads (“TMDLs”) for pollutants in each of their waters⁶³ to determine when the pollution levels exceed water quality standards.⁶⁴ A TMDL is “the maximum daily amount of a pollutant that can enter a water body and still ensure that the water meets applicable water quality standards.”⁶⁵ The EPA has issued guidance requiring that waters impaired by atmospheric deposition be included on the TMDL allocation

59. Following the Supreme Court’s Denial of Certiorari in *New Jersey v. Environmental Protection Agency*, the United States District Court for the District of Columbia issued a consent decree that called for the EPA to propose air toxics standards for coal- and oil-fired electric generating units by March 10, 2011 and finalize a rule by November 16, 2011. *Am. Nurses Ass’n v. Jackson*, Civ. No. 1:08-cv-02198 (RMC) (D.D.C. Apr. 15, 2010), ECF No. 33, available at <http://www.epa.gov/ttn/atw/utility/consentfnl.pdf>. The consent decree required that the EPA promulgate final maximum achievable control technology (“MACT”) emissions standards for these units. Those MACT standards would, therefore, address mercury emissions as they relate to technology standards. On March 11, 2011, the EPA issued its proposed rule, and it accepted comments until July 5, 2011. See National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 76 FR 38590 (proposed March 11, 2011) (to be codified at 40 C.F.R. pt. 60 & 63), available at <http://www.epa.gov/airquality/powerplanttoxics/pdfs/proposal.pdf>. On July 6 2011, the EPA finalized the rule, named the Cross-State Air Pollution Rule. Press Release, Env’tl. Prot. Agency, EPA Reduces Smokestack Pollution, Protecting Americans’ Health from Soot and Smog (July 7, 2011), available at [http://yosemite.epa.gov/opa/admpress.nsf/6424ac1caa800a ab85257359003f5337/cedd944b946fdc5f852578c60055e818!OpenDocument](http://yosemite.epa.gov/opa/admpress.nsf/6424ac1caa800aab85257359003f5337/cedd944b946fdc5f852578c60055e818!OpenDocument).

60. See ENVTL. PROT. AGENCY, EPA’S ROADMAP FOR MERCURY 8 (2006), available at <http://www.epa.gov/mercury/pdfs/FINAL-Mercury-Roadmap-6-29.pdf> (“The majority of mercury in U.S. waters, particularly in the eastern U.S., results from air deposition . . .”).

61. ENVTL. PROT. AGENCY, *supra* note 16, at 2–3.

62. ENVTL. PROT. AGENCY, *supra* note 60, at 26.

63. 33 U.S.C. § 1313(d) (2006).

64. ENVTL. PROT. AGENCY, *supra* note 60, at 26.

65. *Id.*

lists.⁶⁶ The EPA encourages states to collaborate in this process; however, figures indicate that despite some cooperation amongst Northeastern states⁶⁷ and Great Lakes states,⁶⁸ total mercury concentration in rainfall and through wet deposition remains high in many places,⁶⁹ leaving many states under mercury advisories.⁷⁰ In 2007, the EPA instituted more voluntary measures to reduce mercury pollution;⁷¹ however, the incentive for states to participate in this program was that the states would be allowed to defer the development of mercury TMDLs.⁷² Moreover, in some instances, the EPA's approval actually has limited the ability of those states to seek new cuts in mercury emissions from power plants through state statutes and regulations, by not approving some cuts proposed by the states.⁷³ In one recent, tell-

66. ENVTL. PROT. AGENCY, *supra* note 16, at 2. The process of creating TMDLs for mercury is complicated by the fact that mercury can travel through the atmosphere across state and international boundaries before depositing in water bodies. *Id.*

67. See Press Release, Env'tl. Prot. Agency, EPA Approves Plan by Northeast States to Lower Mercury Levels in Fish (Dec. 27, 2007), <http://yosemite.epa.gov/opa/admpress.nsf/8b770facf5edf6f185257359003fb69e/7040cdf181f9ab13852573c40066eda5!OpenDocument> (announcing the approval of a Northeast states cooperative TMDL); see also Press Release, New Eng. Interstate Water Pollution Control Comm'n, Northeast, Regional Mercury TMDL, <http://www.neiwpc.org/mercury/MercuryTMDL.asp> (last visited Oct. 28, 2010) (noting that Connecticut, Massachusetts, Maine, New Hampshire, New York, Rhode Island, and Vermont have been working together on the TMDL since late 2005).

68. See ENVTL. PROT. AGENCY, *supra* note 60, at 27 (describing how Great Lakes states have adopted uniform water quality standards for the Great Lakes System).

69. NAT'L ATMOSPHERIC DEPOSITION PROGRAM, ILL. STATE WATER SURVEY, MONITORING MERCURY DEPOSITION: A KEY TOOL TO UNDERSTANDING THE LINK BETWEEN EMISSIONS AND EFFECTS 2 (2005), available at <http://nadp.sws.uiuc.edu/lib/brochures/mdn.pdf>.

70. *Id.*; see *State Specific Causes of Impairment that Make Up the National Mercury Cause of Impairment Group*, ENVTL. PROT. AGENCY, http://iaspub.epa.gov/tmdl_waters10/attains_nation_cy.cause_detail_303d?p_cause_group_id=693 (last updated July 31, 2011) (containing links to lists of all waters currently considered "impaired" by mercury-related pollution for the purposes of the Clean Water Act's section 303(d)).

71. See Memorandum from Craig Hooks, Dir., Office of Wetlands, Oceans, and Watersheds, to Env'tl. Prot. Agency to Region 1-X Water Div. Dir. 1 (Mar. 8, 2007), <http://www.epa.gov/owow/tmdl/mercury5m/Mercury5m.pdf> (describing the voluntary approach for states that established comprehensive mercury reduction programs incorporating elements recommended by the EPA).

72. *Id.*

73. See *EPA Approval of States' Mercury TMDL May Temper Industry Concerns*, ENVTL. POLICY ALERT, Jan. 16, 2008 (noting that power plant industry favors the new Northeast TMDL because the EPA, by "taking no action" on the particular part of the Northeast states' submission requesting greater mercury reductions from out-of-region sources, curtailed the ability of the participating states to seek new cuts in mercury emissions from power plants).

ing, example from the Bush administration era, industry sources correctly predicted the EPA's resistance to states' efforts to make emissions requirements more stringent than required by the EPA, evidencing the enforcement mentality within the EPA during the last administration.⁷⁴ The EPA has not taken notable action on mercury TMDLs since the new administration took office.⁷⁵

While this section specifically addresses the pervasive problem that mercury deposition poses for humans and ecosystems, the problem of atmospheric deposition is by no means limited to mercury. Anthropogenic sources, such as burning fossil fuels, industrial processes, pesticide application, and agricultural activities, are significant sources of a range of atmospherically-deposited pollutants, in addition to mercury compounds. These pollutants include, but are not limited to, sulfur compounds, nitrogen compounds, lead compounds, cadmium compounds, chlorpyrifos, copper, zinc, polychlorinated biphenols ("PCBs"), diazinon, dioxins/furans, dieldrin, DDT/DDE, hexachlorobenzene ("HCB"), a-hexachlorocyclohexane ("a-HCH"), lindane, toxaphene, polycyclic organic matter ("POM"), and atrazine.⁷⁶ While these pollutants have different affects on human and ecosystem health depending on the particular chemical compounds—some may not have as deleterious effects on humans and ecosystems as mercury compounds do, while others are as or more dangerous—the EPA considers all to be problematic and a threat to ecosystems. However, scientific knowledge of atmospheric deposition rates and patterns for many of these pollutants is nascent or nonexistent.⁷⁷ Mercury is an example of a pollutant for which scientific knowledge has advanced rapidly over the last decade; perhaps even to the point that mercury dis-

74. See *Industry Sees Little Chance for Mercury Emissions Cuts Due to TMDL*, Inside EPA, Nov. 2, 2007 (quoting one industry source predicting that the EPA would bypass a request by Northeast states to cut mercury emissions in the states' TMDL). The EPA approved the Northeast states' TMDL, but without further mercury emissions restrictions. See *supra* note 73 and accompanying text.

75. Cf. *Emissions of Mercury*, *supra* note 34 (noting that all fifty states in the United States have mercury advisories).

76. ENVTL. PROT. AGENCY, *supra* note 60, at 3–5.

77. Cf. ENVTL. PROT. AGENCY, *supra* note 16, at 57 ("Source attribution may be the most technically difficult part of solving environmental problems caused by atmospheric deposition. . . . Source identification . . . involves some sort of tracking of the pollutant from the source to the area where it is being deposited. This is complicated by the fact that many sources emit the same pollutants. Furthermore, the pollutants are dispersed and do not necessarily travel in a straight line and they may be transformed in the atmosphere before being deposited.")

charges should be regulated pursuant to the Clean Water Act. If and when scientific certainty regarding deposition rates and patterns for these other pollutants is attained, they too could be regulated pursuant to the Clean Water Act.

III.

THE CLEAN WATER ACT AND THEORIES OF DISCHARGE

A primary reason that courts may be receptive to regulating some forms of atmospheric deposition pursuant to the Clean Water Act is that Congress has expressed a preference that pollutants be controlled at the point source whenever possible.⁷⁸ Although, in the past, the EPA has noted that atmospheric deposition is a source of nonpoint pollution,⁷⁹ this does not exclude the possibility that atmospherically-deposited pollutants may be subject to Clean Water Act regulations when a point source of those pollutants is identifiable and the deposition is observable.⁸⁰ The definitions of point and nonpoint pollution sources should follow the increased and increasing scientific knowledge about the spread and deposition patterns of atmospheric pollutants, not vice versa.

78. See National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule, 40 C.F.R. pt. 122 (2008) (“Congress generally intended that pollutants be controlled at the source whenever possible.”) (citing S. Rep. No. 92-414, p. 77 (1972)); see also *United States v. Earth Sciences, Inc.*, 599 F.2d 368, 373 (10th Cir. 1979) (“The concept of a point source was designed to further this scheme by embracing the broadest possible definition of any identifiable conveyance from which pollutants might enter the waters of the United States. It is clear from the legislative history Congress would have regulated so-called nonpoint sources if a workable method could have been derived.”).

79. Nonpoint Source Program and Grants Guidelines for States and Territories, 68 Fed. Reg. 60653, 60655 (Oct. 23, 2003) (“Nonpoint source pollution is caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, other coastal waters, and ground water. Atmospheric deposition and hydrologic modification are also sources of nonpoint pollution.”). See *infra* note 116 for discussion of the definition of “nonpoint source.”

80. See *Earth Sciences, Inc.*, 599 F.2d at 373 (stating that, in light of the broad congressional mandate to regulate pollutants from point sources pursuant to the Clean Water Act, it would “contravene [] the intent of [the Clean Water Act] and the structure of the statute to exempt from regulation any activity that emits pollution from an identifiable point”); see also *Nw. Env'tl. Def. Ctr. v. Brown*, No. 07-35266, 2011 WL 1844060, at *6 (9th Cir. May 17, 2011) (noting that Congressional committees “made clear that the term ‘point source’ was not to be interpreted narrowly”).

Congress enacted the Clean Water Act to restore and maintain “the chemical, physical, and biological integrity of the Nation’s waters.”⁸¹ The Clean Water Act, in section 301(a), makes illegal “the discharge of any pollutant by any person[,]” subject to certain exceptions.⁸² Section 402—one of the exceptions—establishes the National Pollution Discharge Elimination System (“NPDES”), which forbids “the discharge of any pollutant” without an NPDES permit.⁸³ “Discharge of a pollutant” means “any addition of any pollutant to navigable waters from any point source” or “any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.”⁸⁴ A point source is “any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, . . . or vessel or floating craft, from which pollutants are or may be discharged.”⁸⁵ Thus, in combination, the Clean Water Act proscribes the discharge of any pollutant in navigable waters from any point source without an NPDES permit.

Courts have embraced two rationales for describing the relationship between point sources and navigable waters—the indirect discharge rationale and the point source rationale.⁸⁶ Both rationales focus on the Clean Water Act’s requirement that the “discharge of a pollutant” be “to navigable waters from any point source.”⁸⁷ In *Rapanos v. United States*, the Supreme Court noted that the indirect discharge rationale holds that the Clean Water Act’s language “does not forbid the ‘addition of any pollutant

81. *S. Fla. Water Mgmt. Dist. v. Miccosukee Tribe of Indians*, 541 U.S. 95, 102 (2004) (quoting 33 U.S.C. § 1251).

82. 33 U.S.C. § 1311(a) (2006); see *W. Va. Highlands Conservancy, Inc. v. Huffman*, 625 F.3d 159, 165 (4th Cir. 2010) (noting that the “the Clean Water Act is a broadly worded statute”). In particular, in *W. Va. Highlands Conservancy*, the Fourth Circuit noted that that “[a]ny” is a powerful statutory term” and that [t]he Clean Water Act uses it frequently.” 625 F.3d at 165.

83. 33 U.S.C. § 1342(a) (2006); see *S. Fla. Water Mgmt. Dist.*, 541 U.S. at 102 (“[T]he NPDES requires dischargers to obtain permits that place limits on the type and quantity of pollutants that can be released into the Nation’s waters.”). The Clean Water Act contains a “citizen suit” provision—33 U.S.C. § 1365—that gives any “person or persons having an interest which is or may be adversely affected” the right to sue to enforce the limitations of a Clean Water Act permit.

84. 33 U.S.C. § 1362(12) (2006).

