

CLIMATE EXCEPTIONALISM

BY

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“Climate exceptionalism” is the belief that the problem presented by climate change is different from the air pollution problems that we have addressed in the past. The Supreme Court appeared to have rejected that claim in Massachusetts v. EPA, when it held that greenhouse gases are pollutants within the meaning of the Clean Air Act. But climate exceptionalism persists as advocates emphasize the differences between climate change and traditional air pollution, and as they question whether the entire pollution paradigm is appropriate for responding to climate change.

This Article explores the debate about climate exceptionalism. It identifies the ways in which climate change is like other air pollution problems and the ways in which it is different. It then analyzes how the debate concerning climate exceptionalism affects the preferred response to climate change. If climate change is simply the latest air pollution problem, then the tools that we have developed to respond to pollution can be deployed to address climate change. But if climate change is exceptional, then the lessons of air pollution regulation may be less suitable, and other strategies should be developed instead. The broader understanding of pollution as a phenomenon that exists outside of environmental law shows why multiple responses to the emission of greenhouse gases is preferable to mitigation, adaptation, tolerance, or any other single purported solution to the problem of climate change.

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I. INTRODUCTION

The United States Supreme Court held in *Massachusetts v. Environmental Protection Agency* (*Massachusetts v. EPA*)¹ that carbon dioxide (CO₂) is a pollutant.² The increasing levels of CO₂ in the atmosphere—along with methane, nitrous oxide, and other so-called greenhouse gases—are blamed for trapping heat on the earth and producing global warming and changing the earth's climate.³ CO₂, said the Court, fits easily within the Clean Air Act's⁴ broad definition of "pollutant."⁵ The Court thus rejected what Lisa Heinzerling has characterized as "climate exceptionalism"—the belief that the problem presented by climate change is different from the air pollution problems that we have addressed in the past.⁶

But climate exceptionalism persists. The emission of greenhouse gases into the atmosphere is not usually described as an "air pollution" problem, but rather as "climate change" or "global warming."⁷ When "pollution" is invoked, it is often as "global warming pollution" (the phrase used in the bill passed by the House in June 2009),⁸ "carbon pollution" (the term that President Obama has used in asking Congress to address climate change),⁹

¹ 549 U.S. 497 (2007).

² *Id.* at 528–29.

³ *Id.* at 504.

⁴ 42 U.S.C. §§ 7401–7671q (2006).

⁵ *Id.* § 7602(g); see *Massachusetts v. EPA*, 549 U.S. at 528–29.

⁶ Lisa Heinzerling, *The Role of Science in Massachusetts v. EPA*, 58 EMORY L.J. 411, 416 (2008). Heinzerling represented Massachusetts in its lawsuit against the United States Environmental Protection Agency (EPA), and she has since joined the Obama Administration as special climate advisor to EPA Administrator Lisa Jackson. Who Runs Gov, Lisa Heinzerling, http://www.whorungov.com/Profiles/Lisa_Heinzerling (last visited Jan. 24, 2010).

⁷ See, e.g., Tamara S. Ledley et al., *Climate Change and Greenhouse Gases*, 80 EOS, TRANSACTIONS, AM. GEOPHYSICAL UNION 453 (1999), available at <http://www.ecd.bnl.gov/pubs/BNL66903.pdf>.

⁸ See American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. § 311 (as passed by House, June 26, 2009); see also Global Warming Pollution Reduction Act, S. 309, 110th Cong. (2007) (proposed bill introduced by Senators Boxer and Sanders).

⁹ President Barack Obama, Weekly Address (Feb. 28, 2009) (transcript available at Posting of Macon Phillips to the White House Blog, Keeping Promises, <http://www.whitehouse.gov/blog/09/02/28/Keeping-Promises> (Feb. 28, 2009, 05:43) (last visited Jan. 24, 2010)); see also 155 CONG. REC. S9076 (daily ed. Aug. 7, 2009) (statement of Sen. Udall) (referring to "carbon pollution").

“carbon dioxide pollution” (as former Vice President Gore described it to Congress),¹⁰ “heat-trapping pollution” (in the words of the head of the National Oceanic and Atmospheric Administration),¹¹ or “climate change pollution” (as one federal judge described it).¹² Even the most forceful advocates of action to combat climate change doubt that it is properly viewed as a problem of pollution. Bill McKibben calls for ambitious societal changes in response to climate change, but only after he admits that “the problem is outside our normal way of thinking” or controlling “traditional pollution.”¹³ Ted Nordhaus and Michael Shellenberger argue that the entire “pollution paradigm . . . is profoundly inadequate for understanding and dealing with global warming.”¹⁴

The pollution paradigm fits uneasily for a substance like CO₂. Unlike most air pollutants, CO₂ occurs naturally in the atmosphere, is actually necessary for human life, is not toxic when breathed even at the elevated levels that now exist in the atmosphere, and harms people and the environment indirectly by facilitating the greenhouse effect that has begun to change the world’s climates.¹⁵ Such differences between CO₂ and the pollutants that are typically addressed by the Clean Air Act (CAA) prompted four Justices to dissent in *Massachusetts v. EPA*.¹⁶ Justice Scalia dissented from the Court’s decision because he was constrained by a traditional view of pollution—or at least he thought he was. Scalia objected that such a reading of the CAA means that “*everything* airborne, from Frisbees to flatulence, qualifies as an ‘air pollutant.’”¹⁷ Such a “reading of the statute,” Scalia insisted, “defies common sense.”¹⁸

Actually, that is precisely how much environmental law works—and even today’s environmental law underestimates the traditional understanding of “pollution.” Justice Scalia is right, though not in the sense that he intended. Everything *is* pollution—or at least it can be—for the

¹⁰ *The American Clean Energy and Security Act of 2009: Hearing Before the Subcomm. on Energy and Environment of the H. Comm. on Energy and Commerce*, 111th Cong. (Apr. 24, 2009) (prepared statement of Hon. Al Gore), available at http://energycommerce.house.gov/Press_111/20090424/testimony_gore.pdf [hereinafter *House ACES Hearing*].

¹¹ Lauren Morello, *Obama and His Aides Phase ‘Greenhouse Gases’ Out of Their Vocabulary*, CLIMATEWIRE, Sept. 23, 2009 (on file with Environmental Law) (quoting National Oceanographic and Atmospheric Administration Administrator Jane Lubchenco, who stated that “[t]he choice of that term is intended to make what’s happening more understandable and more accessible to non-technical audiences. . . . And ‘heat-trapping pollution’ calls a spade a spade.”).

¹² SF Chapter of *A. Philip Randolph Inst. v. EPA*, No. C 07-04936 CRB, 2008 WL 859985, at *18 (N.D. Cal. Mar. 28, 2008).

¹³ BILL MCKIBBEN, *THE END OF NATURE* 31–32 (2006).

¹⁴ TED NORDHAUS & MICHAEL SHELLENBERGER, *BREAK THROUGH: FROM THE DEATH OF ENVIRONMENTALISM TO THE POLITICS OF POSSIBILITY* 111 (2007).

¹⁵ Richard B. Alley et al., *Summary for Policymakers*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS* 1, 2 (Susan Solomon et al. eds., 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wgl/ar4-wgl1-spm.pdf> [hereinafter *CLIMATE CHANGE 2007*].

¹⁶ 549 U.S. 497 (2007).

¹⁷ *Id.* at 558 n.2 (Scalia, J., dissenting).

¹⁸ *Id.*

concept of “pollution” is socially constructed. That is the lesson of both environmental historians and anthropologists following the lead of Mary Douglas.¹⁹ Justice Scalia relied upon the dictionary definition of “pollute” as “to make or render impure or unclean.”²⁰ But he neglected to quote the entire definition, which expands the meaning of “pollute” to include impure or unclean “ceremonially, physically, or morally; to impair or destroy the purity or sanctity of; to defile; desecrate; profane; corrupt; befoul.”²¹ This is a far broader understanding of pollution than the writers of the CAA imagined. Yet it is an understanding that dominates the earliest American pollution cases, including slavery and moral pollution.²² The broader understanding of pollution continues in the twenty-first century in Title VII cases involving liability for workplaces “polluted” by discrimination, judicial concerns about “pollution” of criminal trial procedures, and popular complaints about cultural pollution arising from violent entertainment and internet pornography.²³

This Essay explores the debate about climate exceptionalism. In Part II, I consider the ways in which climate change is like other air pollution problems and the ways in which it is different. In Part III, I analyze how the debate concerning climate exceptionalism affects the preferred response to climate change. If climate change is simply the latest air pollution problem, then the tools that we have developed to respond to pollution can be deployed to address climate change. But if climate change is exceptional, then the lessons of air pollution regulation may be less suitable and other strategies should be developed instead. The broader understanding of

¹⁹ See, e.g., MARY DOUGLAS, PURITY AND DANGER: AN ANALYSIS OF CONCEPTS OF POLLUTION AND TABOO 159 (1966); NEIL EVERNDEN, THE SOCIAL CREATION OF NATURE 131–32 (1992); David N. Cassuto, *The Law of Words: Standing, Environment, and Other Contested Terms*, 28 HARV. ENVTL. L. REV. 79, 81 (2004); Adam W. Rome, *Coming to Terms with Pollution: The Language of Environmental Reform, 1865-1915*, 1 ENVTL. HIST. 6, 21 (1996). I analyzed the contingent nature of pollution in John Copeland Nagle, *The Idea of Pollution*, 43 U.C. DAVIS L. REV. 1 (2009).

²⁰ *Massachusetts v. EPA*, 549 U.S. at 559 (Scalia, J., dissenting) (quoting WEBSTER’S NEW INTERNATIONAL DICTIONARY 1910 (2d ed. 1949)).

²¹ See WEBSTER’S NEW INTERNATIONAL DICTIONARY 1910 (2d ed. 1949). The example provided by Webster’s is taken from the apocryphal Second Book of Esdras: “Wickedness . . . hath polluted the whole earth.” *Id.*

²² See, e.g., *Hardesty v. Hine*, 34 N.E. 701, 702 (Ind. 1893) (“Few greater crimes against society can be conceived than that of the moral pollution of our youth.”); FREDERICK DOUGLASS, MY BONDAGE AND MY FREEDOM 172, 287 (William L. Andrews ed., Univ. of Ill. Press 1987) (1857) (describing slavery as “glaring frightfully upon us, with the blood of millions in his polluted skirts,” and a system “marked with blood and stained with pollution”). See generally Nagle, *supra* note 19, at 5–14 (citing additional sources).