85. 33 U.S.C. § 1362(14) (2006).

86. See generally *Rapanos v. United States*, 547 U.S. 715, 743–44 (2006) (coining the terms “indirect discharge” and “point source” rationales, and discussing these rationales). The Court did not approve of either theory, but recognized that both theories were well-established in lower courts. *Id.*

87. 33 U.S.C. § 1362(12) (2006).

directly to navigable waters from any point source,' but rather the 'addition of any pollutant *to* navigable waters [*from* a point source].'⁸⁸ At its core, the indirect discharge rationale states that the absence of a requirement for *direct* addition of a pollutant to a navigable water from a point source means that a pollutant may pass "through conveyances" in between release from the point source and addition to navigable waters.⁸⁹

In contrast, under the "point source" rationale, the source of a pollutant is irrelevant as long as the pollutant is diverted or channeled into navigable waters by a point source.⁹⁰ The Supreme Court recognized that the Clean Water Act "makes plain that a point source need not be the original source of the pollutant; it need only convey the pollutant to 'navigable waters.'⁹¹ Thus, this rationale includes cases involving intervening channels, as well as pollution sources that deposit directly into navigable waters.⁹² In essence, the "indirect discharge" rationale holds that release of a pollutant from a point source is covered under the Clean Water Act if it passes from the point source, through a conveyance, into a navigable water; while the "point source" rationale includes in its definition of point sources both those pollution vehicles that the indirect discharge theory identifies merely as "conveyances," as well as original sources of pollution. Common usage supports both interpretations of the statute, because the Clean Water Act proscribes the discharge of a pollutant "to" navigable waters, not "directly to" navigable waters or "into" navigable waters.⁹³

88. *Rapanos*, 541 U.S. at 743 (final emphasis added).

89. *See id.* at 743 ("[L]ower courts have held that the discharge into intermittent channels of any pollutant *that naturally washes downstream* likely violates § 1311(a), even if the pollutants discharged from a point source do not emit 'directly into' covered waters, but pass 'through conveyances' in between.") (citing *United States v. Velsicol Chem. Corp.*, 438 F. Supp. 945, 946-47 (W.D. Tenn. 1976)); *see also* *W. Va. Highlands Conservancy, Inc. v. Huffman*, 625 F.3d 159, 168 ("[I]n *South Florida Water Management District v. Miccosukee Tribe*, the Supreme Court rejected as 'untenable' the argument that NPDES permits are only required when a pollutant 'originates from the point source.' 541 U.S. 95, 104-05 (2004). To the contrary, the Court determined that permits are required for discharges from point sources 'that do not themselves generate pollutants' but merely 'convey [pollutants] to "navigable waters."' *Id.* at 105.").

90. *Id.*

91. *Id.* (quoting *South Fla. Water Mgmt. Dist. v. Miccosukee Tribe*, 541 U.S. 95, 105 (2004)).

92. *See id.* (describing lower court cases where channels and intervening culverts are found to be point sources).

93. The Supreme Court has noted that although "canons of construction are no more than rules of thumb[.]" the "cardinal canon" is that "courts must presume that

IV.

ATMOSPHERIC DEPOSITION OF POLLUTANTS AND THE
TWO RATIONALES OF DISCHARGE

In exploring the question of whether atmospheric deposition could be regulated pursuant to the NPDES system of the Clean Water Act, the answer lies in whether the physical processes of atmospheric deposition fit either the involuntary discharge rationale or the point source rationale. This section explores the merits of both rationales, as per atmospheric deposition, including discussion of the cases cited in Justice Scalia's plurality opinion from *United States v. Rapanos*.⁹⁴

A. *The Indirect Discharge Rationale*

The indirect discharge rationale is a difficult fit for atmospheric deposition, because the indirect discharge rationale requires that pollutants travel from a point source through a conveyance—something that atmospheric pollutants generally do not do—and then to navigable waters.⁹⁵ In *Rapanos*, the Supreme Court cited two cases that are illustrative of the rationale, *United States v. Velsicol Chemical Corp.*⁹⁶ and *Sierra Club v. El Paso Gold Mines, Inc.*⁹⁷

a legislature says in a statute what it means and means in a statute what it says there." *Conn. Nat'l Bank v. Germain*, 503 U.S. 249, 253 (1992). Therefore, a "court should give a word in a statute its 'ordinary, contemporary, common meaning, absent an indication Congress intended [it] to bear some different import.'" *Nat'l Cotton Council of Am. v. Env'tl. Prot. Agency*, 553 F.3d 927, 935 (6th Cir. 2009) (quoting *Grand Traverse Band of Ottawa & Chippewa Indians v. Office of U.S. Attorney*, 369 F.3d 960, 967 (6th Cir. 2004)) (alteration in original). *MERRIAM-WEBSTER DICTIONARY*, defines "to" as "used as a function word to indicate movement or an action or condition suggestive of movement toward a place, person, or thing reached." *MERRIAM-WEBSTER DICTIONARY*, available at <http://www.merriam-webster.com/dictionary/to> (last visited Oct. 21, 2010). In contrast, "into" is "used as a function word to indicate entry, introduction, insertion, superposition, or inclusion." *MERRIAM-WEBSTER DICTIONARY*, available at <http://www.merriam-webster.com/dictionary/into> (last visited Oct. 21, 2010). Therefore, the plain reading of the words in the Clean Water Act reveals that the "discharge of pollutants" does not have to be "directly to" or "into" the navigable water.

94. 547 U.S. 715 (2006).

95. *Id.* at 2227; see *Sierra Club v. Abston Constr. Co.*, 620 F.2d 41, 44 (5th Cir. 1980) (agreeing that "surface runoff collected or channeled by the operator constitutes a point source discharge"). It is of note that Justice Scalia's plurality opinion is the first to call the "indirect discharge" rationale by that name. Prior to his opinion in *Rapanos*, no court described or appears to have discerned a split between the point source rationale and the indirect discharge rationale.

96. 438 F. Supp. 945 (W.D. Tenn. 1976).

97. 421 F.3d 1133 (10th Cir. 2005). Justice Scalia's plurality opinion also cited another case, *Concerned Area Residents for the Env't v. Southview Farm*, 34 F.3d 114

In *Velsicol Chemical*, the defendant, Velsicol Chemical Corporation, claimed, *inter alia*, that its discharges of pollutants into the city sewer system were not “to navigable waters” as required for regulation under the Clean Water Act.⁹⁸ Velsicol Chemical argued that it merely discharged pollutants into the city sewer system (a non-treatment system), which then emptied into the Mississippi River.⁹⁹ Velsicol Chemical contended that the absence of a direct link between its plant and the Mississippi River removed it from Clean Water Act regulation.¹⁰⁰ The district court, however, rejected this reasoning, finding instead that “[t]he fact that [a] defendant may discharge *through conveyances* owned by another party does not remove defendant’s actions from the scope of [the Clean Water Act]”—in this case an entire municipal sewer system was the intermediary.¹⁰¹ The court found that Velsicol Chemical’s knowledge that the city sewers led to the Mississippi River was sufficient to bring it under the umbrella of the Clean Water Act.¹⁰²

Sierra Club v. El Paso Gold Mines, Inc. involved an abandoned gold mine that was leaching pollutants into a nearby tunnel, which led to a creek. Plaintiffs, the Sierra Club and the Mineral Policy Center, alleged that El Paso Gold Mines, Inc. (“El Paso”) was discharging manganese and zinc through a vertical mine shaft into a 2.5 mile stretch of Roosevelt Tunnel, which connected the mine with Cripple Creek, a navigable water.¹⁰³ One of the critical issues in the case was whether the plaintiffs could prove a hydrological connection between the mine shaft and Roosevelt Tunnel.¹⁰⁴ The Court of Appeals for the Tenth Circuit began discussion of this issue by quickly concluding that the mine shaft was a point source,¹⁰⁵ and then deciding that the mine’s chemical releases were an “addition” under the Clean Water

(2d Cir. 1994) as illustrative of the indirect discharge rationale, but examination of that case reveals that it describes two examples of point source rationale discharges, not one example of the indirect discharge rationale and one example of the point source rationale, as Justice Scalia claimed. See *supra* note 128 and accompanying text for discussion of *Southview Farm*’s relation to the indirect discharge rationale and the point source rationale.

98. 438 F. Supp. at 946.

99. *Id.* at 946–47.

100. *Id.*

101. *Id.* at 947 (emphasis added).

102. *Id.*

103. 421 F.3d 1133, 1136–37 (10th Cir. 2005).

104. *Id.* at 1137.

105. *Id.* at 1140–41.

Act.¹⁰⁶ Turning to the discussion about the contested hydrologic connection, the Tenth Circuit noted that “[t]he language of the [Clean Water Act] requires a connection or link between discharged pollutants and their addition to navigable waters.”¹⁰⁷ That link, the court concluded, could be established by proof that “pollutants, discharged from the [mine] shaft, actually make their way to the Roosevelt Tunnel portal where they are then discharged into navigable waters (Cripple Creek, and, ultimately, the Arkansas River).”¹⁰⁸ In essence, the 2.5 mile course that the water took through Roosevelt Tunnel was an indirect conveyance for pollutants.¹⁰⁹

Atmospheric deposition of pollutants does not fit well with the indirect discharge rationale because such a rationale requires there to be a discrete channel or conveyance through which the pollutants flow. In other words, in order for atmospheric deposition to fit in this theory, the atmosphere must be a “conveyance.” The available case law, however, simply does not support this conclusion. The cases described above both comprehend the indirect discharge rationale as applicable only to situations where pollutants are transmitted from a point source to navigable waters through a discrete conveyance. No case law supports the notion that the indirect discharge rationale can be applied to abstract, open conveyances that facilitate the spread of pollutants, such as an open field, a hillside, or air. Therefore, no case law, abstractly or concretely, supports extension of the indirect discharge rationale to atmospheric deposition of pollutants.

B. *The Point Source Rationale*

The Clean Water Act contains an expansive definition of point sources, which at their heart are “discernable, confined and discrete conveyance[s] . . .”¹¹⁰ It is undisputed that a point source

106. *Id.* at 1143–46.

107. *Id.* at 1146.

108. *Id.*

109. The Tenth Circuit concluded that the Sierra Club was not entitled to summary judgment because there existed a matter of material dispute as to whether pollutants traveled the length of Roosevelt Tunnel. *Id.* That fact, however, is irrelevant for the purposes of this discussion, because the court concluded that had pollutants passed through Roosevelt Tunnel then it would have been an addition of pollutants to a navigable water from a point source, pursuant to the indirect discharge rationale.

110. “The term ‘point source’ means any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or

can be either an original source of a pollutant or merely a discrete conveyer of a pollutant to navigable waters, such as a storm drain or culvert.¹¹¹ The Supreme Court recognized as much in *Rapanos*.¹¹² More interesting is the question of how, under the point source rationale, a pollutant travels from a point source to navigable waters. The Clean Water Act “does not forbid the ‘addition of any pollutants *directly* to navigable waters from any point source,’ but rather the ‘addition of any pollutant *to* navigable waters.’”¹¹³ Federal district and appellate court cases uniformly confirm that pollutants released from a point source need not be released *directly* to navigable water. These courts repeatedly have held that pollutants which, after release from point sources, flow over land or pass through the air before reaching navigable waters, are safely within the purview of the Clean Water Act.¹¹⁴ The lesson from these cases is that the ability to

vessel or any other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.” 33 U.S.C. § 1362(14) (2006).

111. See *infra* note 112 and accompanying text.

112. See *Rapanos v. United States*, 547 U.S. 715, 744 (2006) (“We have held that the [Clean Water] Act ‘makes plain that a point source need not be the original source of the pollutant; it need only convey the pollutant to ‘navigable waters.’” (quoting *South Fla. Water Mgmt. Dist. v. Miccosukee Tribe*, 541 U.S. 95, 105 (2004))).

113. *Id.*; see also *supra* note 93 (discussing how the plain language of the Clean Water Act supports an expansive understanding of the point source rationale).

114. See, e.g., *Peconic Baykeeper, Inc. v. Suffolk County*, 600 F.3d 180 (2d Cir. 2010) (pesticides sprayed into the air, over water, were discharged from a point source); *League of Wilderness Defenders/Blue Mountains Biodiversity Project v. Forsgren*, 309 F.3d 1181 (9th Cir. 2002) (aerial spraying of pesticides over forests and navigable waters); *Concerned Area Residents for the Env’t v. Southview Farm*, 34 F.3d 114 (2d Cir. 1994) (vehicles spraying manure, which then flowed from land to navigable water); *Alaska Cmty. Action on Toxics v. Aurora Energy Servs., LLC*, Case No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173 (D. Alaska Jan. 10, 2011) (coal dust from mining activity); *No Spray Coal., Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395(GBD), 2005 WL 1354041 (S.D.N.Y. June 8, 2005) (spraying pesticides over water from land-based point source); *Stone v. Naperville Park Dist.*, 38 F. Supp. 2d 651 (N.D. Ill. 1999) (shooting clay pigeons and lead pellets at a shooting range of a public park); *Long Island Soundkeeper Fund, Inc. v. N.Y. Athletic Club, Inc.*, No. 94 Civ. 0436 (RPP), 1996 U.S. Dist. LEXIS 3383 (S.D.N.Y. Mar. 22, 1996) (shooting clay pigeons over Long Island Sound). But see *Chem. Weapons Working Grp., Inc. v. Dep’t of the Army*, 11 F.3d 1485 (10th Cir. 1997) (rejecting an argument for regulation of pollutants under Clean Water Act, when particulates discharged from chemical weapons incineration would eventually reach navigable waters); see also *No Spray Coalition, Inc. v. City of New York (No Spray I)*, No. 00 CIV 5395(JSM), 2000 WL 1401458 (S.D.N.Y. Sept. 25, 2000) (declining to find that incidental drift of pesticides to water from spraying over New York City sites constituted a discharge of pollutants from a point source within the meaning of the Clean Water Act).

observe that a pollutant eventually will deposit in navigable waters is critical to subjecting the discharge of pollutants to the requirements of the Clean Water Act. In the case of atmospheric deposition, scientific ability to predict and track deposition patterns for atmospheric pollutants can satisfy this observability requirement. The remainder of this section examines the methods by which pollutants travel from point sources to navigable waters by discussing the relevant cases and considering their implications for the regulation of atmospheric deposition.