²³ See, e.g., *Harris v. Forklift Sys., Inc.*, 510 U.S. 17, 22 (1993) (acknowledging that Title VII imposes liability upon employers responsible for working environments “so heavily polluted with discrimination as to destroy completely the emotional and psychological stability of minority group workers” (quoting *Meritor Savings Bank v. Vinson*, 477 U.S. 57, 66 (1986))); 145 CONG. REC. S4421 (daily ed. Apr. 29, 1999) (statement of Sen. Brownback) (describing violent video games as cultural pollution); H. Patricia Hynes, *Pornography and Pollution: An Environmental Analogy*, in PORNOGRAPHY: WOMEN, VIOLENCE AND CIVIL LIBERTIES 384 (Catherine Itzin ed., 1992); Barbara Allen Babcock, *The Duty to Defend*, 114 YALE L.J. 1489, 1511 (2005) (reciting “the old saying” that “perjury ‘pollutes the fountain of justice’”). See generally Nagle, *supra* note 19, at 5–14 (citing additional sources).

pollution as a phenomenon that exists outside of environmental law shows why multiple responses to the emission of greenhouse gases such as CO₂ is preferable to mitigation, adaptation, tolerance, or any other single purported solution to the problem of climate change.

II. IS CLIMATE CHANGE EXCEPTIONAL?

The air pollution that prompted Congress to enact the CAA in 1970 had several familiar characteristics. Factories, power plants, cars, and other sources emitted chemicals into the air, where those chemicals sickened people who breathed them, reduced visibility, and affected ecological processes.²⁴ The CAA instituted a regulatory scheme focused on the emission of six pollutants—carbon monoxide, lead, nitrogen oxide, ozone, particulate matter, and sulfur dioxide—that produce many of those harms. The debate concerning climate change is often a debate about whether CO₂ and other greenhouse gases are like the pollutants already regulated by the CAA.²⁵

As its name indicates, CO₂ is composed of two oxygen atoms bonded to one carbon atom.²⁶ It is a colorless, odorless gas, noncombustible, and about twice as dense as air.²⁷ In its solid form, CO₂ is known as dry ice.²⁸ CO₂ is one of the rare substances that transforms directly from a solid to a gas (and back) without ever becoming a liquid.²⁹ Its existence was first discovered in the seventeenth century by the Flemish scientist Jan Baptista van Helmont,³⁰ and in the ensuing years it was variously known as wood gas, fixed air, and carbonic acid gas.³¹

CO₂ is produced by animals, plants, fungi, and microorganisms.³² Volcanoes, hot springs, and other geological processes release CO₂ into the air.³³ It is a byproduct of a number of human activities, including refrigeration, the production of ammonia and hydrogen, the fermentation of sugar when brewing beer and other alcoholic beverages, and the

²⁴ *Air Pollution—1970: Hearings on S. 3229, S. 3466, S. 3546 Before the Subcomm. on Air and Water Pollution of the S. Comm. on Public Works*, 91st Cong. 254 (Mar. 16–18, 1970) (statement of Benjamin Linsky, Professor, Department of Civil Engineering, West Virginia University).

²⁵ See, e.g., Posting of The Editors to N.Y. Times Room for Debate Blog, Who Should Regulate Greenhouse Gasses?, <http://roomfordebate.blogs.nytimes.com/2009/02/19/the-epa-puts-on-the-heat> (Feb. 19, 2009, 16:35) (last visited Jan. 24, 2010).

²⁶ TYLER VOLK, CO₂ RISING: THE WORLD'S GREATEST ENVIRONMENTAL CHALLENGE 3 (2008).

²⁷ *Id.* at 28; see also MSN Encarta, Carbon Dioxide Definition, http://encarta.msn.com/dictionary/_carbon_dioxide.html (last visited Jan. 24, 2010). But see Paul Freund et al., *Annex I: Properties of CO₂ and Carbon-Based Fuels*, in IPCC SPECIAL REPORT ON CARBON DIOXIDE CAPTURE AND STORAGE 383, 385 (Bert Metz et al. eds., 2005) (asserting that carbon dioxide has a “slightly irritating odour”).

²⁸ Freund et al., *supra* note 27, at 393.

²⁹ See *id.* at 385.

³⁰ F.J. MOORE, A HISTORY OF CHEMISTRY 22–23 (1918).

³¹ See generally WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 225, 336, 396, 1385, 2631 (2002) [hereinafter WEBSTER'S THIRD] (providing definitions of terms and their relation to carbon dioxide); MSN Encarta, *supra* note 27.

³² See A.M. MANNION, CARBON AND ITS DOMESTICATION 59–60 (2006).

³³ See ROBERT DECKER & BARBARA DECKER, VOLCANOES 202 (4th ed. 2006).

manufacture of sodium phosphates.³⁴ A far greater amount of CO₂ is dissolved in the oceans.³⁵ Most importantly, CO₂ is released by the combustion of vegetable matter or by fossil fuels, whose name suggests their composition of decayed biological matter.³⁶

CO₂ has numerous uses to humans, including the carbonization of soft drinks, the pressurization of life jackets, the extinguishing of fires, and the rising of dough when yeast produces CO₂.³⁷ CO₂ is absorbed by plants during the process of photosynthesis.³⁸ In the atmosphere, CO₂ allows visible light to pass through but absorbs infrared light. It is this characteristic of CO₂ that yields its description as a greenhouse gas.³⁹ A Swedish scientist, Svante Arrhenius, first suggested in an 1896 paper that CO₂'s reflective property could raise global temperatures.⁴⁰ That idea was roundly dismissed in scientific circles until Guy Callendar, a British researcher, advanced the same argument in a series of papers written beginning in the 1930s.⁴¹ By 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded that "[w]arming of the climate system is unequivocal."⁴²

Some scientists estimate that CO₂ might have comprised as much as 80% of the earth's atmosphere 4.5 billion years ago, and that amount was still 20 to 30% two billion years ago.⁴³ By 1800, CO₂ represented 280 parts per million (ppm) of the earth's atmosphere.⁴⁴ The amount of CO₂ rose to

³⁴ See U.S. ENVTL. PROT. AGENCY, 2008 INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS, at ES-5 tbl.ES-2, -8 to -9 (2008), *available at* http://www.epa.gov/climatechange/emissions/downloads/08_CR.pdf; 11 THE ENCYCLOPEDIA AMERICANA 127 (1919).

³⁵ See U.S. ENVTL. PROT. AGENCY, *supra* note 34, at ES-7.

³⁶ MANNION, *supra* note 32, at 7.

³⁷ WEBSTER'S THIRD, *supra* note 31, at 336.

³⁸ Roberta C. Barbalace, *CO₂ Pollution and Global Warming: When Does Carbon Dioxide Become a Pollutant?*, ENVIRONMENTALCHEMISTRY.COM, Nov. 7, 2006, <http://environmentalchemistry.com/yogi/environmental/200611CO2globalwarming.html> (last visited Jan. 24, 2010).

³⁹ The process occurs as follows:

Greenhouse gases trap energy, much like the glass panels of a greenhouse. The earth's surface is warmed by absorbing solar energy (visible light). The earth, in turn, radiates infrared energy (heat) back into space. A portion of the infrared radiation is trapped by greenhouse gas molecules, resulting in additional warming of the lower atmosphere and the earth's surface. This "greenhouse effect" is a natural phenomenon, without which the planet would be significantly colder and life as we know it would not be possible.

Massachusetts v. Env'tl. Prot. Agency, 415 F.3d 50, 56 (D.C. Cir. 2005), *rev'd*, 549 U.S. 497 (2007).

⁴⁰ JAMES RODGER FLEMING, THE CALLENDAR EFFECT: THE LIFE AND WORK OF GUY STEWART CALLENDAR (1898–1964), THE SCIENTIST WHO ESTABLISHED THE CARBON DIOXIDE THEORY OF CLIMATE CHANGE 68 (2007).

⁴¹ *Id.* at 65 ("G. S. Callendar, working largely alone and from home, established the carbon dioxide theory of climate change in its essentially modern form."); *see also* Hervé Le Treut et al., *Historical Overview of Climate Change Science*, in CLIMATE CHANGE 2007, *supra* note 15, at 93, 101, *available at* <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter1.pdf> (discussing the role of Callendar in climate change science).

⁴² INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT 26, 72 (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

⁴³ Barbalace, *supra* note 38.

⁴⁴ *Id.*

379 ppm by 2005.⁴⁵ Therein lies the climate change problem. The presence of extra amounts of CO₂ in the atmosphere may result in numerous harms and, therefore, the emissions of more CO₂ are attacked as pollution.

Pollution implies an environment that is unpolluted. To say that CO₂—or any substance—is a pollutant requires an agreement about the proper baseline amount of that substance. The appropriate baseline for CO₂ concentrations in the atmosphere is not self-evident. As several scientists asked in a recent law review symposium,

should we define “preindustrial climate” as that of the past 700 years—in which case all experts agree that current global temperatures are probably unprecedented—the past 1000 years (in which case there would be more disagreement)—or the past 5000 years (which very likely contain certain periods warmer than the present day due to changes in the configuration of the Earth’s orbit).⁴⁶

Or is “the real question” concerned with “the climate that would have prevailed today in the absence of human influence.”⁴⁷ Those scientists punted the question of the appropriate baseline, asking “the legal community to resolve” it for them.⁴⁸

The question is further complicated by the differences between greenhouse gases and traditional environmental pollutants. CO₂ is naturally occurring, necessary for life, and even instrumental in the development of human welfare.⁴⁹ Each of these characteristics distinguishes CO₂ from many other pollutants, yet they are shared by many other substances that we regard as pollutants.⁵⁰ CO₂ exists as a natural part of the earth’s atmosphere, but so do fixed amounts of nitrogen, oxygen, argon, neon, helium, methane, krypton, hydrogen, nitrous oxide, and xenon, and variable amounts of water, ozone, sulfur dioxide, and nitrogen dioxide.⁵¹ Each of those substances is dangerous if it is present in the atmosphere in elevated (or sometimes reduced) amounts.⁵² CO₂ is necessary for life: Plants depend upon it for the

⁴⁵ See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 42, at 37 (“The global atmospheric concentration of CO₂ increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005.”).

⁴⁶ Myles Allen et al., *Scientific Challenges in the Attribution of Harm to Human Influence on Climate*, 155 U. PA. L. REV. 1353, 1365–66 (2007).

⁴⁷ *Id.* at 1366.

⁴⁸ *Id.* at 1367.

⁴⁹ See U.S. Env’tl. Prot. Agency, Natural Sources and Sinks of Carbon Dioxide, http://www.epa.gov/climatechange/emissions/co2_natural.html (last visited Jan. 24, 2010).