1. Addition of Pollutants via Land: The Effect of Gravity

The majority of Clean Water Act cases addressing the discharge of pollutants without an NPDES permit can be classified as using the point source rationale, because they involve discharge of pollutants directly into navigable waters.¹¹⁵ Generally, pollutants discharged onto land and then washed down to navigable waters are classified as pollutants from nonpoint sources,¹¹⁶ which are not subject to the NPDES permitting scheme.¹¹⁷ How-

115. See, e.g., *United States v. Evans*, No. 3:05 CR 159 J 32HTS, 2006 WL 2221629, at *22 (M.D. Fla. Aug. 2, 2006) (describing use of a PVC pipe to transport human waste overflow from a septic tank directly into a nearby creek); *Colvin v. United States*, 181 F. Supp. 2d 1050, 1052, 1056 (C.D. Cal. 2002) (noting that, during low tide, defendant used a bulldozer to spread screw press rejects, a pollutant, below the high tide line, and therefore finding that he had discharged a pollutant to navigable waters); *United States v. Weisman*, 489 F. Supp. 1331, 1337 (M.D. Fla. 1980) (describing defendant's bulldozers as point sources that spread fill material and a pollutant into a wetland, which was a navigable water).

116. See *Forsgren*, 309 F.3d at 1186 (“[N]onpoint source pollution involves runoff that picks up scattered pollutants and washes them into water bodies.”); *Cordiano v. Simsbury-Avon Pres. Soc’y, LLC*, 575 F.3d 199, 220 (2d Cir. 2009) (“Congress had classified nonpoint source pollution as runoff caused primarily by rainfall around activities that employ or create pollutants. Such runoff could not be traced to any identifiable point of discharge.”) (quoting *Trustees for Alaska v. Envtl. Prot. Agency*, 749 F.2d 549, 558 (9th Cir. 1984); *Or. Natural Desert Ass’n v. Dombeck*, 172 F.3d 1092, 1098 (9th Cir. 1998) (same); see, e.g., 33 U.S.C. § 1362(14) (2006) (excluding agricultural stormwater discharge and return flows from irrigated agriculture from the definition of “point source”); *Nw. Envtl. Def. Ctr. v. Brown*, 476 F. Supp. 2d 1188, 1197 (D. Or. 2007) (finding that “the fact that pollutants deposited on top of the roads during timber hauling end up being washed into water bodies does not turn the road system with its associated ditches and culverts into a point source”); cf. *Nw. Envtl. Def. Ctr. v. Brown*, 640 F.3d 1063, 1071 (9th Cir. May 17, 2011) (noting that, under the Clean Water Act, “runoff is not inherently a nonpoint or point source of pollution”; instead, “it is a nonpoint or point source under § 502(14) depending on whether it is allowed to run off naturally (and is thus a nonpoint source) or is collected, channeled, and discharged through a system of ditches, culverts, channels, and similar conveyances (and is thus a point source discharge).”).

117. See *Cordiano*, 575 F.3d at 220 (“Unlike point sources, nonpoint sources are not subject to the [NPDES], under which the discharge of pollutants into the waters

ever, there are instances when a point source releases a pollutant onto land, and the pollutant then travels to navigable waters without the aid of any conveyance other than gravity.¹¹⁸ These releases are subject to the NPDES requirements of the Clean Water Act.

In *Concerned Area Residents for the Environment v. Southview Farm*, the United States Court of Appeals for the Second Circuit reviewed a district court's decision to grant to the defendants' judgment as a matter of law, thereby overriding a jury's decision in favor of the plaintiffs on five Clean Water Act violations.¹¹⁹ All the Clean Water Act violations were related to the defendants' manure-spreading operations.¹²⁰ Concerned Area Residents for the Environment ("CARE") and others sued Southview Farm for, *inter alia*, discharging liquid manure onto fields, where the manure then flowed off the fields to a stream, and also flowed into a swale and then to navigable waters.¹²¹ The manure in the swale then flowed through a drain to a stream that emptied into the Genesee River.¹²² CARE argued that the swale became a point source when the manure channeled or collected in it, only then to flow into a stream.¹²³ Alternatively, CARE argued that the machines spreading the manure on the fields were point sources.¹²⁴ The Second Circuit agreed with both of CARE's rationales.¹²⁵ First, the court found that "the swale coupled with the pipe under the stonewall leading into the ditch that leads into the stream was in and of itself a point source."¹²⁶ That reasoning tracks the point source rationale, where a channel that was not the original source can be a point source. Second, the Second Circuit agreed that the manure-spreading tankers were point sources, in that "[t]he collection of liquid manure into tankers and their discharge on fields from which the manure *directly* flows into navigable waters are point source discharges under the

of the United States without permit is illegal. Control of nonpoint sources continues to be primarily a state function, with indirect federal participation.").

118. See *Southview Farm*, 34 F.3d at 119 (finding that liquid manure that flowed down a hill to a swale and then to a creek was discharge of a pollutant from a point source—the vehicles that spread the manure—to a navigable water).

119. *Id.* at 115, 117.

120. *Id.* at 117–18.

121. *Id.* at 117–18.

122. *Id.*

123. *Id.* at 118.

124. *Id.*

125. *Id.*

126. *Id.*

case law.”¹²⁷ This description also coincides with the point source rationale.¹²⁸ For the purposes of this Article, the Second Circuit’s decision is notable in that the court found that vehicles spreading liquid manure, which in turn flowed from the field to navigable waters due purely to the effect of gravity, were point sources.¹²⁹ This, the court said, violated the Act’s NPDES permit requirements.¹³⁰

Reduced to its essential facts, *Southview Farm* is a case about a point source releasing a pollutant onto land, where gravity then carried the pollutant to a navigable water—thus constituting a “discharge of a pollutant” pursuant to section 502(12) of the Clean Water Act.¹³¹ Despite Justice Scalia’s erroneous assertion in *Rapanos*,¹³² this rendition of *Southview Farm*’s facts clarifies that the case was decided under the point source rationale because it involves release of a pollutant from a point source to a navigable water without any intervening discrete conveyance or

127. *Id.* at 119 (emphasis added).

128. In *Rapanos*, the Court cited *Southview Farm* as representative of both the indirect discharge rationale and the point source rationale. See *United States v. Rapanos*, 547 U.S. 744 (citing *Southview Farm* for the proposition that “[s]ome courts have even adopted both the ‘indirect discharge’ rationale and the ‘point source’ rationale in the alternative, as applied to the same facts”). The plain language of the opinion indicates only that the Second Circuit decided that the discharge was within the purview of the Clean Water Act because the liquid manure flowed directly from vehicles down the fields into a stream. The cases cited by the Second Circuit speak only to the fact that vehicles can be point sources under the Clean Water Act. The court made no mention of conveyances or of indirect discharge. In other words, the Second Circuit appears to be describing another “point source” rationale situation—not flow of pollutants through a channel or conveyance. This suggests that Justice Scalia’s plurality opinion in *Rapanos* misinterpreted the Second Circuit’s opinion by assuming that the same facts applied to its discussions of the two types of point sources involved, when in fact the Second Circuit was referring to two different factual settings.

129. *Id.* at 118–19; see *id.* at 119 (“The collection of liquid manure into tankers and their discharge on fields from which the manure directly flows into navigable waters are point source discharges under the case law.”). The Second Circuit, as previously discussed in notes 118–128 and accompanying text, also found that the swale and channeling mechanism themselves were also point sources. *Id.* at 119.

130. *Id.*

131. See 33 U.S.C. 1362(12) (2006) (“The term ‘discharge of a pollutant’ and the term ‘discharge of pollutants’ each means (A) any addition of any pollutant to navigable waters from any point source, [or] (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.”).

132. See *supra* note 128 and accompanying text (arguing that Justice Scalia misidentified *Southview Farm* as a case involving both the indirect discharge rationale and the point source rationale, when in reality the facts of the case and holding by the Second Circuit indicate that the court found two independent bases for its decision under the point source rationale).

channel. Likewise, the facts involved in a potential atmospheric deposition case comport with the point source rationale and can be closely analogous to those in *Southview Farm*. In *Southview Farm*, the manure traveled from a point source to navigable waters with the aid only of natural forces, such as gravity and atmospheric conditions (but not precipitation).¹³³ These are the same natural factors that influence the dry deposition of airborne pollutants, such as atmospheric mercury.¹³⁴ Although the process of dry deposition differs for particulates and gases,¹³⁵ in general the process of dry deposition, which has been described as similar to dust collecting on a surface,¹³⁶ is affected by many micro-factors.¹³⁷ However, all of those factors are basic atmospheric characteristics, such as temperature and humidity,¹³⁸ which affect every single discharge by a point source to a navigable water—certainly factors that affected the discharge of manure in *Southview Farm*.¹³⁹ Thus, there appears to be no practical atmospheric difference between the discharge of liquid manure in *Southview Farm* and predictable atmospheric deposition, especially for particles dependent mainly on gravitational settling for dry deposition. In both scenarios, a point source released a pollutant which, after being affected by gravity and atmospheric elements, deposited into a navigable water without any intervening factor that would render the discharge as pollution from a nonpoint source.

It is worth noting that in evaluating another alleged violation in *Southview Farm*, the Second Circuit held that the jury was reasonable in finding a Clean Water Act violation even though it

133. See *supra* note 36 and accompanying text (discussing wet deposition). See *supra* notes 140–150 and accompanying text for a discussion regarding the application of *Southview Farm* to wet deposition of atmospheric pollutants.

134. See *supra* notes 42 and 43, and accompanying text (describing the short atmospheric residence times of particulate mercury and RGM, and indicating that dry deposition occurs soon after the mercury is emitted from the point source).

135. See generally *supra* note 36, at §§ 12.2–12.3 (describing the process of dry deposition of gases and particle-bound chemicals).

136. ENVTL. PROT. AGENCY, *supra* note 16, at 6.

137. See *supra* note 36 and accompanying text (describing the meteorological, surface, and chemical variables affecting dry deposition rates).

138. See *supra* note 36 and accompanying text.

139. As shall be discussed *infra* in Part III.B.3, the physical form of the particulate—e.g., particulate versus liquid—provides neither a logical nor a principled reason for deciding whether to subject a pollutant to regulation pursuant to the Clean Water Act.

was raining at the time liquid manure flowed down a hill.¹⁴⁰ The defendants, in defense of this violation, argued that it was rain that carried the liquid manure down the field, making this a discharge from a nonpoint source.¹⁴¹ However, the Second Circuit observed that “the real issue is not whether the discharges occurred during rainfall or were mixed with rain water runoff, but rather, whether the discharges were the result of precipitation.”¹⁴² After reviewing the evidence, the court concluded that the district court erred, because the jury could reasonably have concluded that the manure flow, although aided by rain, would have occurred regardless of the precipitation.¹⁴³

One shortcoming of applying the Clean Water Act to atmospheric deposition of pollutants is that it is difficult to make out a case for regulating wet deposition of atmospheric pollutants. As mentioned above, in *Southview Farm*, the Second Circuit decided that despite the presence of rain, the real issue was whether the manure would have flowed to the creek without the aid of rain.¹⁴⁴ The court found no reason to disrupt the jury’s finding that it would have.¹⁴⁵ Rain, too, aids the deposition of atmospheric pollutants, and, in fact, can be a significant and effective pollution delivery mechanism.¹⁴⁶ Similar to *Southview Farm*, rainfall will affect, and even hasten, the delivery of atmospheric pollutants to navigable waters.¹⁴⁷ However, in the case of atmos-

140. *Concerned Area Residents for the Env’t v. Southview Farm*, 34 F.3d 114, 120-21 (2d Cir. 1994).

141. *Id.* at 120.

142. *Id.* at 120-21; *see also* *Alaska Cmty. Action on Toxics v. Aurora Energy Servs. LLC*, Case No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173, at *24 (D. Alaska Jan. 10, 2011) (“[T]he mere fact that some form of precipitation is involved in the pollution does not preclude the possibility that the pollution may result from a ‘point source.’”).

143. *Southview Farm*, 34 F.3d at 121. Later in its decision regarding this violation, the Second Circuit found a third point-source rationale—the farm met the requirements of a concentrated animal feeding operation (“CAFO”). *Id.* at 122; *cf.* *Cmty. Ass’n for the Restoration of the Env’t v. Henry Bosma Dairy*, 305 F.3d 943, 955-56 (9th Cir. 2002) (finding that because point sources are to be defined broadly, a CAFO may include “any manure spreading vehicles, as well as manure storing fields, and ditches used to store or transfer the waste”). Pursuant to the Clean Water Act, CAFOs are statutorily defined as point sources. 33 U.S.C. § 1362(14) (2006).

144. *Southview Farm*, 34 F.3d at 120-21.

145. *Id.* at 121.

146. *See* *Weiner et al.*, *supra* note 14, at 416 (“Reactive gaseous mercury is rapidly removed from the atmosphere via both wet and dry deposition”); *see also* *Driscoll et al.*, *supra* note 12, at 19 (noting that RGM is “highly soluble in water”).

147. *See supra* note 146 and accompanying text.

pheric pollutants, rainfall can alter whether pollutants would have entered the navigable waters. This is not simply an example of rainfall expediting the process, as in *Southview Farm*. For atmospheric pollutants that have an atmospheric residence time of more than several hours, rainfall injects a degree of unpredictability into the calculus about where an atmospheric pollutant will deposit. For example, rain can wet-deposit an atmospheric pollutant into navigable waters or onto land long before and in a different location than that pollutant would have dry-deposited from the atmosphere.¹⁴⁸ Wind, too, creates a similar degree of unpredictability, but in an opposite manner.¹⁴⁹ A strong wind can carry an atmospheric pollutant far beyond the location that it would have deposited in a wind-free day. Thus, these two factors can have drastic effects on the dispersal of atmospheric pollutants. A lesson of *Southview Farms*, therefore, is that regulation of atmospheric deposition pursuant to the NPDES permitting scheme of the Clean Water Act is only a good fit for those atmospheric pollutants that have brief, scientifically ascertainable atmospheric residence times. To attempt to broaden regulation of atmospheric pollutants beyond pollutants with fast atmospheric dry deposition rates could, in the words of one court, “eviscerate the point source requirement and undo Congress’s choice.”¹⁵⁰

2. Addition of Pollutants via the Atmosphere: The Effects of Gravity and Predictability

Although no court has explicitly endorsed the regulation of atmospheric deposition pursuant to the Clean Water Act, several courts have found Clean Water Act violations where a point source released a pollutant into the air and the pollutant eventually fell into navigable waters.¹⁵¹ Such cases primarily fall into

148. See *supra* notes 39, 40 (discussing how rain can speed up the process of deposition for RGM and particulate mercury).

149. But see *Alaska Cmty. Action on Toxics v. Aurora Energy Servs., LLC*, Case No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173 (D. Alaska Jan. 10, 2011) (allowing a Clean Water Act citizen suit to survive a motion to dismiss when the complaint alleged that prevailing winds carried coal dust from a defendants’ property to navigable waters).

150. *Cordiano v. Simsbury-Avon Pres. Soc’y, LLC*, 575 F.3d 199, 224 (2d Cir. 2009).

151. See *League of Wilderness Defenders v. Forsgren*, 309 F.3d 1181, 1190 (9th Cir. 2002) (deciding that pesticides depositing in navigable waters after being sprayed from aerial point sources were within the purview of the Clean Water Act); *Alaska Cmty. Action on Toxics v. Aurora Energy Servs., LLC*, Case No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173, at *28–31 (D. Alaska Jan. 10, 2011) (find-

one of two categories: (1) cases involving the atmospheric release of solid pollutants (gun clubs¹⁵² and coal dust¹⁵³) or (2) cases involving the atmospheric release of liquid or misted pollutants (pesticide spraying¹⁵⁴).¹⁵⁵ In many ways, those cases resemble the argument for regulating atmospheric deposition of emissions pursuant to the NPDES permitting scheme of the Clean Water Act. The principle difference, as discussed in detail below, is the residence time of the pollutant in the atmosphere.

a. Shotgun Pellets and Clay Pigeons

Pellets and clay pigeons that are shot over and fall into navigable waters from trap- and skeet-shooting clubs are discharges of a pollutant within the meaning of the Clean Water Act.¹⁵⁶ Several courts have addressed cases involving the Clean Water Act and discharge of lead shotgun pellets¹⁵⁷; of those cases, only several

ing that wind-blown coal dust can be regulated pursuant to the Clean Water Act); *No Spray Coalition, Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395(GBD), 2005 WL 1354041, at *4 (S.D.N.Y. June 8, 2005) (finding that spraying pesticides over navigable waters from a land-based vehicle was a “discharge of a pollutant” within the meaning of the Clean Water Act); *Stone v. Naperville Park Dist.*, 38 F. Supp. 2d 651 (N.D. Ill. 1999) (finding that lead shot and clay pigeons released from a shooting range were discharges of pollutants pursuant to the Clean Water Act); *Long Island Soundkeeper Fund, Inc. v. N.Y. Athletic Club*, No. 94 Civ. 0436 (RPP), 1996 U.S. Dist. LEXIS 3383, at *42–44 (S.D.N.Y. Mar. 22, 1996) (deciding that clay pigeons shot over Long Island Sound, which then fell into the Sound, were discharges in violation of the Clean Water Act).

152. See, e.g., *Cordiano*, 575 F.3d 199; *Long Island Soundkeeper Fund*, 1996 U.S. Dist. LEXIS 3383; *Stone*, 38 F. Supp. 2d 651; see also *Benjamin v. Douglas Ridge Rifle Club*, 673 F. Supp. 2d 1210 (D. Or. 2009).

153. *Alaska Cmty. Action on Toxics*, 2011 U.S. Dist. LEXIS 22173.

154. E.g., *Peconic Baykeeper, Inc. v. Suffolk Cnty.*, 600 F.3d 180 (2d Cir. 2010); *League of Wilderness Defenders*, 309 F.3d 1181; *No Spray II*, 2005 WL 1354041.

155. *Chemical Weapons Working Group v. United States Department of the Army* dealt with atmospheric emissions, but those pollutants were the byproduct of chemical incineration, not pesticide spraying. 111 F.3d 1485 (10th Cir. 1997). Because the court in that case made similar arguments to those made by courts in the pesticide spraying cases, this Article will address the case in that section.

156. *Long Island Soundkeeper Fund*, 1996 U.S. Dist. LEXIS 3383 at *37–46; see *Benjamin*, 673 F. Supp. 2d at 1214 (denying a defendant’s motion for summary judgment on grounds that the plaintiff proved that navigable waters were at issue, in a case where plaintiff proved that defendant or members of the rifle club discharged lead shot into a creek and surrounding wetlands without an NPDES permit); see also *Cordiano*, 575 F.3d at 223–25 (affirming a district court’s grant of summary judgment when the plaintiff failed to prove that lead shot or dust from the shot landed in navigable waters).

157. See *Conn. Coastal Fishermen’s Ass’n v. Remington Arms Co.*, 989 F.2d 1305, 1312–13 (2d Cir. 1993) (deciding that the plaintiffs could not rebut the defendants’ argument that there was no present or continuing violation because evidence supplied by the defendants indicated the defendants’ affirmative intent to permanently

reached the merits to determine whether the discharge of lead pellets and clay pigeons into navigable waters required an NDPES permit. *Long Island Soundkeeper Fund, Inc. v. New York Athletic Club*¹⁵⁸ and *Stone v. Naperville Park District*¹⁵⁹ are two such cases. Because these cases present facts and decisions that are virtually identical for the purpose of this discussion, this Article only substantively discusses the former case.

In *Long Island Soundkeeper Fund*, the defendant, the New York Athletic Club, operated a trap-shooting range on the coast of Long Island Sound.¹⁶⁰ Members using the defendant's facility released clay pigeons over Long Island Sound and shot at those targets with shotguns.¹⁶¹ Thus, remnants of the clay pigeons, as well as lead and steel shotgun pellets, deposited into Long Island Sound.¹⁶² The plaintiffs claimed, *inter alia*, that they were entitled to summary judgment on the claim that the defendant violated the Clean Water Act because it discharged pollutants into Long Island Sound.¹⁶³ The defendant conceded that it was a "person" within the meaning of the Clean Water Act and also that Long Island Sound is a navigable water, but argued (1) that it was not a point source and (2) that the target debris and shotgun pellets were not pollutants under the Clean Water Act.¹⁶⁴

close the gun club to trap and skeet shooters); *Potomac Riverkeeper, Inc. v. Nat'l Capital Skeet and Trap Club, Inc.*, 338 F. Supp. 2d 582, 585–86 (D. Md. 2005) (finding that the plaintiff was unable to find a continuing violation required for suit under the Clean Water Act because plaintiff was unable to refute the defendants' proof that the defendant Maryland Department of Natural Resources prevented defendant National Capital Skeet and Trap Club from reopening its shooting range "until it was physically reconfigured to ensure that no lead shot could reach areas protected under the Clean Water Act"); *Simsbury-Avon Pres. Soc'y, LLC v. Metacon Gun Club, Inc.*, No. Civ. 3:04CV803JBA, 2005 WL 1413183 (D. Conn. June 14, 2005) (holding that the plaintiffs' Clean Water Act claims survived because the plaintiffs had provided adequate notice of their intent to sue).

158. No. 94 Civ. 0436 (RPP), 1996 U.S. Dist. LEXIS 3383 (S.D.N.Y. Mar. 22, 1996).

159. 38 F. Supp. 2d 651 (N.D. Ill. 1999).

160. *Long Island Soundkeeper Fund*, 1996 U.S. Dist. LEXIS 3383, at *2.

161. *Id.* at *3.

162. *Id.*

163. *Id.* at *37.

164. *Id.* at *38–39. Gun clubs having a firing line have been found not to be a point source when plaintiffs have failed to prove that the lead shot from the firing line reaches navigable waters. *Cordiano v. Simsbury-Avon Pres. Soc'y, LLC*, 575 F.3d 199, 223–25 (2d Cir. 2009). The plaintiff in *Cordiano* also argued that the lead shot landed in a berm—a collecting area—where it then was transferred to navigable waters through leaching and airborne dust. *Id.* at 222–23. The Second Circuit found that the plaintiff had not demonstrated that surface water runoff from the berm constituted a discharge from a point source, since runoff was a hallmark of

The United States District Court for the Southern District of New York disagreed with the defendant, finding that the facility was a point source¹⁶⁵ and that the clay pigeon remnants and shotgun pellets were pollutants,¹⁶⁶ regardless of whether they were intended to be.¹⁶⁷ That decided, the district court granted the plaintiffs' motion for partial summary judgment.¹⁶⁸

Importantly, neither the district court nor the defendant questioned whether either the clay pigeons or spent shot was an "ad-

nonpoint sources. *Id.* at 223–24. The Second Circuit further found that there was no evidence that airborne lead dust migrating from the berm to navigable waters had travelled through a "discernible, confined and discrete conveyance[.]" *Id.* at 224. The berm itself did not meet that definition, either. *Id.* However, the Second Circuit clarified that its "holding is not that a berm can never constitute a point source, but only that there [was] insufficient evidence that the migration of lead from [the] berm by virtue of runoff and airborne dust [was] a point source discharge." *Id.* The Second Circuit noted that even assuming that the berm could be described as a point source, potential migration of the dust from the berm was essentially the same as paradigmatic examples of nonpoint source pollution. *Id.* The court expressed its fear that to regulate windborne dust or runoff escaping from the berm, even if the berm represented an identifiable source within the meaning of Clean Water Act, would "eviscerate the point source requirement and undo Congress's choice." *Id.* This appears to be an attempt by the court to equate windborne pollutants to runoff, which is a nonpoint source of pollution. It appears that the court's reticence regarding windborne pollutants stems from the belief that the spread of airborne pollutants cannot predictably be determined. That argument is addressed *infra* in Section III.B.3. *Id.* Furthermore, the court's reticence regarding windborne pollutants is belied by the same court's decision in *Peconic Baykeeper, Inc. v. Suffolk County*, where the Second Circuit held that trucks and helicopters with pesticide spray applicators on them were point sources within the meaning of the Clean Water Act. 600 F.3d 180, 188 (2d Cir. 2010). In that case, the court noted that pesticides were discharged "from" the trucks and helicopters, which were point sources, not "from" the air. *Id.* Strangely, the court stated that if the berm was considered a point source, so too could be "a passerby who flings a candy wrapper into the Hudson River, or a urinating swimmer[.]" *Id.* (citing *United States v. Plaza Health Labs*, 3 F.3d 643, 652 (2d Cir. 1993)). However, in *Plaza Health Labs*, the Second Circuit decided that a human being could not be a point source. 3 F.3d at 646–50 (finding no suggestion that Congress intended to extend the definition of point source to include individual humans). A berm is not a human being, and it certainly could fit in the definition of "point source," so one fairly can assume that the court's trepidation is based on a belief that regulating windborne pollutants under the Clean Water Act would unreasonably overreach Congressional intent, thereby making all manner of minor offenses fall within the purview of the Clean Water Act. This concern is addressed *infra* in Section III.B.3.

165. *Long Island Soundkeeper Fund*, 1996 U.S. Dist. LEXIS 3383, at *42–43.

166. *Id.* at *44.

167. *Id.* ("The Clean Water Act's broad statutory definition of 'pollutant' has been interpreted to apply to substances emitted into United States waters, regardless of whether they have been put to beneficial use or to their intended use."); see also *infra* note 226 (discussing the EPA's approach to the definition of "pollutant" with regard to sprayed pesticides).