⁵⁰ See, e.g., U.S. ENVTL. PROT. AGENCY, AIR QUALITY INDEX: A GUIDE TO AIR QUALITY AND YOUR HEALTH 5 (2009), *available at* http://www.epa.gov/airnow/aqi_brochure_08-09.pdf (explaining that ozone, which shields and protects living organisms from harmful ultraviolet rays when located on Earth’s upper atmosphere, can be a pollutant when found at ground level).

⁵¹ ENERGY INFO. ADMIN., U.S. DEP’T OF ENERGY, ALTERNATIVES TO TRADITIONAL TRANSPORTATION FUELS 1994, VOLUME 2: GREEN HOUSE GAS EMISSIONS 9 tbl.2, *available at* <http://tonto.eia.doe.gov/FTP/ROOT/alternativefuels/058594-2.pdf>.

⁵² See DAVID E. NEWTON, CHEMISTRY OF THE ENVIRONMENT 18–52 (2007) (discussing pollutants and the chemical composition of the atmosphere).

process of photosynthesis, and the entire carbon cycle is essential for life on Earth.⁵³ Again, even some substances that the CAA denominates as air pollutants are necessary for life, including the essential nutrients chromium and selenium.⁵⁴

It is also true that increases in CO₂ levels have assisted in numerous improvements to the quality of human life during the past two centuries.⁵⁵ As one scientist told Congress, as a result of rising temperatures during the past century,

[c]rop yields quintupled. Life span doubled, in part because of better nutrition. Winters warmed. Growing seasons lengthened. The planet became greener. Increasing carbon dioxide had something to do with each and every one of these That kind of improvement in the quality of human life could hardly be caused by a “pollutant.”⁵⁶

Yet there are many other instances in which something denominated a “pollutant” has beneficial effects as well as harmful ones. Fluoridation is deemed a valuable additive to municipal water supplies even though some critics judge it to be a dangerous pollutant.⁵⁷ Smoke drives away bothersome insects.⁵⁸ Farmers have long valued the sludge culled from municipal water treatment plants as a substitute for expensive fertilizers.⁵⁹ The heated water discharged by power plants attracts manatees even as it is derided by environmentalists as thermal pollution.⁶⁰ Scientists recently documented how sewage treatment plant effluent discharged into the water can bind toxic metals and thus prevent the metals from harming organisms in the water.⁶¹ The popular accounts of that research proclaimed that not all pollution is bad.⁶² Decades ago, courts suggested that the discharge of city

⁵³ See generally NASA Earth Observatory, The Carbon Cycle, http://earthobservatory.nasa.gov/Features/CarbonCycle/carbon_cycle.php (last visited Jan. 24, 2010) (“Carbon . . . is *the* building block of life.”).

⁵⁴ See Lisa Heinzerling, *Climate Change and the Clean Air Act*, 42 U.S.F. L. REV. 111, 126 (2007).

⁵⁵ *Is CO₂ a Pollutant and Does EPA Have the Power to Regulate It?: J. Hearing Before the Subcomm. on National Economic Growth, Natural Resources, and Regulatory Affairs of the Comm. on Government Reform and the Subcomm. on Energy and the Environment of the Comm. on Science*, 106th Cong. 93 (Oct. 6, 1999) (statement of Patrick J. Michaels, Professor of Environmental Sciences, University of Virginia) [hereinafter *1999 CO₂ Hearing*].

⁵⁶ *Id.*

⁵⁷ See Allan Mazur, *Looking Back at Fluoridation*, 12 RISK 59, 59–60 (2001) (discussing the proponents of and the opposition against the introduction of fluoride into America’s drinking water).

⁵⁸ See James Gorman, *Don’t Get Stung: Outsmarting the Mosquito*, N.Y. TIMES, Jul. 1, 2003, at F5.

⁵⁹ See Ellen Z. Harrison & Malaika M. Eaton, *The Role of Municipalities in Regulating the Application of Sewage Sludges and Septage*, 41 NAT. RESOURCES J. 77, 79–80 (2001).

⁶⁰ See David W. Laist & John E. Reynolds III, *Florida Manatees, Warm-Water Refuges, and an Uncertain Future*, 33 COASTAL MGMT. 279, 280 (2005).

⁶¹ Tim F. Rozan et al., *Evidence for Iron, Copper and Zinc Complexation as Multinuclear Sulphide Clusters in Oxidic Rivers*, 406 NATURE 879 (2000) (describing the value of sewage treatment plant effluent).

⁶² *E.g.*, Norra MacReady, *Not All Pollution Bad, Study Suggests*, UNITED PRESS INT’L, Aug. 23, 2000, available at LEXIS.

sewage and a farm's runoff into a river could both benefit the water as well as harm it.⁶³ More commonly, the same substance can be essential to human health in small amounts but toxic in large amounts. As Peter Huber explains,

As exposure levels drop, predicted biological effects may even flip from bad to good. A bit of carbon dioxide grows the grass; a lot may flood the prairie. Metals banned from the workplace are added to your vitamin tablet. There's a model—quite a credible one, in fact—that purports to prove that a steady dose of low-level radiation, like the one you get living in a high-altitude locale like Denver, or at some suitable distance from Chernobyl, actually improves your health, by impelling your cells to shape up.⁶⁴

To cite one more example, a small dose of zinc fights colds, but emissions from the Donora Zinc Works killed more people than any other single air pollution episode in American history.⁶⁵

Another purported distinction between CO₂ and other pollutants is that CO₂ is not toxic. There are a number of cases in which people have died or suffered serious injuries from CO₂, but they each involved exposure to the high level of CO₂ that could accumulate in a confined space.⁶⁶ Likewise, the “canary in the mine” now refers to species whose status indicates the health of an ecosystem, but the original source of that metaphor is the canaries that were actually taken into mines where they would die from levels of CO₂ that were just shy of the levels that are toxic to people. CO₂ becomes dangerous to human health at about 5000 ppm, which is far beyond the less than 400 ppm that now occurs in the ambient air.⁶⁷ Only rarely does the presence of

⁶³ *Slide Mines, Inc. v. Left Hand Ditch Co.*, 77 P.2d 125, 127 (Colo. 1938) (noting the benefits of human sewage); *Doremus v. Mayor of Paterson*, 69 A. 225, 232 (N.J. 1908) (explaining that sewage in a river is not necessarily detrimental).

⁶⁴ PETER HUBER, *HARD GREEN: SAVING THE ENVIRONMENT FROM THE ENVIRONMENTALISTS*, at xvii (1999).

⁶⁵ See DEVRA LEE DAVIS, *WHEN SMOKE RAN LIKE WATER: TALES OF ENVIRONMENTAL DECEPTION AND THE BATTLE AGAINST POLLUTION* 14–15 (2002) (comparing the harms and benefits of zinc).

⁶⁶ *E.g.*, *The Ellenor*, 39 F. Supp. 576, 578 (S.D. Fla. 1941) (a longshoreman died from CO₂ asphyxiation while working in the hold of a ship); *New River Coal Co. v. Files*, 109 So. 360, 360 (Ala. 1926) (miner died from breathing CO₂ (or carbon monoxide, or both) due to insufficient ventilation); *Roy v. Smith*, 25 P.2d 251, 252 (Cal. Dist. Ct. App. 1933) (apartment resident died from CO₂ released from a gas furnace); *Gatliff Coal Co. v. Ramseur's Adm'x*, 228 S.W. 1028, 1028 (Ky. 1921) (miner died from breathing CO₂ in an inadequately ventilated coal mine); *State v. Flanigan*, 74 A. 818, 819–21 (Md. 1909) (contractor died from CO₂ while excavating a sewer trench); *Cohen v. St. Regis Paper Co.*, 481 N.E.2d 562, 562 (N.Y. 1984) (salesman suffocated from CO₂ emitted from dry ice cooling an ice cream truck's freezer); *Polatschek v. City of New York*, 331 N.Y.S.2d 966, 968 (N.Y. App. Div. 1972) (plumbing contractor “was overcome by carbon dioxide fumes while trying to install a metal ladder in the wet sump pit”); *Miller v. N.Y. Oil Co.*, 243 P. 118, 119 (Wyo. 1926) (apartment resident died while taking a bath because CO₂ was released from a water heater). Of course, I exclude cases in which the involvement of CO₂ is incidental. See, e.g., *Kilbride v. Carbon Dioxide & Magnesite Co.*, 51 A. 347, 347 (Pa. 1902) (railroad employee died when a cylinder filled with CO₂ exploded).

⁶⁷ See 29 C.F.R. § 1910.134(i)(1) (2009) (requiring employers to “ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration” has a CO₂ “content of 1,000 ppm or less”); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 42, at 37.

CO₂ in the atmosphere threaten human health, as occurred in Cameroon in 1986, when a cloud of CO₂ exploded from the volcanic Lake Nyos and killed nearly 1700 people in the surrounding area.⁶⁸ Nor does CO₂ raise an issue of “clean” air. But toxicity and dirtiness are contingent concepts, too. Mary Douglas famously defined “dirt” as “matter out of place,” which is the objection to heightened levels of CO₂ in the atmosphere.⁶⁹ Toxicity, in turn, refers to the point at which a substance produces unacceptable harms. As one scientist explained, “[w]hen one substance is present in excess and as a result threatens the wellbeing of an ecosystem, it becomes toxic, and could be considered a pollutant, despite the fact that it is required in small quantities.”⁷⁰

CO₂ produces different harms than most air pollution, and it produces them indirectly. Many air pollutants cause respiratory ailments when they are inhaled, or they irritate people’s eyes, or they interfere with the aesthetic enjoyment of desired views.⁷¹ In each instance, harm is caused by direct exposure to the pollutant.⁷² CO₂ and other greenhouse gases are different. Their causal nexus begins by trapping heat from escaping the atmosphere, which results in the heating of the earth’s surface and other changes to the climate, which results in injuries to the environment, which then harms human communities and wildlife alike.⁷³ Yet “pollution” is not necessarily limited to more direct effects, and environmental law often requires consideration of the indirect effects of an action.⁷⁴ If a pollutant is “something that produces a demonstrable net negative impact on climate and ecosystems,” as one critic of using the CAA to regulate greenhouse gases insisted,⁷⁵ then CO₂ easily satisfies that test given the scientific consensus regarding the causes and consequences of climate change.⁷⁶ Finally, CO₂ exists in greater quantities in the air, lasts for a longer duration,

⁶⁸ Peter J. Baxter et al., *Lake Nyos Disaster, Cameroon, 1986: The Medical Effects of Large Scale Emission of Carbon Dioxide?*, 298 BMJ 1437, 1437 (1989), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1836556/pdf/bmj00233-0037.pdf>.

⁶⁹ DOUGLAS, *supra* note 19, at 35.

⁷⁰ Barbalace, *supra* note 38.