168. *Id.* at *46.

dition . . . to navigable waters.”¹⁶⁹ *Long Island Soundkeeper Fund* undoubtedly is an application of the point source rationale, because there is no intervening discrete conveyance or channel between the shooting range and the Long Island Sound—only the atmosphere, through which spent shot and clay pigeons traveled.¹⁷⁰ Presumably, the clay pigeons and pellets were airborne for a discrete amount of time; perhaps five to ten seconds.¹⁷¹ That obviously is much less time than atmospheric pollutants are resident in the atmosphere before dry- or wet-depositing.¹⁷² But, imagine that the shooters were using rifles instead of shotguns. Bullets travel much farther than shotgun pellets—several miles on average.¹⁷³ A court nonetheless would find that there was a discharge to navigable waters because the bullet still, predictably, would land in the water. What if, hypothetically, lead shot from a shotgun took an hour to fly ten kilometers? Still yes, because there would be observable evidence that correlates with scientific ability to demonstrate that gravity makes whatever is shot upward return to earth at some predictable point (discounting the effects of elemental conditions, such as wind). Bullets from a long-ranging rifle would be regulated under the Clean Water Act for the same reason that fireworks residue could be regulated under the Clean Water Act.

This suggests that the essential calculus of any point source rationale analysis is whether there is scientific certainty that a pollutant released from a point source will deposit into navigable waters.¹⁷⁴ In the shotgun and rifle examples, courts evaluating

169. 33 U.S.C. § 1362(12) (2006).

170. See *supra* Section III.A (describing the indirect discharge rationale’s requirement that there be an intervening channel or conveyance between the point source and navigable waters).

171. Depending on gauge, shotgun pellets can fly 500 to 1750 feet. Texas Parks and Wildlife Dep’t, Firearms: Shotgun Distances, TEXAS PARKS AND WILDLIFE, http://www.tpwd.state.tx.us/learning/hunter_education/homestudy/firearms/sgdist.phtml (last modified Oct. 22, 2008).

172. See *supra* notes 39–43 and accompanying text (noting that mercury has a residence time of several hours to a couple days, during which it travels up to tens of kilometers).

173. Distances Bullets Travel, TEXAS PARKS & WILDLIFE DEP’T, http://www.tpwd.state.tx.us/learning/hunter_education/homestudy/firearms/bullets.phtml (last visited Oct. 25, 2010).

174. Cf. *No Spray Coalition, Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395(GBD), 2005 WL 1354041, at *4 (S.D.N.Y. June 8, 2005) (“The definition of an addition is simple and plain. . . . The amount that is discharged does not affect a finding that an addition has taken place. Nor does the fact that the pesticide is initially sprayed into the air as a fine mist, if the mist descends into the water.”).

the issue always will conclude that the pellets/bullets are an “addition . . . to navigable waters” within the meaning of the Clean Water Act because, thanks to gravity and parabolas, there is relative certainty about how far and in what direction the pellets/bullets will travel.¹⁷⁵

A recent Alaska district court case underscores this point. In *Alaska Community Action on Toxics v. Aurora Energy Services, LLC*, the plaintiffs alleged, *inter alia*, that wind carried coal dust from the defendants’ coal mining operations to Resurrection Bay, a navigable water.¹⁷⁶ Specifically, the plaintiffs alleged that “when the prevailing wind [was] from the north and [was] of sufficient speed, wind transport[ed] coal dust from the stockpiles, railcar dumping facility, stracker-reclaimer, ship loader, and conveying systems into Resurrection Bay.”¹⁷⁷ Plaintiffs attached to their complaint photographs that allegedly showed coal dust being blown by the wind from the defendants’ facility to Resurrection Bay.¹⁷⁸ Relevant to the discussion in this Article, the district court found that plaintiffs’ complaint could survive a motion to dismiss, in part because the dust released from the mining facility was subject to regulation under the Clean Water Act.¹⁷⁹ The district court noted that the clear purpose of the Clean Water Act was to regulate water pollution, and the complaint alleged that activities at defendants’ facilities resulted in water pollution, in violation of the Clean Water Act.¹⁸⁰ Importantly, the court noted that “[m]erely because the pollution has traveled some yet to be determined distance through the air does not render it ‘atmospheric’ and remove it from the realm of the [Clean Water Act].”¹⁸¹ The coal dust discharges from defendants’ facility could be “reasonably expected” given the nature of activities that defendants conducted on the property, which satisfied the “plausibility” standard appropriate at the motion to dismiss stage.¹⁸²

175. *Cf. Weinberger v. Romero-Barcelo*, 456 U.S. 305, 307–10 (1982) (upholding the district court’s finding that bombs and other ordnance fired from airplanes and ships at marine targets—whether deliberately or accidentally—was a discharge of pollutants within the meaning of the Clean Water Act).

176. No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173, at *4–5 (D. Alaska Jan. 10, 2011).

177. *Id.* at 5.

178. *Id.* at 28.

179. *Id.* at 29–31.

180. *Id.* at 30.

181. *Id.*

182. *Id.* at 30–31.

The district court's focus on the plausibility of the pollutants reaching navigable waters—as opposed to whether the pollutants traveled through the atmosphere—is a critical concept as it relates to atmospheric deposition of pollutants that have particle sizes smaller than coal dust. This is because scientists have reached or are approaching levels of certainty for the deposition of certain pollutants released into the atmosphere.¹⁸³ Although scientists may not be able to photograph these atmospheric pollutants in the same way that the plaintiffs could in *Alaska Community Action on Toxics*, the fact that scientists may be able to project and prove that atmospheric pollutants will deposit in navigable waters, regardless of how long it takes the pollutants to deposit, suggests that atmospheric deposition of pollutants could be regulated under the Clean Water Act to the extent that it is scientifically supported.

b. Pesticide Spray and Incinerator Emissions

Several courts have taken up the issue of whether pesticides sprayed over navigable waters, which then deposit in those waters, violate the NPDES requirement of the Clean Water Act. Those courts that have accepted that pesticide spraying falls under the purview of the Clean Water Act do so because they follow a textual application of the Clean Water Act. Courts rejecting regulation of pesticide spraying and incinerator emissions under the Clean Water Act—the so-called “common-sense” approach—uniformly believe that such an interpretation delimits the Clean Water Act and leads to regulatory conflict. This section starts by examining this latter class of cases, and discusses why these cases are anything but “common-sense.” The section also discusses the former approach and explains why the cases utilizing a textual approach in the area of pesticide spraying counsel for regulation of atmospheric deposition of pollutants under the parameters of the Clean Water Act.

i. The Non-Textual Approach to Discharge of Pollutants

The U.S. Court of Appeals for the Tenth Circuit coined the “common-sense” approach (which this Article will, for the sake of impartiality, refer to as the “non-textual approach”) in *Chemical Weapons Working Group, Inc. v. U.S. Department of the*

183. See *supra* notes 42–43 and accompanying text (discussing the localized effects of airborne mercury pollution).

Army,¹⁸⁴ in declining to regulate discharge of pollutants from chemical weapons incineration under the Clean Water Act.¹⁸⁵ *Chemical Weapons Working Group* involved a challenge by the Sierra Club and other plaintiffs to a proposed facility in Tooele, Utah, where the Army intended to incinerate chemical warfare agents.¹⁸⁶ Although not discussed in detail in the court's opinion, the plaintiffs presumably argued that incineration of the nerve agents would produce particulate matter that would eventually deposit into navigable waters. The plaintiffs contended that the ban on discharge of chemical warfare agents into navigable waters under section 301(f)¹⁸⁷—not the NPDES requirements¹⁸⁸—of the Clean Water Act should apply to the facility's stacks.¹⁸⁹ The Tenth Circuit declined to adopt the plaintiff's broad interpretation of section 301(f) because, in its estimation, the interpretation was “inconsistent with congressional intent, [led] to irrational results, and create[d] a conflict between the Clean Water Act and Clean Air Act”¹⁹⁰ Among the reasons cited by the Tenth Circuit that such a broad interpretation would lead to irrational results, the court noted that the plaintiffs argued that EPA “could issue a nationwide permit for sources of water pollution such as cars and chimneys.”¹⁹¹ The court added that “the very thought of regulating car emissions under the Clean Water Act exposes the absurdity of their position.”¹⁹² The court

184. 111 F.3d 1485 (10th Cir. 1997).

185. *Id.* at 1489–91.

186. *Id.* at 1487–88.

187. 33 U.S.C. § 1311(f) (2006).

188. Section 301(f) provides: “Notwithstanding any other provisions of this chapter it shall be unlawful to discharge any radiological, chemical, or biological warfare agent, any high-level radioactive waste, or any medical waste *into* the navigable waters.” 33 U.S.C. § 1311(f) (2006) (emphasis added). It is important to note that section 301(f)'s language prohibiting discharges “*into*” the navigable waters differs from the definition of “discharge of a pollutant” in section 502(12), which circumscribes “any addition . . . *to* navigable waters.” 33 U.S.C. § 132(12) (2006) (emphasis added). While the Supreme Court recognized that “*to*” implies that pollutants need not deposit *directly* into navigable waters, *Rapanos v. United States*, 547 U.S. 715, 743 (2006) (plurality opinion), the word “*into*” implies direct addition to a navigable water. See *supra* note 93 and accompanying text (discussing the difference between the definition of “*to*” and “*into*”). This distinction is so central to the interpretation of what a discharge is that *Chemical Weapons Working Group* is not meaningful precedent for the hypothetical discussed in this Article, involving emissions from coal-fired power plants, but it helps illustrate judicial perspectives on regulating atmospheric deposition of pollutants under the Clean Water Act.

189. *Chem. Weapons Working Grp.*, 111 F.3d at 1489–90.

190. *Id.* at 1490.

191. *Id.* (internal quotations omitted).

192. *Id.*

also rejected the plaintiffs' argument because of the regulatory conflict it would create between Clean Water Act and the Clean Air Act.¹⁹³ The Army had received a Clean Air Act permit from EPA to commence incineration at Tooele. That the Army could receive a Clean Air Act permit and yet simultaneously violate Clean Water Act created, in the minds of the Tenth Circuit judges, an "irreconcilable conflict between these two regulatory regimes."¹⁹⁴ Ultimately, the court concluded that "common sense dictates that . . . stack emissions constitute discharges into the air—not water—and are therefore beyond [the Clean Water Act's] reach."¹⁹⁵ Although recognizing that there may be situations where "an object may fly through the air and still be 'discharged . . . into the navigable waters' under the Clean Water Act,"¹⁹⁶ the Tenth Circuit, in essence, decided that the discharge from smokestacks was *into* the air, not the water.¹⁹⁷ As noted in footnote 188, the difference between Sections 301(f) and 301(a) of the Clean Water Act render inconsequential the holding of *Chemical Weapons Working Group* for the purpose of this Article, but the Tenth Circuit's general comments regarding regulation of emissions pursuant to the Clean Water Act provide insight about courts' legitimate concerns regarding such a proposal.

Despite seemingly dispositive differences between chemical weapons discharges and NPDES requirements under the Clean Water Act—for instance, the difference between the wording on Sections 301(a) and 301(f)¹⁹⁸—the U.S. District Court for the Southern District of New York seized upon the Tenth Circuit's non-textual approach in a case involving pesticide spraying. In

193. *Id.*

194. *Id.* at 1491.

195. *Id.* at 1490; see *Umatilla Waterquality Protective Ass'n, Inc. v. Smith Frozen Foods, Inc.*, No. 96-657-JO, 1997 U.S. Dist LEXIS 16458, at *10-11 (D. Or. Sept. 25, 1997) (describing how the Tenth Circuit, in *Chemical Weapons Working Group*, "distinguished discharges where navigable waters were the immediate destination from discharges where pollutants actually mixed in with an intervening medium: the former could constitute discharges to navigable water for Clean Water Act purposes, while the latter were, in common-sense terms, discharges to the intervening medium and *not* discharges to navigable water.").

196. *Chem. Weapons Working Grp.*, 111 F.3d at 1490.

197. *Umatilla Waterquality Protective Ass'n*, 1997 U.S. Dist LEXIS 16458, at *10-11.

198. See *supra* note 188 and accompanying text (distinguishing the requirements of section 301(f) of the Clean Water Act—proscribing "discharge *into* navigable waters"—from the definition of "discharge of a pollutant" in section 502(12), which prevents "any addition . . . to navigable waters.").

No Spray Coalition, Inc. v. City of New York (No Spray I),¹⁹⁹ the district court dealt with a challenge by plaintiffs alleging that pesticide spraying in New York City was a discharge of a pollutant to navigable waters under the Clean Water Act.²⁰⁰ Specifically, the plaintiffs alleged that “(1) spraying is a discharge; (2) the trucks and helicopters from which pesticides are sprayed are point sources; and (3) the pesticides are pollutants that are (4) discharged into the waters of the United States.”²⁰¹ The court’s reaction was similar to the Tenth’s Circuit’s in *Chemical Weapons Working Group*: “Plaintiffs’ argument stretches the language of the Clean Water Act beyond its reasonable meaning and results in a conflict with the apparent purpose of Congress to leave the regulation of use of pesticides to the EPA and the Attorney General under [the Federal Insecticide, Fungicide, and Rodenticide Act (“FIFRA”)].”²⁰² The court disagreed that the “unintended drift of miniscule particles of the City’s pesticide spray into the waters surrounding New York City violate[d] the Clean Water Act.”²⁰³ Specifically, the court noted that the defendant “discharge[d] the insecticides into the atmosphere and not into navigable waters.”²⁰⁴ This language tracks the decision in *Chemical Weapons Working Group*, where Section 301(f) proscribed the discharge of pollutants “into” navigable waters. As discussed previously, Section 301(a), which was at issue in *No Spray I*, contains the word “to,” not “into,” in the relevant section.²⁰⁵

The district court continued, noting that “[i]t would be stretching the language of the statute well beyond the intent of Congress to hold that *de minimis* incidental drift over navigable waters of a pesticide is a discharge from a point source into those waters.”²⁰⁶ It further criticized such reasoning as bringing “every emission of smoke, exhaust fumes, or pesticides” within the purview of the Clean Water Act.²⁰⁷ The court embraced the argument that, because EPA’s decision to register a pesticide means

199. No. 00 CIV 5395(JSM), 2000 WL 1401458 (S.D.N.Y. Sept. 25, 2000), *aff’d*, 252 F.3d 148 (2d Cir. 2001).

200. *Id.* at *2.