⁷¹ *E.g.*, U.S. ENVTL. PROT. AGENCY, *supra* note 50, at 6–10 (describing the health effects of ozone, particulate matter, carbon monoxide, and sulfur dioxide); see WILLIAM C. MALM, NAT’L PARK SERV., INTRODUCTION TO VISIBILITY 1 (1999), available at <http://www.epa.gov/visibility/pdfs/introvis.pdf> (noting that particulates and certain gases reduce visibility).

⁷² U.S. ENVTL. PROT. AGENCY, *supra* note 50, at 5–11.

⁷³ U.S. ENVTL. PROT. AGENCY, FREQUENTLY ASKED QUESTIONS ABOUT GLOBAL WARMING AND CLIMATE CHANGE: BACK TO BASICS 2–3, 7 (2009), available at http://www.epa.gov/climatechange/downloads/Climate_Basics.pdf.

⁷⁴ *E.g.*, 40 C.F.R. § 1502.16(b) (2008) (containing a NEPA regulation requiring the discussion of a federal project’s “[i]ndirect effects and their significance”); 50 C.F.R. § 402.02 (2008) (containing an Endangered Species Act regulation specifying that the “effects” of a contested action include “indirect effects of an action on the species or critical habitat,” with indirect effects defined as “those for which the proposed action is an essential cause and that are later in time, but still are reasonably certain to occur”).

⁷⁵ 1999 CO₂ Hearing, *supra* note 55, at 81.

⁷⁶ See generally Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift*, 39 ENVTL. L. 43, 48–53 (2009).

and disperses farther than most other air pollutants.⁷⁷ But mercury, ozone, particulate matter, and persistent organic chemicals are examples of pollutants that “cross state and even national boundaries,”⁷⁸ and the amount and duration of CO₂ in the atmosphere counsels toward greater concern, not less.

There were occasional suggestions before the recent CAA litigation that CO₂ constituted a pollutant.⁷⁹ The most notable case considered whether CO₂ is a “pollutant” within the meaning of common insurance policy exclusions for injuries resulting from pollution.⁸⁰ In 1997, a divided Wisconsin Supreme Court answered “no.”⁸¹ It was “a ‘sick building’ case” in which inadequate ventilation in an office building produced an excessive accumulation of CO₂ exhaled by the workers, who then suffered such injuries as headaches, sinus problems, and nausea.⁸² The court agreed with an earlier federal court decision that the contractual term “pollutant”—and the terms “irritant” and “contaminant” that were used to define it—needed to be read with “a common sense approach.”⁸³ Otherwise, the court said, the terms “are virtually boundless, for there is virtually no substance or chemical in existence that would not irritate or damage some person or property.”⁸⁴ The court further noted that “inadequately ventilated carbon dioxide from human respiration would not ordinarily be characterized as a ‘pollutant.’”⁸⁵ Therefore, CO₂ was not a pollutant within the insurance policy’s exclusion, so the policyholder could recover for damages related to the CO₂.⁸⁶ But the dissenting judge observed that “the term ‘pollutant’ unambiguously includes exhaled carbon dioxide because it is a ‘gaseous irritant’ in certain concentrations,” and he added that “a ‘reasonable insured’ would not expect coverage for injuries resulting from exhaled breath.”⁸⁷

The question of whether CO₂ is a pollutant within the meaning of the CAA arose one year after the Wisconsin Supreme Court’s insurance decision. The CAA defines “air pollutant” to include “any air pollution agent or

⁷⁷ See Robert B. McKinstry, Jr. et al., *The New Climate World: Achieving Economic Efficiency in a Federal System for Greenhouse Gas Control Through State Planning Combined with Federal Programs*, 34 N.C. J. INT’L L. & COM. REG. 767, 802–03 (2009). Compare U.S. ENVTL. PROT. AGENCY, *supra* note 73, at 3 (providing a graph showing concentration of carbon dioxide in the atmosphere over the last 10,000 years), with 40 C.F.R. §§ 50.4–.13 (2009) (establishing National Ambient Air Quality Standards for criteria pollutants).

⁷⁸ Heinzerling, *supra* note 6, at 419.

⁷⁹ See *infra* text accompanying notes 201–05 (discussing the earliest, and most bizarre, case to equate CO₂ with pollution).

⁸⁰ *Donaldson v. Urban Land Interests, Inc.*, 564 N.W.2d 728, 731 (Wis. 1997).

⁸¹ See *id.* at 732–33.

⁸² *Id.* at 730.

⁸³ *Id.* at 732 (quoting *Pipefitters Welfare Educ. Fund v. Westchester Fire Ins. Co.*, 976 F.2d 1037, 1043–44 (7th Cir. 1992)).

⁸⁴ *Id.*; see also J. Wylie Donald & Craig W. Davis, *Carbon Dioxide: Harmless, Ubiquitous, and Certainly Not a “Pollutant” Under a Liability Policy’s Absolute Pollution Exclusion*, 39 SETON HALL L. REV. 107, 127 (2009).

⁸⁵ *Donaldson*, 564 N.W.2d at 732.

⁸⁶ *Id.*

⁸⁷ *Id.* at 733–34 (Steinmetz, J., dissenting).

combination of such agents, including any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters the ambient air.”⁸⁸ In 1998, Jonathan Z. Cannon, then General Counsel of the Environmental Protection Agency (EPA), prepared a legal opinion concluding that “CO₂ emissions are within the scope of EPA’s authority to regulate,” even as he recognized that EPA had so far declined to exercise that authority.⁸⁹ Cannon’s successor, Gary S. Guzy, reiterated that opinion before a congressional committee in October 1999.⁹⁰ Two weeks later, a group of nineteen private organizations petitioned EPA to regulate greenhouse gas emissions from new motor vehicles under the CAA.⁹¹ It was not until 2003, though, that EPA entered an order denying the rulemaking petition.⁹² The agency reasoned that Congress sought to address climate change through other tools besides the CAA, and Congress did not intend to give EPA the authority to use the CAA to regulate CO₂ emissions.⁹³ EPA relied upon that conclusion to then read the statutory terms “air pollutant” and “air pollution” to not encompass the role of CO₂ in contributing to climate change.⁹⁴ EPA added that even if the CAA did give the agency the authority to regulate the emission of greenhouse gases, it declined to do so because it would be unwise to impose such regulations at that time.⁹⁵ The D.C. Circuit accepted EPA’s conclusion, though only dissenting Judge Tatel discussed the status of CO₂ as a pollutant.⁹⁶ Judge Tatel thought that the CAA’s “exceedingly broad language” accommodates the treatment of CO₂ as a pollutant and “enables the Act to apply to new air pollution problems as well as existing ones.”⁹⁷

⁸⁸ Clean Air Act, 42 U.S.C. § 7602(g) (2006).

⁸⁹ Memorandum from Jonathan Z. Cannon to Carol M. Browner, Adm’r, Env’tl. Prot. Agency (Apr. 10, 1998), *reprinted in 1999 CO₂ Hearing*, *supra* note 55, at 21, 26.

⁹⁰ *See 1999 CO₂ Hearing*, *supra* note 55, at 11–20 (testimony of Gary Guzy, General Counsel, U.S. Environmental Protection Agency).

⁹¹ Control of Emissions from New and In-Use Highway Vehicles and Engines, 66 Fed. Reg. 7486, 7486 (Jan. 23, 2001).

⁹² Control of Emissions from New Highway Vehicles and Engines: Notice of Denial of Petition for Rulemaking, 68 Fed. Reg. 52,922, 52,922 (Sept. 8, 2003).

⁹³ *See id.* at 52,925–27.

⁹⁴ *Id.* at 52,928–29.

⁹⁵ *See id.* at 52,925–31.

⁹⁶ *See Massachusetts v. EPA*, 415 F.3d 50, 58, 67 (D.C. Cir. 2005), *rev’d*, 549 U.S. 497 (2007). Judge Randolph found that the agency could rely upon its evaluation of the appropriate policy regarding climate change to decline to regulate greenhouse gas emissions even if they comprised pollutants that endangered public health or welfare within the meaning of the CAA. *See id.* at 58. Judge Sentelle would have held that the petitioners failed to demonstrate the kind of injury necessary to sustain standing to bring suit under Article III. *Id.* at 59 (Sentelle, J., dissenting in part and concurring in the judgment). Despite the conclusion of his colleagues that the petitioners had standing, Judge Sentelle joined Judge Randolph to deny the petition for review. *See id.* Judge Tatel wrote a lengthy dissenting opinion explaining why the CAA afforded EPA the authority to regulate greenhouse gas emissions and why the agency abused its discretion by declining to do so. *See id.* at 73 (Tatel, J., dissenting); *see also id.* at 67–82.

⁹⁷ *Id.* at 67, 69.

The Supreme Court reversed in a five to four decision.⁹⁸ Writing for the majority, Justice Stevens emphasized that the CAA's "sweeping definition of 'air pollutant' . . . embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word 'any.'"⁹⁹ Specifically, CO₂ and other greenhouse gases "are 'without a doubt physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air.' The statute is unambiguous."¹⁰⁰ Writing for the dissent, Justice Scalia turned to the dictionary definition of "pollute" as "[t]o make or render impure or unclean."¹⁰¹ He further objected that the majority's reading of "pollutant" "defies common sense" because "[i]t follows that *everything* airborne, from Frisbees to flatulence, qualifies as an 'air pollutant.'"¹⁰²

Precisely. Many environmental statutes define "pollution" as anything that is emitted, discharged, or otherwise released into the relevant environment.¹⁰³ Consider Arizona's air pollution law, which defines "air contaminants" to include "smoke, vapors, charred paper, dust, soot, grime, carbon, fumes, gases, sulfuric acid mist aerosols, aerosol droplets, odors, particulate matter, windborne matter, radioactive materials, or noxious chemicals, *or any other material*."¹⁰⁴ Justice Scalia cited "Frisbees" and "flatulence" as illustrating the silliness of viewing everything as pollution, and while no one has accused Frisbees of polluting the air, flatulence has provoked the attention of environmental regulators—at least flatulence from cows.¹⁰⁵

⁹⁸ *Massachusetts v. EPA*, 549 U.S. 497 (2007).

⁹⁹ *Id.* at 528–29.

¹⁰⁰ *Id.* at 529 (alteration in original) (quoting Clean Air Act, 42 U.S.C. § 7602(g) (2006)). The Court declined to note two other textual indications that CO₂'s contribution to climate change is covered by the CAA. *See* 42 U.S.C. § 7403(g)(1) (2006) (including carbon dioxide in a list of air pollutants to be considered in an EPA research program); *id.* § 7602(h) (including "weather" and "climate" among the effects on "welfare").