201. *Id.*

202. *Id.*

203. *Id.* (emphasis added).

204. *Id.* at *3.

205. See *supra* notes 93 and 188 and related text (discussing the definitional difference between “to” and “into,” and discussing the effect on Sections 301(a) and 301(f)).

206. *No Spray I*, 2000 WL 1401458, at *3.

207. *Id.*

that it made a determination that the pesticide would not have “unreasonable adverse effects on the environment,” it would “frustrate the intent of the regulatory scheme to hold that such approved use violates the Clean Water Act.”²⁰⁸ However, similar to *Chemical Weapons Working Group*, the court declined to address the issue of whether spraying insecticides directly over navigable waters would violate the Clean Water Act. Despite criticizing the persuasiveness of Plaintiffs’ evidence, the court denied “Defendants’ motion to dismiss Plaintiffs’ claim that the City violated the Clean Water Act by spraying insecticides directly over the rivers, bays, sound, and ocean, in order to give Plaintiffs the opportunity to conduct discovery on this issue.”²⁰⁹

ii. *The Textual Approach to Discharge of Pollutants*

In 2005, the U.S. District Court for the Southern District of New York, in *No Spray Coalition, Inc. v. City of New York (No Spray II)*,²¹⁰ eventually addressed the issue left open in *No Spray I*—whether pesticides sprayed near and over water were discharges into navigable waters—when deciding to deny cross motions for summary judgment.²¹¹ Although the central dispute centered on whether the pesticides sprayed were “pollutants,”²¹² the court first decided that “spraying of pesticides into navigable waters can constitute ‘an addition’ under the [Clean Water Act],”²¹³ and that the helicopters and trucks used to spray the pesticides were point sources.²¹⁴ In particular, the court noted that trucks sprayed pesticides over land, and the pesticides then spread out over various waters.²¹⁵ Helicopters also sprayed insecticides directly over lakes, streams, ponds, and marshes.²¹⁶ The City argued that the residue that fell into the water did not constitute a discharge of a pollutant under Clean Water Act.²¹⁷ However, the district court disagreed, noting that “[t]he amount that is discharged does not affect a finding that an addition has taken place.”²¹⁸ The court further repudiated the *No Spray I* de-

208. *Id.* at *2.

209. *Id.* at *4.

210. No. 00 Civ. 5395(GBD), 2005 WL 1354041 (S.D.N.Y. June 8, 2005).

211. *Id.* at *8.

212. *Id.* at *5.

213. *Id.* at *4.

214. *Id.* at *5.

215. *Id.* at *2.

216. *Id.*

217. *Id.* at *4.

218. *Id.* (emphasis added).

cision, observing that addition of the pollutant by a mist was as offensive to the Clean Water Act as an addition through a drain pipe:

Nor does the fact that the pesticide is initially sprayed into the air as a fine mist [affect a finding that an addition has taken place], if the mist descends downward into the water. Moreover, it is [sic] would be unreasonable to distinguish between a sprayer releasing a fine mist pollutant into the atmosphere over the water and a pipe that released the same single flow pollutant directly into water. Violators of [the Clean Water Act] would then need only to attach an airborne mist blower or hydraulic sprayer to their pipe to discharge a pollutant over the water in order to escape liability or regulation. The spraying of pesticides over navigable water, therefore, can constitute an addition of a pollutant into navigable water.²¹⁹

*League of Wilderness Defenders/Blue Mountain Biodiversity Project v. Forsgren*²²⁰ presents another example of pesticide spraying that was regulated pursuant to the Clean Water Act. In *Forsgren*, the U.S. Forest Service sprayed insecticide from airplanes over national forest land in Oregon and Washington in an attempt to prevent a predicted outbreak of a moth that endangered Douglas Fir trees.²²¹ Environmental groups challenged the Forest Service's action as, *inter alia*, a violation of the Clean Water Act's requirement that the Forest Service obtain an NPDES permit prior to spraying, because the spraying occurred over navigable waters.²²² The Forest Service urged the Ninth Circuit to reject the environmental groups' reasoning in part because of two letters and a brief guidance document from the EPA indicating that no NPDES permit was required for aerial spraying.²²³ The Ninth Circuit dismissed the two letters as having "very little power to persuade," because they provided "no analysis and [did] not even mention the regulation" upon which the Forest Service relied.²²⁴ The court viewed the guidance document in a similar light because it was "not a guidance document for silvicultural activities."²²⁵ The Ninth Circuit concluded that this was a situation clearly within the statutory definition of a "point source." Therefore, the court rejected EPA's interpreta-

219. *Id.* at *4.

220. 309 F.3d 1181 (9th Cir. 2002).

221. *Id.* at 1182.

222. *Id.*

223. *Id.* at 1189.

224. *Id.*

225. *Id.*

tion of “point source,” holding that “the aerial spraying . . . is a point source and that the Forest Service must obtain an NPDES permit before it resumes spraying.”²²⁶

226. *Id.* at 1190. In response to this line of pesticide cases, discussed above, EPA commenced a formal rulemaking, aimed at “exercising its authority to interpret a term[, “pollutant”] in [the Clean Water Act,] a statute it administers.” Application of Pesticides to Waters of United States in Compliance with FIFRA, 71 Fed. Reg. 68,483, 68,488 (Nov. 27, 2006) (to be codified at 40 C.F.R. pt. 122).

EPA concluded the final rulemaking in November 2006 by narrowing its interpretation of “pollutant” to exclude two applications of pesticides—first, when “application of the pesticide is made directly to waters of the United States to control pests that are present in the water”; and (more importantly for the purpose of this article) second, when “application of the pesticide is made to control pests that are over, including near, waters of the United States.” *Id.* at 68,483. Despite conceding that “pesticides are waste materials, and therefore pollutants under [the Clean Water Act],” EPA contended that these two categories of pesticide use are not “pollutants” because they do not fit within the definitions of “chemical wastes” or “biological materials.” *Id.* at 68,486–87. Although it is easy to understand why pesticides might not be “biological materials,” EPA’s argument for why pesticides used over water are not “chemical wastes” is far from clear. In interpreting the phrase, EPA read a temporal intent requirement into the definition of “pollutant,” whereby “at the time of discharge to a water of the United States, the material in the discharge must be both a pollutant, and from a point source.” *Id.* at 68,487. According to EPA, pesticides that are intentionally released over navigable waters to combat mosquitoes in and above those waters are, in fact, not pollutants because they are not “chemical wastes” at the time of release. *Id.* at 68,486–87. As EPA clarified:

Even though the pesticide may become a “pollutant” at a later time (e.g., after the pesticide product has served its intended purpose), a permit is not required for its application because it did not meet both statutory prerequisites (pollutant and point source) at the time of its discharge into the water. Instead, the residual should be treated as a nonpoint source pollutant”

Id. at 68,487. Thus, EPA maintained its position that “residual materials from pesticide applications are ‘pollutants’ under [the Clean Water Act],” without requiring application for NPDES permits for pesticides released over water. *Id.* at 68,489.

In *Nat’l Cotton Council of Am. v. Envtl. Prot. Agency*, the Sixth Circuit decided that the EPA’s temporally-tied interpretation of “discharge of a pollutant” is unsupported by the Clean Water Act and “also contrary to the purpose of the permitting program, which is to prevent harmful discharges into the nation’s waters.” 553 F.3d 927, 939 (6th Cir. 2009) (internal quotation omitted), cert denied, 130 S. Ct. 1505 (2010). Thus, the Sixth Circuit struck down the EPA’s final rule as foreclosed by the text of the Clean Water Act. *Id.* at 940. The EPA plans to issue a final NPDES permit for covered pesticide applications and to initiate development of a state-level permitting plan. See *Peconic Baykeeper, Inc. v. Suffolk Cnty.*, 600 F.3d 180, 186 (2d. Cir. 2010).

It is important to note that the EPA’s regulation had no practical application to the theory that pollutants released into the atmosphere above navigable waters, which then eventually deposit in those waters, are within the purview of the Clean Water Act. EPA quibbled regarding what was a pollutant; but other discharges from point sources, such as a coal-fired power plant, are less susceptible to being “defined out” of the Clean Water Act because they are pollutants at the time they are released. See *supra* notes 14 and 35 (discussing how coal fired power plants release mercury as a byproduct). See generally Paul J. Miller & Chris Van Atten, Comm’n for Envtl. Cooperation, North Am. Power Plant Air Emissions (2004), available at

3. Applying a Textual Interpretation of the Clean Water Act to Atmospheric Deposition of Pollutants

The logic of cases employing a textual interpretation of the Clean Water Act—*Forsgren*, *No Spray II*, and *Alaska Community Action on Toxics*—counsels that atmospheric deposition could be regulated under the Clean Water Act. Reduced to their essential elements, *Forsgren* and *No Spray II* address situations where a fine mist of insecticides was sprayed into the air near and above navigable waters.²²⁷ Neither court seemingly was concerned with how long the insecticides were in the atmosphere above the navigable waters, because there was certainty that the insecticides would deposit in the waters.²²⁸ Nor did these courts focus on the amount or size of the pollutant particles discharged, a focus that would be specious given the Clean Water Act's mandate proscribing the discharge of "any pollutant . . . from any point source."²²⁹ Similarly, *Alaska Community Action on Toxics* involved coal dust that was picked up by prevailing winds and carried to navigable waters.²³⁰ The district court focused not on the size or shape of the pollutants, or the fact that wind carried the pollutants to navigable waters, but rather whether the pollutants indeed reached navigable waters.²³¹ There are obvious parallels between these cases and the deposition of atmospheric pollutants. The only meaningful and principled difference between the misted insecticides and the pollutants depositing from

http://www.cec.org/files/pdf/POLLUTANTS/PowerPlant_AirEmission_en.pdf (discussing the pollutants, including sulfur dioxide, nitrogen oxides, and mercury, released by power plants in the United States, Mexico, and Canada).

227. See League of Wilderness Defenders v. Forsgren, 309 F.3d 1181, 1183 (9th Cir. 2002) (describing how the Forest Service ordered aerial pesticide spraying, conducted near and over navigable waters, which would deposit directly into streams); *No Spray Coalition, Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395(GBD), 2005 WL 1354041, at *2 (S.D.N.Y. June 8, 2005) (recounting instances when New York City sprayed "insecticides directly over lakes, streams, ponds, and marshes.").

228. *Id.* at *2 (noting that "the fact that the pesticide is initially sprayed into the air as a fine mist" does not affect the question of whether there has been an addition of the pollutant, "if the mist descends downward into the water"); cf. *Forsgren*, 309 F.3d at 1183 ("Insecticide will drift outside the area targeted for spraying and may kill beneficial species, including butterflies. Because aircraft conducting the spraying discharge insecticides directly above streams, stoneflies and other aquatic insects may be affected, reducing food supplies for salmon and other fish.").

229. 33 U.S.C. § 1362(12) (2006); see *No Spray II*, 2005 WL 1354041, at *4 ("The amount that is discharged does not affect a finding that an addition has taken place.").

230. *Alaska Cmty. Action on Toxics v. Aurora Energy Servs., LLC*, No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173, at *28–31 (D. Alaska Jan. 10, 2011).

231. *Id.*

the atmosphere is the residence time of pollutants in the atmosphere. The same holds true for wind-blown coal dust when compared to atmospheric pollutants released from coal-fired power plants. Although the atmospheric residence time for airborne pollutants, *e.g.*, particulate mercury and RGM, presumably is longer than that of misted pesticides and, arguably, coal dust,²³² scientific certainty that the pollutants will deposit in navigable waters can make these situations factually indistinguishable for all practical purposes. Whether, not how, the pollutants deposit in navigable waters is the essential calculus.

In contrast, cases subscribing to a non-textual interpretation of the Clean Water Act—*Chemical Weapons Working Group* and *No Spray I*—present several theoretical objections to regulating atmospheric deposition under the Clean Water Act. These courts object to application of the Clean Water Act to atmospheric pollutants, including pesticide spraying, because they claim (a) that it conflicts with Congressional intent and produces a regulatory conflict between the Clean Water Act and other laws; and (b) that it leads to irrational results, such as regulation of all automobiles, chimneys, and *de minimis* drift of pollutants.²³³ The remainder of this section addresses these arguments, as applied to atmospheric deposition of pollutants.

a. Congressional Intent and Regulatory Conflict

The claims that Congress never intended regulation of atmospheric deposition under the Clean Water Act, because it creates a regulatory conflict with the Clean Air Act, ignore the plain language of sections 301(a) and 502(12) of the Clean Water Act and overstates the role of the Clean Air Act in controlling atmospheric deposition of pollutants. In *Chemical Weapons Working Group*, the Tenth Circuit concluded that section 301(f) of the Clean Water Act was inconsistent with Congressional intent be-

232. See *supra* notes 39–43 (discussing the atmospheric residence time of mercury emitted from anthropogenic sources, such as coal-fired power plants).