¹⁰¹ *Massachusetts v. EPA*, 549 U.S. at 559 (Scalia, J., dissenting) (alteration in original) (quoting WEBSTER'S NEW INTERNATIONAL DICTIONARY, *supra* note 21, at 1910). Justice Scalia did not elaborate on why CO₂ did not render the air "impure or unclean." Instead, he argued that the dictionary definition of "air" supported EPA's focus upon "ambient air" "at ground level or near the surface of the earth." *Id.* at 559–60.

¹⁰² *Id.* at 558 n.2. Justice Scalia also sought refuge in the statute's use of the undefined term "air pollution agent," but CO₂ can be seen as an "agent" that results in "air pollution," albeit one that operates differently than most other air pollutants. *See id.* at 529 n.26 (majority opinion). At least, that is what the majority concluded. *Id.*

¹⁰³ *See, e.g.*, Federal Water Pollution Control Act § 502(6), 33 U.S.C. § 1362(6) (2006); Clean Air Act § 302(g), 42 U.S.C. § 7602(g) (2006).

¹⁰⁴ ARIZ. REV. STAT. ANN. § 49-421 (2002) (emphasis added). I describe this approach to defining everything as pollution as "the comprehensive solution" to the problem of identifying pollution. *See* Nagle, *supra* note 19, at 30. The other ways that environmental law defines pollution are the listing solution (which contains lists of specific pollutants) and the harm solution (which says that anything that produces a harm is a pollutant). *See id.*

¹⁰⁵ *See, e.g.*, Brian Duggan, 'Cow Tax' Angers Dorgan, BISMARCK TRIB., Dec. 12, 2008, http://www.bismarcktribune.com/news/opinion/article_82ec8f20-1592-57dc-b97d-4120ca6e5897.html (last visited Jan. 24, 2009) ("Sen. Byron Dorgan, D-N.D., is raising a stink over an idea stemming from the Environmental Protection Agency last week that would tax farmers with flatulence-

Water provides an even better example of the breadth of the CAA's understanding of pollution. After the Court decided *Massachusetts v. EPA*, the agency was petitioned to regulate water vapor as a pollutant under the CAA.¹⁰⁶ The petition focuses upon the "contrails"—condensation trails—of water vapor released by aircraft flying at high altitudes.¹⁰⁷ Most of the twenty-six-page petition recites the disproportionate greenhouse gas effect of water vapor occurring at high altitudes and the ways in which aircraft could be changed to reduce such emissions.¹⁰⁸ It took only one paragraph to argue that water vapor is a pollutant for purposes of the CAA. That paragraph simply quoted the statutory definition of "air pollutant," the history of broad judicial readings of that definition, and the Court's *Massachusetts v. EPA* conclusion that greenhouse gas emissions are pollutants.¹⁰⁹ Water itself, it seems, is a pollutant.

That means, as one physicist contended, that "[c]alling carbon dioxide a pollutant is a political statement, not a scientific one."¹¹⁰ It further means that Justice Scalia was wrong to conclude that CO₂ could not be a pollutant within the meaning of the CAA, but Lisa Heinzerling was also wrong to contend that CO₂ is like most other environmental pollutants. There are many kinds of pollution, and the CAA seems to require EPA to regulate any of them that endanger public health or welfare.¹¹¹

III. RESPONDING TO CLIMATE CHANGE AS A POLLUTION PROBLEM

The claim that CO₂ is a pollutant implies that it should be treated as a pollutant. The appellation "pollution" invokes a set of ideas about how to respond to a problem. Generally, pollutants imply polluters who are at fault and whose activities must be controlled to eliminate the harms of

producing livestock, which the agency suggested could be taxed to reduce climate change-inducing greenhouse gases.").

¹⁰⁶ See Letter from Friends of the Earth et al., to Stephen L. Johnson, Adm'r, U.S. Env'tl. Prot. Agency (Dec. 14, 2007), available at http://oceana.org/fileadmin/oceana/uploads/Climate_Change/FINAL_Aircraft_GHG_Petition_FINAL.pdf (containing a "Petition for Rulemaking Under the Clean Air Act to Reduce the Emission of Air Pollutants from Aircraft that Contribute to Global Climate Change").

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ See *id.* at 14.

¹¹⁰ Gerald E. Marsh, Letter to the Editor, *CO2 Cannot Be Called a Pollutant*, FIN. TIMES, Dec. 29, 2004, http://www.ft.com/cms/s/0/72a811d4-593e-11d9-89a5-00000e2511c8.html?nclick_check=1 (last visited Jan. 24, 2010).

¹¹¹ See Clean Air Act, 42 U.S.C. § 7521(a)(1)(2006) (providing that EPA shall regulate "air pollution which may reasonably be anticipated to endanger public health or welfare"). The Court in *Massachusetts v. EPA* remanded the endangerment question to EPA for it to decide in light of the Court's conclusion that CO₂ qualified as a pollutant, and in 2009 EPA proposed the requisite endangerment finding. See Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 18,886, 18,886 (proposed Apr. 24, 2009) (to be codified at 40 C.F.R. ch. 1).

pollution.¹¹² That is the focus of most of the efforts to respond to climate change to date. The Kyoto Protocol requires developed countries to reduce their greenhouse gas emissions, and it has been faulted for failing to extend similar regulations to rapidly developing countries such as China and India.¹¹³ Congress and EPA have approved or considered numerous measures designed to regulate the emission of CO₂ from power plants, cars, and other sources.¹¹⁴ Several groups of states have already adopted similar measures. Such pollution control regulations are precisely what many advocates of the characterization of climate change as pollution desire, and precisely what others fear.¹¹⁵

But there is much more to the idea of pollution than what appears in the provisions of environmental statutes. The traditional understanding of pollution included a wide range of things, and that understanding persists in claims of cultural pollution resulting from violent entertainment, racism, and pornography.¹¹⁶ The law's response to such pollution claims is much different than environmental law's approach to pollution. Rather than regulating polluting activities in an effort to control or prevent pollution, the law asks us to tolerate the harms associated with exposure to violent entertainment or pornography.¹¹⁷ The law may seek a middle ground between preventing or tolerating pollution, as evidenced by avoidance efforts that allow pollution to occur while separating it from those who would be injured by it.¹¹⁸ The federal Telecommunications Act¹¹⁹ embraces that strategy in its response to claims of visual pollution from cell phone towers: Such towers must be permitted, but a local government may locate them away from complaining neighbors if there is substantial evidence of aesthetic harms.¹²⁰

The recognition that prevention, control, toleration, and avoidance are all familiar responses to pollution claims holds special promise for climate change. The unprecedented implications of climate change caution against

¹¹² See, e.g., Alan Carlin, *Global Climate Change Control: Is There a Better Strategy than Reducing Greenhouse Gas Emissions?*, 155 U. PA. L. REV. 1401, 1403 (2007) ("The standard response to most pollution problems has been to impose regulations limiting the production and/or discharge of the pollutants involved . . .").

¹¹³ See Kevin A. Baumert, Note, *Participation of Developing Countries in the International Climate Change Regime: Lessons for the Future*, 38 GEO. WASH. INT'L L. REV. 365, 366 (2006).

¹¹⁴ See generally Arnold W. Reitze, Jr., *Federal Control of Carbon Dioxide Emissions: What Are the Options?*, 36 B.C. ENVTL. AFF. L. REV. 1 (2009) (exploring options for developing a U.S. energy policy that will reduce greenhouse gas emissions).

¹¹⁵ See Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1180 (2009).

¹¹⁶ I explain the history of "pollution" and the unifying work of pollution claims in Nagle, *supra* note 19.

¹¹⁷ See generally LEE C. BOLLINGER, *THE TOLERANT SOCIETY* 140–44 (1986) (defending tolerance as the appropriate response to claims of objectionable speech).

¹¹⁸ See Nagle, *supra* note 19, at 77.

¹¹⁹ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified in scattered sections of 42 U.S.C.).

¹²⁰ See John Copeland Nagle, *Cell Phone Towers as Visual Pollution*, 23 NOTRE DAME J.L. ETHICS & PUB. POL'Y 537, 540 (2009).

relying upon the CAA, or environmental law generally, or any other single model to craft the appropriate response. The challenge is to identify the ideal mix of regulatory commands, funding, adaptation measures, and toleration that fits the potential harms resulting from climate change. The broader idea of pollution offers insights outside of environmental law that may help to solve this unique environmental problem.

A. Applying Environmental Law's Understanding of Pollution to Climate Change

Environmental law itself offers several models for responding to climate change. The CAA has received the most attention among existing federal pollution laws, while Congress has struggled to enact a law specifically focused upon climate change.¹²¹ Each effort relies upon understandings of pollution that, for better or worse, are familiar to environmental law.

1. Carbon Dioxide and the Clean Air Act

The purpose for litigating whether CO₂ is a pollutant was to determine whether the CAA requires EPA to regulate greenhouse gas emissions from motor vehicles.¹²² Congress enacted the CAA expecting that it would provide the tools to solve all air pollution problems.¹²³ Those tools include the establishment of uniform standards for the presence of pollutants in the air, the development of state plans to achieve those standards and to prevent the quality of already clean air from deteriorating, regulation of vehicle emissions standards and fuels, and heightened regulation of “hazardous” air pollutants.¹²⁴ Subsequent amendments to the original 1970 law created special provisions to establish a cap-and-trade system for acid rain caused by power plant emissions and to prevent the depletion of the ozone layer.¹²⁵

The application of those tools to CO₂ has provoked a debate about the effectiveness of the CAA, and of pollution control laws more generally. Since the Court decided *Massachusetts v. EPA*, the battle has shifted to EPA and

¹²¹ See CHRIS WOLD ET AL., CLIMATE CHANGE AND THE LAW 538 (2009) (describing the Clean Air Act as the “most clearly relevant” existing U.S. statute to use in fighting climate change); *id.* at 487 (mentioning that out of the seven separate greenhouse gas emissions trading programs introduced in the 110th Congress, only one made it out of committee onto the Senate floor, though it ultimately died).

¹²² See *id.* at 538 (explaining that litigation ensued following the EPA General Counsel’s reversal in 2003 of its earlier position that EPA does have authority under the CAA to regulate carbon dioxide emissions).

¹²³ See, e.g., Clean Air Act, 42 U.S.C. §§ 7401, 7602(g) (2006) (providing congressional purposes in enacting the Clean Air Act and containing a broad definition of “air pollutant”).

¹²⁴ See *id.* §§ 7402, 7410, 7412(d)(2), 7521.