233. See *Chem. Weapons Working Grp., Inc. v. Dep't of the Army*, 111 F.3d 1485, 1490 (10th Cir. 1997) (“Because Plaintiffs’ interpretation of § 301(f) of the Clean Water Act is inconsistent with congressional intent, leads to irrational results, and creates a conflict between the Clean Water Act and the Clean Air Act, we decline to construe that provision in the broad manner proposed by Plaintiffs.”); see also *No Spray Coalition, Inc. v. City of New York (No Spray I)*, No. 00 CIV. 5395(JSM), 2000 WL 1401458 (S.D.N.Y. Sept. 25, 2000) (quoting *Chemical Weapons Working Group* and concluding that “[i]t would be well beyond the intent of Congress to hold that the *de minimis* incidental drift over navigable waters of a pesticide is a discharge from a point source into those waters”), *aff'd*, 252 F.3d 148 (2d Cir. 2001).

cause Congress specifically authorized the funding of chemical weapons incineration programs.²³⁴ The court also cited provisions of the Clean Air Act to demonstrate that it, not the Clean Water Act, encompassed regulation of atmospheric deposition.²³⁵ Similarly, the district court in *No Spray I* contended that there was a regulatory conflict between the Clean Water Act and FIFRA.²³⁶

The potential regulation of atmospheric pollution under the Clean Water Act differs from the situations envisioned by the courts in *Chemical Weapons Working Group* and *No Spray I* because there is neither an explicit statement of Congressional intent nor statutory language precluding regulation of atmospheric deposition under the Clean Water Act. At worst, regulating atmospheric pollutants under the Clean Water Act is merely another layer of regulation that adds to the protection of human and ecosystem health. This complies with Congress' intention to regulate pollution as close to the point source as possible.²³⁷ It is well settled that the plain language of a statute controls its interpretation.²³⁸ When, as here, there is no clear indication that Congress intended to exclude atmospheric deposition from the

234. *Chem. Weapons Working Grp.*, 111 F.3d at 1490.

235. *See id.* at 1491 (citing 42 U.S.C. § 7403(e)(4) and §§ 42 U.S.C. 7651(a)-(o) to demonstrate that Congress intended to evaluate and control atmospheric deposition related to acid rain under the Clean Air Act).

236. *No Spray I*, 2000 WL 1401458, at *2 (finding that there is a regulatory conflict between FIFRA and the Clean Water Act because "it would frustrate the intent of the regulatory scheme" to find that a pesticide approved by the EPA under FIFRA could offend the Clean Water Act). *But see* *No Spray Coalition, Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395 (GBD), 2005 WL 1354041, at *6 (S.D.N.Y. June 8, 2005) (explicitly rejecting this argument); *but see also* *Headwaters, Inc. v. Talent Irrigation Dist.*, 243 F.3d 526, 531 (9th Cir. 2001) ("The label's general rules for applying the herbicide must be observed under FIFRA, but where the herbicide will enter waters of the United States, FIFRA provides no method for analyzing the local impact and regulating the discharge from a particular point source. The NPDES permit requirement under the Clean Water Act thus provides the local monitoring that FIFRA does not.").

237. *See* National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule, 40 C.F.R. pt. 122 (2008) ("Congress generally intended that pollutants be controlled at the source whenever possible.") (citing S. Rep. No. 92-414, p. 77 (1972)); *United States v. Earth Scis., Inc.*, 599 F.2d 368, 373 (10th Cir. 1979) ("It is clear from the legislative history Congress would have regulated so-called nonpoint sources if a workable method could have been derived. We believe it contravenes the intent of [the Clean Water Act] and the structure of the statute to exempt from regulation any activity that emits pollution from an identifiable source.").

238. *See, e.g., United States v. Locke*, 471 U.S. 84, 95-96 (1985) ("[D]eference to the supremacy of the Legislature, as well as recognition that Congressmen typically vote on the language of a bill, generally requires us to assume that 'the legislative purpose is expressed by the ordinary meaning of the words used.'" (quoting Rich-

Clean Water Act, it is not for courts to grasp at straws in an attempt to divine or invent Congressional logic.²³⁹ The Tenth Circuit ignored relevant sections of the Clean Water Act in stating that only the Clean Air Act regulates atmospheric deposition. First, although the Clean Air Act does expressly consider the effects of air pollution, including acid deposition, on water quality,²⁴⁰ so does the Clean Water Act. Just as the Clean Air Act requires the EPA to evaluate “the effects of air pollution on water quality,”²⁴¹ section 119 of the Clean Water Act contains a similar requirement to study “atmospheric deposition of acidic and other pollutants into Long Island Sound.”²⁴² While this language is not as sweeping as that in the Clean Air Act,²⁴³ it demonstrates that Congress, at the very least, contemplated regulation of atmospheric deposition under the Clean Water Act.

Second, and more importantly, Section 303(d) of the Clean Water Act requires that states develop TMDLs for pollutants in their waters,²⁴⁴ and the EPA has specifically instructed its watershed managers to create watershed management plans that account for atmospheric deposition of pollutants, which it considers a major source of contaminants, in those TMDLs.²⁴⁵ Given that Congress intended to regulate sources of pollution as point sources whenever possible,²⁴⁶ the non-textual approach struggles in the face of such evidence that Congress and the EPA both have contemplated regulation of atmospheric deposition under the Clean Water Act. Moreover, this is an important example of how a single source of pollution can be regulated under two envi-

ards v. United States, 369 U.S. 1, 9 (1962)); see also *supra* note 93 (discussing statutory interpretation of the Clean Water Act).

239. See *id.* at 96 (“Going behind the plain language of a statute in search of a possibly contrary congressional intent is ‘a step to be taken cautiously’ even under the best of circumstances.” When even after taking this step nothing in the legislative history remotely suggests a congressional intent contrary to Congress’ chosen words, . . . any further steps take the courts out of the realm of interpretation and place them in the domain of legislation.” (quoting *American Tobacco Co. v. Patterson*, 456 U.S. 63, 75 (1982))).

240. See *supra* note 235 and accompanying text (discussing provisions of the Clean Air Act cited in *Chemical Weapons Working Group* for the proposition that the Clean Air Act regulates atmospheric deposition).

241. 42 U.S.C. § 7403(e)(4) (2006).

242. 33 U.S.C. § 1269(c)(F) (2006).

243. See 42 U.S.C. § 7651 (2006) (specifying provisions for acid rain control).

244. 33 U.S.C. § 1313(d) (2006).

245. See *supra* note 66 and accompanying text (discussing an EPA handbook for watershed managers that explicitly instructs watershed managers to monitor atmospheric deposition of pollutants).

246. See *supra* note 237 and accompanying text.

ronmental statutes. The Sixth Circuit's invalidation of the EPA's Final Rule, which exempted from NPDES permitting pesticides applied directly to the Nation's waters, is another such example that illustrates how polluters may be compliant with one environmental statute—FIFRA—while violating another, the Clean Water Act.²⁴⁷ Although the court explicitly declined to analyze the relationship between the Clean Water Act and FIFRA,²⁴⁸ its decision clarifies that it is possible for a point source to discharge pesticides in compliance with FIFRA, while discharging a pollutant such that an NPDES permit is required pursuant to the Clean Water Act. Given the lack of any explicit statement preventing regulation of atmospheric deposition, it appears that statutory conflict does not prevent courts from applying the plain language of sections 301(a), 402, and 502(12) of the Clean Water Act to regulate discharges of pollutants into the atmosphere.²⁴⁹

b. *Fear of Irrational Results*

A number of courts have expressed fear that employing textual interpretations of sections 301(a) and 502(12) of the Clean Water Act in order to regulate discharges of atmospheric pollutants, including incinerated chemicals and sprayed pesticides, would lead to irrational results, such as regulation of every emission of fumes or smoke.²⁵⁰ Some of these courts appear to focus

247. See *supra* note 226 and accompanying text (discussing the EPA's final rule that an application of pesticides consistent with FIFRA labeling did not constitute the discharge of a pollutant, and the Sixth Circuit's determination that such an interpretation of "discharge of a pollutant" violated the plain language of the Clean Water Act, thus invalidating the Final Rule); see also *Headwaters, Inc. v. Talent Irrigation Dist.*, 243 F.3d 526, 531 (9th Cir. 2001) ("The label's general rules for applying the herbicide must be observed under FIFRA, but where the herbicide will enter waters of the United States, FIFRA provides no method for analyzing the local impact and regulating the discharge from a particular point source. The NPDES permit requirement under the Clean Water Act thus provides the local monitoring that FIFRA does not.")

248. *Nat'l Cotton Council of Am v. Env'tl. Prot. Agency*, 553 F.3d 927, 940 (6th Cir. 2009).

249. Combined, these sections work to proscribe the discharge of any pollutant by any person from a point source without an NPDES permit. See 33 U.S.C. §§ 1311(a), 1342(a), 1362(12) (2006).

250. See *Chem. Weapons Working Grp., Inc. v. Dep't of the Army*, 111 F.3d 1485, 1490 (10th Cir. 1997) ("While Plaintiffs argue that the Environmental Protection Agency could issue a nationwide permit 'for sources of water pollution such as cars and chimneys' to the extent § 301(a) would apply, the very thought of regulating car emissions under the Clean Water Act exposes the absurdity of their position."); *No Spray Coalition, Inc. v. City of New York (No Spray I)*, No. 00 CIV 5395(JSM), 2000 WL 1401458, at *3 (S.D.N.Y. Sept. 25, 2000) ("The fact that a pollutant might ultimately end up in navigable waters as it courses through the environment does not

on the intentionality of the discharge to navigable waters.²⁵¹ However, any discharge of pollutants, regardless of the amount or intention, implicates section 301(a) of the Clean Water Act.²⁵² Disagreement with the policy of the Clean Water Act is not a principled ground for vitiating the statutory text.²⁵³ As the court in *No Spray II* noted in repudiating the logic of *No Spray I*, “[t]he amount that is discharged does not affect a finding that an addition has taken place.”²⁵⁴ There is no intent requirement in

make its use a violation of the Clean Water Act. To so hold would bring within the purview of the Clean Water Act every emission of smoke, exhaust fumes, or pesticides in New York City.”) (internal citation omitted); see also *Cordiano v. Simsbury-Avon Pres. Soc’y*, 575 F.3d 199, 224 (2d Cir. 2009) (“[A]ssuming the berm is an identifiable source from which lead pollution reaches jurisdictional wetlands – a generous assumption on the record here – this is not enough to satisfy the Clean Water Act requirement of a point source discharge. Otherwise, a passenger who flings a candy wrapper into the Hudson River, or a urinating swimmer would constitute point sources. So, too would runoff due to the agricultural use of land adjoining a river, or runoff of salt from roads, oil from parking lots, or pollutants from construction activities. But these are paradigmatic examples of nonpoint source pollution.”).

It is important to restate that *Chemical Weapons Working Group* concerned section 301(f) of the Clean Water Act, which proscribes discharge of radioactive waste “into the navigable waters,” instead of “to navigable waters” as per sections 301(a) and 502(12). See *supra* note 188 for a discussion of how that definitional difference affects interpretation, rendering *Chemical Weapons Working Group* useless as a direct precedent for the hypothetical discussed in this article. The court in *No Spray I* missed that distinction when it piggybacked on the Tenth Circuit’s reasoning, rendering the logic of its decision highly suspect. See *No Spray I*, 2000 WL 1401458, at *3 (noting that helicopters and trucks discharged insecticides “into the atmosphere and not into navigable waters”) (emphasis added).

251. The district court in *No Spray I* suggested that the pesticide sprayed from land, which drifted through the air into navigable waters, were not discharges of pollutants under section 301(a) because those spraying pesticides did not intend for them to reach the water. *No Spray I*, 2000 WL 1401458, at *3 (declining to apply section 301(a) of the Clean Water Act to “*de minimus* incidental drift” of pesticides, in part, because the cases cited by plaintiffs involved only *deliberate* discharges of pollutants “into” navigable waters).

252. *No Spray Coalition, Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395 (GBD), 2005 WL 1354041, at *4 (S.D.N.Y. June 8, 2005) (“The spraying of pesticides into navigable waters can constitute ‘an addition’ under the Clean Water Act. The definition of an addition is simple and plain. An addition is ‘the action or process of adding something to something else.’” (quoting THE NEW OXFORD AMERICAN DICTIONARY 18 (Elizabeth J. Jewell & Frank Abate eds., 2001))); see *United States v. Earth Scis., Inc.*, 599 F.2d 368, 373 (10th Cir. 1979) (“[I]t contravenes the intent of [the Clean Water Act] and the structure of the statute to exempt from regulation any activity that emits pollution from an identifiable point.”).

253. *W. Va. Highlands Conservancy, Inc. v. Huffman*, 625 F.3d 159, 161–62 (4th Cir. 2010).

254. *Id.* Moreover, the Fourth Circuit has noted that [b]y defining “discharge of a pollutant” as “any addition of any pollutant to navigable waters from any point source,” 33 U.S.C. § 1362(12) (emphasis added), the statute clearly covers all additions — no matter how small — rather than merely

the Clean Water Act, so it is likely that the concerns expressed by these courts are symptomatic of a fear that the Clean Water Act could be an unbounded statute, unpredictably subjecting individuals and businesses to regulation. It appears that these courts are using inferred intent as a proxy for predictability. To these courts, a polluter's intent is most obvious when it can be directly observed that he has released a pollutant directly into navigable waters. As a result, these courts only are willing to regulate under the Clean Water Act the discharge of pollutants *directly above* navigable waters, where it is observable that the pollutants deposit into navigable waters.