¹²⁵ Clean Air Act Amendments of 1990, Pub. L. No. 101-549, §§ 403, 403, 601–02, 104 Stat. 2399, 2584–85, 2589, 2649–50 (codified as amended at 42 U.S.C. §§ 7651, 7671 (2006)). For a summary of the CAA, see U.S. ENVTL. PROT. AGENCY, THE PLAIN ENGLISH GUIDE TO THE CLEAN AIR ACT (2007), available at <http://www.epa.gov/air/caa/peg/peg.pdf>.

to Congress. Numerous congressional hearings have explored the ramifications of the Court's decision, including one in which House Energy and Commerce Committee Chair John Dingell (D-Mich.) faulted the Court for creating "a glorious mess" that was not intended by the Congress that enacted the CAA.¹²⁶ Meanwhile, EPA has received more petitions asking it to regulate other activities under the CAA, including nonroad engines, shipping vessels, and aircraft.¹²⁷ EPA, its Environmental Appeals Board (EAB), and the Utah Supreme Court have reached different conclusions regarding the application of the CAA to CO₂ emissions limitations from a proposed coal-fired power plant in Utah; shortly thereafter the Administrator opined that such restrictions were unnecessary, and now EPA's new Administrator is reconsidering that position.¹²⁸ EPA was so cautious in deciding the endangerment issue remanded to it by the Court in *Massachusetts v. EPA* that Senator Boxer (D-Cal.) accused the agency of delay and disregard for law.¹²⁹ In July 2008, EPA published an extensive advance notice of public rulemaking (ANPR) soliciting public advice concerning the next step that it should take regarding all aspects of regulating greenhouse gases as

¹²⁶ *Strengths and Weaknesses of Regulating Greenhouse Gas Emissions Using Existing Clean Air Act Authorities: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy and Commerce*, 110th Cong. 10 (Apr. 10, 2008) (statement of Rep. John D. Dingell, Chairman, H. Comm. on Energy & Commerce) ("This is not what some of us intended, but it is the law of the land and must be followed."); Op-Ed., 'A Glorious Mess,' WALL ST. J., Apr. 12, 2008, at A8 ("Diverging from his prepared remarks, [Representative Dingell] said it was leading to 'a glorious mess' . . .").

¹²⁷ Letter from State of California et al. to Adm'r, U.S. Env'tl. Prot. Agency (Jan. 29, 2008), available at http://ag.ca.gov/cms_attachments/press/pdfs/n1522_finaldraftnonroadpetition3.pdf (regarding "Petition for Rulemaking Seeking the Regulation of Greenhouse Gas Emissions from Nonroad Vehicles and Engines"); Letter from Timothy Ballo & Sarah Burt, Earthjustice, to Stephen L. Johnson, Adm'r, U.S. Env'tl. Prot. Agency (Oct. 3, 2007), available at http://www.oceana.org/fileadmin/oceana/uploads/Climate_Change/Marine_GHG_Petition_FINAL.pdf (regarding "Petition for Rulemaking Under the Clean Air Act to Reduce the Emission of Air Pollutants from Marine Shipping Vessels that Contribute to Global Climate Change" for Oceana, Friends of the Earth, and the Center for Biological Diversity); Letter from Friends of the Earth et al. to Stephen L. Johnson, *supra* note 106.

¹²⁸ *Compare* Deseret Power Elec. Coop., PSD Appeal No. 07-03, slip op. at 2 (Env'tl. Appeals Bd. Nov. 13, 2008), available at [http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/PSD%20Permit%20Appeals%20\(CAA\)/C8C5985967D8096E85257500006811A7/\\$File/Remand...39.pdf](http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/PSD%20Permit%20Appeals%20(CAA)/C8C5985967D8096E85257500006811A7/$File/Remand...39.pdf) (stating CAA CO₂ limitations apply), and Letter from Lisa P. Jackson, Adm'r, U.S. Env'tl. Prot. Agency, to David Bookbinder, Chief Climate Counsel, Sierra Club 1 (Feb. 17, 2009), available at <http://www.epa.gov/nsr/documents/20090217LPJlettertosierraclub.pdf> (promising to reconsider whether the CAA CO₂ limitations apply), with *Utah Chapter of the Sierra Club v. Air Quality Bd.*, No. 20080113, 2009 UT 76, ¶¶ 30–35, 56, 2009 Utah LEXIS 211, at *33–34 (Utah Dec. 4, 2009) (stating CAA CO₂ limitations do not apply), and Memorandum from Stephen L. Johnson, Adm'r, U.S. Env'tl. Prot. Agency, to Regional Administrators 1 (Dec. 18, 2008), available at http://www.epa.gov/nsr/documents/psd_interpretive_memo_12.18.08.pdf (distinguishing between pollutants regulated by the CAA and pollutants (such as CO₂) that are only subject to monitoring and reporting).

¹²⁹ *Regulation of Greenhouse Gases Under the Clean Air Act: Hearing Before the S. Comm. on Environment and Public Works*, 110th Cong. (Sept. 23, 2008) (prepared statement of Sen. Barbara Boxer, Chairman, S. Comm. on Environment & Public Works), http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Statement&Statement_ID=e6ce6bf-b061-469f-9d5b-396e18fba2c4 (last visited Jan. 24, 2010) [hereinafter *Sept. 2008 Hearing*].

pollutants under the CAA.¹³⁰ The public's response demonstrated that the Supreme Court's decision failed to resolve the status of CO₂ as a pollutant. One commenter advised that "CO₂ is good, just ask a tree or your front yard."¹³¹ Another commenter warned that "[c]arbon dioxide (CO₂) pollution is the primary cause of the climate crisis."¹³² Soon after the Obama Administration took office, EPA proposed to use the CAA to regulate CO₂.¹³³ That proposal, in turn, has prompted congressional efforts to prohibit EPA from treating CO₂ as a pollutant under the CAA. Representative Pomeroy (D-N.D.), for example, introduced legislation to remove greenhouse gases from the scope of the CAA because Congress did not intend to regulate such gases when it enacted the CAA and any decision to regulate greenhouse gases should be made by Congress, not EPA.¹³⁴

In each of these venues, the proponents of CAA regulation cite the law's effectiveness in reducing other types of air pollution.¹³⁵ They also insist that the law contains abundant flexibility to allow EPA to mold it to the circumstances presented by greenhouse gas emissions. "One of the hallmarks of the Clean Air Act is its flexibility to address inherently complex air pollution issues," according to California Air Resources Board chairman Mary Nichols.¹³⁶ Most potentially regulated parties see a much grimmer

¹³⁰ Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44,354, 44,354 (proposed July 30, 2008) (to be codified at 40 C.F.R. ch. 1).

¹³¹ Jessica Leber, *EPA: Naysayers Vent Against CO₂ as a Pollutant*, CLIMATEWIRE, June 25, 2009 (on file with Environmental Law) (quoting one commenter). Similarly, an Oregon state senator asked, "How can something we exhale and plants inhale be deemed a 'pollutant?' Carbon dioxide is the essence of life." Letter from Senator David Nelson to Editors, *The Oregonian* (May 7, 2009), available at <http://www.regulations.gov/search/Regs/contentStreamer?objectId=09000064809ca835&disposition=attachment&contentType=pdf>. For good measure, the senator suggested that just as we did not accept the Supreme Court's decisions in *Dred Scott* and *Buck v. Bell*, we should not accept *Massachusetts v. EPA* either. *Id.*

¹³² E-mail from Alex Delano to Stephen Johnson, Adm'r, U.S. Env'tl. Prot. Agency (Nov. 25, 2008, 17:05), available at <http://www.regulations.gov/search/Regs/contentStreamer?objectId=09000064808dd88&disposition=attachment&contentType=pdf>. The commenter also told Administrator Johnson that "you have actually been helping the greedy republicans and their oil and coal burning rich friends pollute the atmosphere." *Id.* For more examples, see Leber, *supra* note 131.

¹³³ See Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 18,886 (proposed Apr. 24, 2009) (to be codified at 40 C.F.R. ch. 1).

¹³⁴ See, e.g., Save Our Energy Jobs Act, H.R. 4396, 111th Cong. § 2(b) (2009); see also 135 CONG. REC. S9654 (daily ed. Sept. 23, 2009) (submitting amendment to H.R. 2996, 111th Cong. (2009), that would have prohibited EPA from "making carbon dioxide a pollutant subject to regulation under the Clean Air Act . . . for any source other than a mobile source"); Dean Scott, *Growing Opposition May Delay Senate Vote to Block EPA Rules for Greenhouse Gases*, 41 Env't Rep. (BNA) 105 (Jan. 15, 2010).

¹³⁵ See *Sept. 2008 Hearing*, *supra* note 129 ("[The CAA] has been very effective in reducing pollution . . .").

¹³⁶ See *id.* (prepared statement of Mary D. Nichols, Chairman, California Air Resources Board), available at http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=e2d29d01-2714-49b0-a5be-e351c270705a; Christopher T. Giovino, *Defending Overstatement: The Symbolic Clean Air Act and Carbon Dioxide*, 30 HARV. ENVTL. L. REV. 99, 152-62 (2006) (arguing that the CAA contains "symbolic" provisions that should be read pragmatically to accommodate regulation of CO₂); Letter from Timothy Ballo & Sarah Burt to Stephen L. Johnson, *supra* note

regulatory future if the CAA is employed to control CO₂ emissions. They refer to the “alarming consequences” of using such a flawed, unsuitable, and potentially destructive instrument as the CAA.¹³⁷ They fear that EPA will micromanage the entire U.S. economy, specifically listing apartment buildings, assisted living facilities, bakeries, boats, breweries, cars, churches, colleges, commercial buildings, data centers, farms, hospitals, hotels, lawnmowers, malls, manufacturing plants, motorcycles, office buildings, planes, refineries, residential homes, restaurants, schools, sports arenas, tractors, trucks, and wineries as regulated entities.¹³⁸ There are a number of other concerns besides the burden on the regulated parties, including “a mandatory scaling down of society,”¹³⁹ the likelihood that businesses will be forced overseas,¹⁴⁰ the fear that energy independence will

127, at 24 (“[T]he realm of potential regulatory responses to an affirmative endangerment finding is quite broad”); Letter from Friends of the Earth et al. to Stephen L. Johnson, *supra* note 106, at 20 (“EPA Has Broad Discretion in Promulgating Regulations to Limit Greenhouse Gas Emissions from Aircraft Engines.”).

¹³⁷ See *Sept. 2008 Hearing, supra* note 129 (prepared statement of Sen. James M. Inhofe, Ranking Member, S. Comm. on Environment and Public Works), http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Statement&Statement_ID=5a0c4dba-3d5d-4536-a2df-b9162ac1b22a (last visited Jan. 24, 2010) (“As more and more analysis is done about the potential implications of regulating greenhouse gases under the Clean Air Act, the more alarming the consequences become.”); *id.* (prepared statement of Marlo Lewis, Senior Fellow, Competitive Enter. Inst.), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=38ed7b76-2817-4f03-9e51-537515c9ffd2 (“The Clean Air Act is a flawed, unsuitable, and potentially destructive instrument for reducing greenhouse gas emissions . . . [that] could trigger massive, economy-chilling regulation.”); Letter from Secretary of Agriculture Edward T. Schaefer et al. to Susan E. Dudley, Adm’r, Office of Info. & Regulatory Affairs (July 9, 2008), *reprinted in* *Regulating Greenhouse Gas Emissions Under the Clean Air Act*, 73 Fed. Reg. 44,354, 44,359–60 (proposed July 30, 2008) (to be codified at 40 C.F.R. ch. 1).

¹³⁸ See *Sept. 2008 Hearing, supra* note 129 (prepared statement of William L. Kovacs, Vice President, Environment, Technology and Regulatory Affairs, U.S. Chamber of Commerce), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=9cc4d7e4-f066-4534-9337-9bf53154b0e1 (arguing that EPA wrongly believes “that it can control the economy through CAA regulation,” and that such an action would result in “an unmanageable regulatory cascade”). The lists of potentially regulated sources appear in *id.*; Letter from Rick Perry, Tex. Governor, to Stephen L. Johnson, Adm’r, U.S. Env’tl. Prot. Agency 3–4 (Nov. 25, 2008), *available at* <http://governor.state.tx.us/files/press-office/O-JohnsonStephen20081125.pdf>; Comments from Benjamin Brandes, Dir. of Air Quality, Nat’l Mining Ass’n, to Air and Radiation Docket and Information Center, U.S. Env’tl. Prot. Agency 10 (Nov. 28, 2008), *available at* http://www.nma.org/pdf/legal/120108_nma_comments.pdf (regarding *Regulating Greenhouse Gases Under the Clean Air Act* under Docket Number EPA-HQ-OAR-2008-0318).

¹³⁹ Letter from William L. Kovacs, Vice President of Env’t, Tech. & Regulatory Affairs, Chamber of Commerce, to Air and Radiation Docket and Information Center, U.S. Env’tl. Prot. Agency 27 (Nov. 19, 2008), *available at* <http://www.uschamber.com/NR/rdonlyres/ea2gvk65j2fsrckuqrkbqcgmpdwrxnuddzyc6j2f2ind42bkuxtgyxnqtfstk24q2erpzqiww33m77airmzt2oeq5vkb/USChamberANPREndangermentCommentswithattachments.pdf>.

¹⁴⁰ See *Sept. 2008 Hearing, supra* note 129 (prepared statement of William L. Kovacs, Vice President, Environment, Technology and Regulatory Affairs, U.S. Chamber of Commerce), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=9cc4d7e4-f066-4534-9337-9bf53154b0e1; Comments from Benjamin Brandes to Air and Radiation Docket and Information Center, *supra* note 138, at 26.

be compromised,¹⁴¹ the suffering in public health resulting from higher energy costs,¹⁴² and the worry that the entire effort will not help the environment in any event.¹⁴³ And they deny that EPA has the power to avoid those consequences because they see the statute as inflexible, a perception fueled by several recent D.C. Circuit decisions in which the court held that the plain language of the CAA precluded EPA's efforts to develop flexible air pollution control programs.¹⁴⁴ EPA seems to recognize the dilemma itself by invoking the absurd results canon of statutory interpretation to justify the regulation of sources that emit more than 25,000 tons of greenhouse gases per year instead of following the statutory ceiling of 2500 tons of such gases.¹⁴⁵ Absurd results arguments are common in environmental litigation, but they inevitably fail because the courts are unwilling to find that an environmental statute's language is so absurd as to justify ignoring its plain meaning.¹⁴⁶ It would be especially ironic for an absurd results argument to succeed in this context because the alleged absurdity is a function of the Supreme Court's insistence upon following the plain meaning of "pollution" in *Massachusetts v. EPA*.

Such is the litany of charges and countercharges being voiced before EPA, Congress, and the courts. If the experience with previous pollution repeats itself, the putative regulated parties are exaggerating the untoward consequences that would result from CAA regulation, while the transition will not be quite as seamless as the champions of the CAA suggest. Some provisions of the CAA could be adapted relatively easily for CO₂, such as vehicle emissions regulations; other provisions are more challenging, such as the establishment of a national CO₂ standard and mandating that each state achieve a certain share of reduced CO₂ emissions lest the state suffer the CAA's statutory sanctions. The picture becomes somewhat clearer when one moves away from the details of the CAA's specific provisions. It is true

¹⁴¹ See Comments from Benjamin Brandes to Air and Radiation Docket and Information Center, *supra* note 138, at 19–24.

¹⁴² See *id.* at 29–31.

¹⁴³ See Letter from Rick Perry to Stephen L. Johnson, *supra* note 138, at 1 (“[T]he proposed regulations will fail to achieve the intended goals of tangible reductions in greenhouse gas emissions given the global nature of these emissions.”).

¹⁴⁴ See *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 531 (D.C. Cir. 2009) (overturning EPA's decision to set the same standard for primary and secondary fine particulate National Ambient Air Quality Standards); *Sierra Club v. EPA*, 551 F.3d 1019, 1028 (D.C. Cir. 2008) (holding EPA violated the CAA by exempting major sources of air pollution from normal emission standards during periods of startups, shutdowns, and malfunctions); *Sierra Club v. EPA*, 536 F.3d 673, 677 (D.C. Cir. 2008) (holding that an EPA rule violated the CAA provision requiring that each Title V permit include adequate monitoring requirements); *North Carolina v. EPA*, 531 F.3d 896, 930 (D.C. Cir. 2008) (overturning EPA's cap-and-trade program in its Clean Air Interstate Rule). Remember that *Massachusetts v. EPA* itself held that EPA lacked the statutory flexibility to formulate its preferred program for addressing climate change. 549 U.S. 497, 532 (2007).

¹⁴⁵ See Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 74 Fed. Reg. 55,292, 55,303–11 (proposed Oct. 27, 2009) (to be codified at 40 C.F.R. pts. 51–52, 70–71).

¹⁴⁶ See, e.g., *Madison Gas & Elec. Co. v. EPA*, 25 F.3d 526 (7th Cir. 1994) (following the plain meaning of the CAA and rejecting an absurd results argument that I made as a Department of Justice attorney on behalf of EPA).

that the drafters of the CAA did not anticipate its application to a substance as common in the atmosphere as CO₂.¹⁴⁷ It is also true that the principles of the CAA provide more useful guidance for addressing climate change than the law's actual provisions, though that is a tacit admission that the actual provisions of the CAA are not ideally suited for regulating CO₂ emissions.¹⁴⁸ There is widespread agreement among supporters of the application of the CAA to CO₂ that the statute offers a "second-best solution" until a more targeted federal statute appears.¹⁴⁹

2. Federal Climate Change Legislation

Congress has moved cautiously toward enacting comprehensive climate change legislation. In 1996, the Senate voted ninety-five to zero for a resolution that opposed any climate change treaty that failed to regulate emissions in the developing world (think China) or that would cause serious harm to the American economy.¹⁵⁰ Numerous bills were proposed during the Bush Administration, but none of them came close to becoming law.¹⁵¹ The election of President Obama sparked a renewed push for a congressional climate change bill in 2009.

In June 2009, the House voted 219 to 212 to approve the American Clean Energy and Security Act (ACES).¹⁵² "The legislation," claims its supporters, "will create millions of new clean energy jobs, enhance

¹⁴⁷ *But see* Massachusetts v. EPA, 415 F.3d 50, 68 (D.C. Cir. 2005) (Tatel, J., dissenting) (citing "a few stray references to human-forced climate change" that appear in the legislative history of the CAA), *rev'd*, 549 U.S. 497 (2007).

¹⁴⁸ *See Sept. 2008 Hearing, supra* note 129 (statement of Mary D. Nichols, Chairman, California Air Resources Board), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=e2d29d01-2714-49b0-a5be-e351c270705a ("[T]here are [seven] powerful principles contained in the Clean Air Act that should be embraced in federal climate policy.").

¹⁴⁹ *See, e.g., id.* (statement of David Bookbinder, Chief Climate Counsel, Sierra Club), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=bf5c538e-7fe8-498c-9d31-0396a465b673 ("[T]rying to tackle [greenhouse gases] via a Clean Air Act regulatory program is a second-best solution"); Comments from the Climate Policy Center of Clean Air-Cool Planet 1 (Nov. 26, 2008), *available at* http://www.cleanair-coolplanet.org/cpc/documents/2008-12-01_Comments_on_EPA_CAA_ANPR.pdf (commenting on EPA's Advanced Notice of Proposed Rulemaking for Regulating Greenhouse Gases Under the Clean Air Act, 73 Fed. Reg. 44,354 (proposed July 30, 2008), under Docket Number EPA-HQ-OAR-2008-1318 and referring to CAA regulations as "[t]he second best outcome"); *see also Sept. 2008 Hearing, supra* note 129 (statement of Mary D. Nichols, Chairman, Cal. Air Res. Bd.), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=e2d29d01-2714-49b0-a5be-e351c270705a ("The CAA is a critical bridge to a federal climate policy.").

¹⁵⁰ 143 CONG. REC. S8138 (1997); S. Res. 98, 105th Cong. (1997) (enacted).

¹⁵¹ *See, e.g.,* Lieberman-Warner Climate Security Act of 2008, S. 3036, 110th Cong. (2008); Low Carbon Economy Act of 2007, S. 1766, 110th Cong. (2007); Clean Power Act of 2007, S. 1201, 110th Cong. (2007).

¹⁵² American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (as passed by House, June 26, 2009); H. COMM. ON ENERGY & COMMERCE, 111TH CONG., THE AMERICAN CLEAN ENERGY AND SECURITY ACT 1 (Comm. Print 2009), *available at* http://energycommerce.house.gov/Press_111/20090724/hr2454_housesummary.pdf.