Although these concerns have some merit, it is arbitrary to subject only atmospheric pollutants released directly above navigable waters to NPDES permitting requirements, when pollutants released into the air near or adjacent to navigable waters are not regulated. The Clean Water Act protects against the discharge of pollutants to navigable waters, not the discharge of pollutants directly above navigable waters to navigable waters. Under the non-textual approach, a hypothetical power plant or pesticide nozzle that released pollutants into the air above land from which they directly deposited into water could not be regulated pursuant to the NPDES permitting system, even if the pollutants obviously and empirically naturally drift and deposit into navigable waters. However, the power plant or pesticide nozzle could be subjected to NPDES permitting requirements if its smoke stack or nozzle was angled so that it released pollutants from a point just above water.²⁵⁵ Illustrated another way, why should the fireworks display that I watched exploding over the lake be subjected to NPDES permitting requirements, when another fireworks display, twenty feet away, above the lake's bank is exempted from NPDES permitting requirements despite the fact that residue from the second fireworks show obviously drifts

net additions. In other words, "[t]he Act does not impose liability only where a point source discharge creates a net increase in the level of pollution. Rather, the Act categorically prohibits any discharge of a pollutant from a point source without a permit." *Comm. to Save Mokelumne River v. E. Bay Mun. Util. Dist.*, 13 F.3d 305, 309 (9th Cir. 1993).

W. Va. Highlands Conservancy, Inc., 625 F.3d at 166.

255. Compare *No Spray I*, 2000 WL 1401458, at *2 (declining to find that discharge of pesticides from land, which then drifted into navigable waters, fell within the purview of the Clean Water Act) with *No Spray II*, 2005 WL 1354041, at *4 (finding that the spraying of pesticides directly over navigable waters can constitute an addition of a pollutant to navigable waters within the purview of the Clean Water Act).

into the lake? The simple answer, and the one most consistent with the purposes of the Clean Water Act,²⁵⁶ is that a pollutant that is released from land should be subjected to NPDES permitting requirements if it is observed depositing into navigable waters.²⁵⁷ It is arbitrary to regulate one, but not the other, when both release pollutants to navigable waters. It is important to remember that although precipitation is listed as a source of nonpoint runoff, wind is not.²⁵⁸ Those pollutants that discharge into navigable waters as a result of predictable wind patterns should be subjected to the NPDES permitting requirements.²⁵⁹

256. See *supra* notes 78 and 81 and accompanying texts (explaining that the purpose of the Clean Water Act was to preserve “the chemical, physical, and biological integrity of the Nation’s waters,” and that Congress had expressed a preference that pollutants be controlled at the point source whenever possible).

257. See, e.g., *Concerned Area Residents for the Env’t v. Southview Farms*, 34 F.3d 114, 118 (finding that the discharge from a tanker of liquid manure onto a field was subject to the NPDES system when the liquid manure flowed off the land into navigable waters); *Long Island Soundkeeper Fund, Inc. v. N.Y. Athletic Club*, No. 94 Civ. 0436 (RPP), 1996 U.S. Dist. LEXIS 3383, at *41–42 (finding that a trap shooting range was subject to the NPDES permitting requirement of the Clean Water Act when shotgun pellets and clay pigeons deposited into Long Island Sound).

258. See *supra* notes 79 and 116 and accompanying text (discussing the definition of nonpoint pollution). Importantly, the atmospheric pollutants discussed in this Article can be traced to specific point sources of pollution. Thus, it would be inappropriate to characterize them as nonpoint pollutants. The influence of wind on the spread of atmospheric pollutants should be relevant only in that it may render unpredictable the deposition of some pollutants. As discussed previously, this Article does not suggest that atmospheric pollutants with unpredictable deposition patterns should be subjected to the requirements of the NPDES permitting system.

259. *Alaska Cmty. Action on Toxics v. Aurora Energy Servs., LLC*, No. 3:09-cv-00255-TMB, 2011 U.S. Dist. LEXIS 22173, at *28–31 (D. Alaska Jan. 10, 2011) (finding that allegations that prevailing winds carried coal dust from a coal mining facility to navigable waters survived a motion to dismiss, in part because “[m]erely because the pollution has traveled some yet to be determined distance through the air does not render it ‘atmospheric’ and remove it from the realm of the [Clean Water Act]”). Although it is tempting to argue that winds are not predictable or constant enough to predictably and fairly subject point sources that release pollutants into the atmosphere to regulation under the Clean Water Act, consider the case of pesticides sprayed directly over navigable waters. Courts have held that an NPDES permit is required for this kind of release. E.g., *League of Wilderness Defenders v. Forsgren*, 309 F.3d 1181, 1183 (9th Cir. 2002); *No Spray Coalition, Inc. v. City of New York (No Spray II)*, No. 00 Civ. 5395 (GBD), 2005 WL 1354041, *4 (S.D.N.Y. June 8, 2005). This requirement exists regardless of the wind conditions on the day that the spraying occurs—an NPDES permit still is required even if the winds on that day prevent the pesticides from reaching the water and instead blow them back onto the land. Unless these pollutants are discharged directly into navigable waters—something that is not required by Section 301(a) of the Clean Water Act—there can be no absolute certainty that they will deposit in navigable waters. Nevertheless, they clearly are subject to the requirements of the Clean Water Act.

Courts rightly fear a regulatory system that lacks predictability as to whom and what the Clean Water Act governs. Thus, they have created arbitrary rules such as requiring release directly above navigable water, and have suggested that the release must be intended and more than *de minimis*.²⁶⁰ These concerns are an attempt to provide predictability, and thus are a substitute for the real requirements of the Clean Water Act—the ability to observe that a particular pollutant is discharged to a navigable water in a predictable, not happenstance, manner. Regulating the discharge of atmospheric pollutants pursuant to the NPDES permitting system based, instead, on the principles of scientific certainty and predictability can prevent the occurrence of irrational results. Refocusing on scientific certainty, rather than the proxies employed by courts espousing the non-textual approach, would not mean that all emissions from every point source would be subject to the limits of the Clean Water Act. Only emissions that are observed predictably depositing to navigable waters—*i.e.*, discharges of pollutants as defined by the Clean Water Act—would be regulated pursuant to the textual approach. Given the nascent scientific knowledge in the study of atmospheric deposition, it is likely that only large, industrial polluters, if any, near large water bodies would be subject to additional liability for their emissions pursuant to the Clean Water Act. Under this textual approach, regulatory scope would follow science.

Concerns expressed by courts relying on the non-textual are premised on a fundamental misunderstanding of the Clean Water Act. Courts have caricatured the regulation of airborne pollutants by incorrectly assuming that every *emission* of a pollutant, such as those from car tailpipes and household chimneys, could be regulated under the textual approach to the Clean Water

260. See generally *No Spray I*, 2000 WL 1401458. Although now repudiated, at least one court had attempted to circumscribe suits under the Clean Water Act by deciding that pesticides that were sprayed in the air, only to deposit into water, were discharged “into” the air, not the water. *Id.* at *3. Extending that court’s reasoning, point sources discharging pollutants in an upward direction could have avoided regulation, while pesticide applications directly into water would be covered, even though both application of pesticides would have the same practical effect. Since then, the same court reversed course when it found that pesticides applied directly over navigable waters could be regulated under the Clean Water Act. *No Spray II*, 2005 WL 1354041, at *2, 4. The Second Circuit has further elaborated by finding that pesticide applicators releasing pesticides into the air could be point sources for the purposes of the Clean Water Act. *Peconic Baykeeper, Inc. v. Suffolk Cnty.*, 600 F.3d 180, 188–89 (2d Cir. 2010).

Act.²⁶¹ First, section 301(a) of the Clean Water Act only regulates “discharge of a pollutant,” not mere emission of pollutants.²⁶² All pollutants released from, *e.g.*, coal-fired power plant smokestacks are “emitted,” but not all of those pollutants are “discharges” pursuant to the Clean Water Act. Thus, even if pollutants are emitted from a point source, the Clean Water Act is not implicated unless there is proof that there is an “addition of any pollutant to navigable waters” from the point source, as per the definition of “discharge of a pollutant.”²⁶³ As discussed above, under the textual approach these emissions would not be regulated unless they could be scientifically measured or observed depositing in navigable waters.

Second, because of the uncertainty surrounding the atmospheric residence times of many pollutants, car and chimney emissions would not be subject to NPDES requirements unless it is determined which navigable waters they reach. It is easy to observe fireworks residue fluttering downward to a lake, and it is becoming more scientifically feasible to track emissions of mercury to the surrounding area from coal-fired power plants. However, it is highly improbable that individual car and airplane emissions ever could be tracked with scientific precision. Mere guesswork that these emissions would eventually deposit in, *e.g.*, the ocean would not suffice.²⁶⁴ Thus, while it is possible that a coal-fired power plant on the Eastern Seaboard could be subject to liability pursuant to the textual approach, it is virtually impossible that individual cars tailpipes would be subject to additional regulation. The hyperbolic fears of courts espousing a non-textual approach would not be realized. Scientific predictability, not mere emissions output, could effectively determine whether atmospheric deposition of any particular pollutant should be regulated under section 402 of the Clean Water Act.

V.

CONCLUSION

Whether atmospheric deposition of pollutants can be regulated pursuant to the NPDES permitting system of the Clean Water

261. *Supra* note 250.

262. See 33 U.S.C. § 1311(a) (2006) (ordering that “the discharge of any pollutant by any person shall be unlawful”).

263. 33 U.S.C. § 1362(12) (2006).

264. The Clean Water Act’s jurisdictional areas include “navigable waters” and “waters of the contiguous zone or the ocean.” 33 U.S.C. §1362(12) (2006).

Act should be a determination grounded on whether regulation is scientifically supportable, based on ascertainable and observable deposition patterns of airborne pollutants. For many pollutants, it is likely that their atmospheric residence times are too extended to predictably regulate their discharge under the Clean Water Act.²⁶⁵ However, scientific knowledge regarding atmospheric deposition rates and patterns has advanced for some pollutants, such as mercury, to the point that scientists know where the pollutant will deposit within hours of its release.²⁶⁶ To the extent that this is scientifically provable, discharges of such pollutants from point sources should be regulated pursuant to the NPDES permitting system. The Clean Water Act expresses Congress' intent that, to the extent possible, discharges of pollutants should be regulated at the point source,²⁶⁷ and that the Clean Water Act be enforced to restore and maintain "the chemical, physical, and biological integrity of the Nation's waters."²⁶⁸ Some courts have taken a narrow view of what constitutes a discharge of a pollutant from a point source to navigable waters, including limiting application of the Clean Water Act only to discharges directly above water, to those not into the air, and to intended discharges.²⁶⁹ This Article concludes that those interpretations are borne out of an unfounded fear that the Clean Water Act will become an expansive tool that could be used to regulate every car's tailpipe, airplane's exhaust, or chimney's smoke.²⁷⁰ These interpretations also contravene the plain text of the Clean Water Act.²⁷¹ This Article proposes that the examination of what constitutes a discharge of a pollutant from a point

265. See *supra* note 13 and accompany text (discussing the global and regional spread of atmospheric pollutants.).

266. See *supra* notes 19, 39, 40, 42, & 43 and accompanying text (discussing the regional and localized effects of anthropogenic mercury emissions and atmospheric residence rates for the various species of atmospheric mercury).

267. See National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule, 40 C.F.R. pt. 122 (2008) ("Congress generally intended that pollutants be controlled at the source whenever possible.") (citing S. Rep. No. 92-414, p. 77 (1972)).

268. *S. Fla. Water Mgmt. Dist. v. Miccosukee Tribe of Indians*, 541 U.S. 95, 102 (2004) (quoting 33 U.S.C. § 1251).

269. See *supra* Section III.B.2.b.i (discussing the non-textual approach to discharge of pollutants that has been embraced by some courts).

270. See *supra* note 250 and accompanying text (detailing the opposition by some courts to a textual interpretation of the Clean Water Act that would require extension of the Clean Water Act's NPDES permitting system to atmospheric discharges of pollutants from point sources).

271. See *supra* notes 93 & 188 and accompanying text (discussing Clean Water Act's requirement in section 301(a) that pollutants be discharged "to" navigable wa-

source to navigable waters should be refocused on scientific proof.²⁷² If an airborne pollutant can be observed predictably discharging from a point source to navigable waters, it should be regulated under the Clean Water Act. Precedent involving discharges of pollutants via the land and the air suggest that this textual interpretation of the Clean Water Act is a logically reasonable and textually faithful interpretation.

A textual interpretation of section 301(a), 402(a), and 502(12) of the Clean Water Act, relying on the predictability of atmospheric deposition, is a preferable interpretation because it gives effect to the plain text of the statute²⁷³ and remains true to the underlying purposes of the Act—restoration and maintenance of the “chemical, physical and biological integrity of the Nation’s waters.”²⁷⁴

ters from point sources, not that the pollutants be discharged “into” or “directly to” navigable waters and precedent regarding textual interpretation of statutes).

272. See *supra* Section III.B.3.

273. See *supra* notes 238–239 and accompanying text (discussing the basic premises of statutory interpretation, that courts are bound by clear language indicating the plain meaning of a statute).

274. 33 U.S.C. § 1251(a) (2006).