America's energy independence, and protect the environment."¹⁵³ Only one of the five titles in the 1427-page bill specifically targets climate change; the other titles promote clean energy, energy efficiency, and agriculture and forestry.¹⁵⁴ Title III, the climate change title,¹⁵⁵ establishes a cap-and-trade program that regulates greenhouse gas emissions from electrical power plants and oil refiners based upon the number of allowances that each plant is awarded.¹⁵⁶ The bill calculates the available number of allowances so that greenhouse gas emissions will drop 17% below 2005 levels by 2020, and then 83% below 2005 levels by 2050.¹⁵⁷ The bill also contains numerous other climate change provisions besides the cap-and-trade program.¹⁵⁸ It requires electric utilities to meet 20% of their electricity demand through renewable energy and energy conservation by 2020.¹⁵⁹ It mandates stricter energy-saving standards for new buildings and appliances.¹⁶⁰ It approves supplemental emissions reductions from programs that reduce deforestation, thus retaining the trees whose storage of CO₂ is an important check on warming temperatures.¹⁶¹ It supports state, federal, and international programs that encourage adaptation to climate change.¹⁶² The bill authorizes \$190 billion in funding for new energy technologies, carbon capture and sequestration, and basic research and development.¹⁶³

The fate of the bill remained unclear until the day that the House passed it. Passage was secured by amendments that reduced the impact of climate change regulations on numerous affected parties, including coal producers, industrial manufacturers, and agricultural growers.¹⁶⁴ Those amendments enabled the bill to pass the House, but the 212 opponents objected that it was unnecessary because the problem of climate change is exaggerated, too expensive for the American economy to endure during a period of recession, or misguided in its reliance on new regulation of greenhouse gas emissions without demanding similar actions by other nations.¹⁶⁵ That debate is already

¹⁵³ H. COMM. ON ENERGY & COMMERCE, 111TH CONG., *supra* note 152, at 1.

¹⁵⁴ H.R. 2454 § 1(b).

¹⁵⁵ *Id.*

¹⁵⁶ *Id.* § 321.

¹⁵⁷ *Id.* § 311.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.* § 101.

¹⁶⁰ *Id.* §§ 201, 212.

¹⁶¹ *Id.* § 311.

¹⁶² *Id.* §§ 478–479, 493.

¹⁶³ H. COMM. ON ENERGY & COMMERCE, 111TH CONG., *supra* note 152, at 2.

¹⁶⁴ See Margaret Kriz Hobson, *Climate Competition Heats Up*, NAT'L J., Aug. 8, 2009, at 17, 18 (“[House committee chair Henry] Waxman aggressively cut deals with the industry reps . . . [and] produced compromises that would cushion the new financial burdens on polluters, reduce the clout of the Environmental Protection Agency, and put brakes on states’ regulatory activism. Coal, large industrials, and agriculture emerged as winners.”).

¹⁶⁵ See, e.g., 155 CONG. REC. H7642 (daily ed. June 26, 2009) (statement of Rep. Roskam) (“[L]et’s do the right thing, let’s do the transformational thing, but let’s not give our markets over to the Chinese, where they have clearly said they are not in this game.”); *id.* at H7453 (statement of Rep. Sessions) (“Billions of dollars wasted on extra energy costs and millions of jobs lost is an extremely high price to pay for a bill that is estimated, at best, to slow the Earth’s

being echoed as the proposed legislation moves to the Senate, where it again awaits an uncertain fate.

B. The Lessons of the Broader Understanding of Pollution to Climate Change

The CAA and ACES both rely upon the traditional environmental understanding of pollution.¹⁶⁶ There are virtues in that approach, but there are vices as well. The broader understanding of pollution introduces new insights into the debate that are absent from most ordinary environmental discussions.

1. Against the Environmental Pollution Paradigm

Ted Nordhaus and Michael Shellenberger have been the harshest critics of viewing climate change as a pollution problem. Nordhaus and Shellenberger are environmental activists who once “viewed global warming as a problem of pollution, whose solution would be found in pollution limits.”¹⁶⁷ Then they changed their minds. Writing an essay in 2004 on the death of environmentalism,¹⁶⁸ then developing their ideas in the 2007 book *Breakthrough: From the Death of Environmentalism to the Politics of Possibility*, Nordhaus and Shellenberger argue “that the pollution paradigm . . . is profoundly inadequate for understanding and dealing with global warming.”¹⁶⁹ The idea of pollution, they write, wrongly presumes “the concept of nature as pure, harmonious, and separate from humans.”¹⁷⁰ They

temperature rises by one-hundredth of a single degree by 2050, and no more than two-tenths of a degree by the end of this century.”); *see also House ACES Hearing, supra* note 10 (prepared statement of Newt Gingrich, Former Speaker of the U.S. House of Representatives), *available at* http://energycommerce.house.gov/Press_111/20090424/testimony_gingrich.pdf (“This bill is wrong for government of, by, and for the people. . . . Instead of rewarding innovation, this bill punishes Americans into living lives that the government wants them to live.”); Ted Nordhaus & Michael Shellenberger, *The Flawed Logic of the Cap-and-Trade Debate*, YALE ENV’T 360, May 19, 2009, <http://e360.yale.edu/content/feature.msp?id=2153> (last visited Jan. 24, 2010) (“The Waxman-Markey cap-and-trade legislation represents the final absurd expression of the failed pollution paradigm that has defined climate policy for over a decade.”).

¹⁶⁶ *See supra* Parts III.A.2, III.B.2.

¹⁶⁷ NORDHAUS & SHELLENBERGER, *supra* note 14, at 8; *see also id.* at 7 (“Environmental leaders continue to insist that global warming is essentially a very big pollution problem.”); *id.* at 24 (asserting that “the idea of pollution” serves as the interpretive framework of environmentalists); *id.* at 108 (“[Former Vice President Al Gore] and the rest of the environmental community had, for more than twenty years, insisted that global warming was essentially a problem of pollution to be fixed by a politics of limits.”). Nordhaus and Shellenberger spent a combined 30 years “working for the country’s largest environmental organizations and foundations, as well as many smaller grassroots ones.” *Id.* at 8.

¹⁶⁸ MICHAEL SHELLENBERGER & TED NORDHAUS, *THE DEATH OF ENVIRONMENTALISM: GLOBAL WARMING POLITICS IN A POST-ENVIRONMENTAL WORLD* (2004), *available at* http://www.thebreakthrough.org/PDF/Death_of_Environmentalism.pdf.

¹⁶⁹ NORDHAUS & SHELLENBERGER, *supra* note 14, at 111.

¹⁷⁰ *Id.* at 24–25; *see also id.* at 25 (suggesting that the idea of pollution views humans “as essentially separate from the world”).

echo the ways in which CO₂ differs from most air pollutants.¹⁷¹ Nordhaus and Shellenberger conclude that “[t]o describe these challenges as problems of pollution is to stretch the meaning of the word beyond recognition.”¹⁷²

But Nordhaus and Shellenberger only recognize the modern environmental understanding of “pollution.” We have become accustomed to thinking of pollution exclusively in terms of environmental degradation. So accustomed, in fact, that references to cultural pollution, light pollution, spiritual pollution and other kinds of pollution besides environmental pollution are sometimes dismissed as a mere rhetorical device.¹⁷³ But human environments were more likely than the natural environment to be described as “polluted” until less than a century ago.¹⁷⁴ Even today, the more familiar connotation of pollution as involving the air or the water has not displaced the important role that the language of pollution plays in several areas of the law and in other scholarly disciplines, most notably anthropology.

The writings of Mary Douglas demonstrate how “pollution” can frame a much different approach than the traditional regulations of environmental law. According to Douglas, each society develops its own pollution beliefs based upon its own values.¹⁷⁵ Pollution beliefs reinforce the boundaries established by a society by designating which things are allowed in which places.¹⁷⁶ Initially, Douglas joined other anthropologists in focusing upon the cultural beliefs—typically involving the body, sexuality, food, or death—that are maintained by what were once regarded as “primitive” cultures in Asia and Africa.¹⁷⁷ Her later work with political scientist Aaron Wildavsky extended that analysis to claims of environmental pollution.¹⁷⁸ That work received a harsh reception among some scholars and environmental advocates who faulted Douglas and Wildavsky for conflating modern scientific evidence and uninformed beliefs.¹⁷⁹ Yet environmental history demonstrates the similarly contingent nature of pollution. The idea of “pollution” was not even applied to the natural environment until the latter part of the nineteenth century, when the term was appropriated from its

¹⁷¹ See *id.* at 112 (observing that CO₂ “is invisible and odorless,” “occurs naturally,” and “does not revolt us, poison us, or make us sick”); *id.* at 7 (“[T]he quantitative accumulation of carbon dioxide in the atmosphere has created something *qualitatively* different from pollution . . .”).

¹⁷² *Id.* at 8.

¹⁷³ Nagle, *supra* note 19, at 5–6.

¹⁷⁴ See *generally id.* at 6–14 (describing the evolution of pollution beliefs).

¹⁷⁵ See DOUGLAS, *supra* note 19, at 3.

¹⁷⁶ See *id.* at 123–24.

¹⁷⁷ See *id.* at 123–27.

¹⁷⁸ See MARY DOUGLAS & AARON WILDAVSKY, *RISK AND CULTURE: AN ESSAY ON THE SELECTION OF TECHNICAL AND ENVIRONMENTAL DANGERS* 10 (1982).

¹⁷⁹ See E. Donald Elliott, *Anthropologizing Environmentalism*, 92 YALE L.J. 888, 892 (1983) (reviewing DOUGLAS & WILDAVSKY, *supra* note 178) (“[*Risk and Culture*] is unsatisfactory [because]: It reduces culture to a theory of the structure of environmental groups; and it fails to give proper weight to rational factors, such as science and economics, in explaining the increased attention policymakers have given to the environment.”); Langdon Winner, *Pollution as Delusion*, N.Y. TIMES, Aug. 8, 1982, § 6 (Magazine), at 8 (dismissing the book as “an ill-conceived polemic” against environmentalists).

earlier connotation of moral defilement in response to new cultural understandings of the effects of industrial processes.¹⁸⁰

Douglas made only one tantalizing reference to climate change in her voluminous writings. She cited “the debates about global warming” as an instance of disputes “between two who will never agree” and whose “differences are irreconcilable.”¹⁸¹ (The only other example that she gave— “[c]urrent political contests between Christianity and Islam”¹⁸²— demonstrates the antipathy that she saw between those who were involved in the climate change debates.) Beliefs about climate change divide sharply along ideological lines today. A recent study prepared by Yale’s Project on Climate Change described “Global Warming’s ‘Six Americas,’” distinguishing between such groups as educated elites who are alarmed at the imminent harms of climate change, poor and minority communities that are cautious in responding to news about climate change, and skeptics who never read the *New York Times* and dismiss fears of climate change as greatly exaggerated.¹⁸³ The study reads like the contested pollution beliefs that anthropologists have studied for over a century.

Pollution thus serves as a contested frame by which to understand climate change. Dan Kahan’s work on cultural cognition relies upon climate change as a paradigmatic example of how preexisting cultural commitments explain why different individuals respond in contrasting ways to the same scientific information.¹⁸⁴ Building on that evidence, Kahan argues that “public reason has failed as a discourse strategy.”¹⁸⁵ In other words, appeals to the scientific evidence showing the harmfulness of CO₂ emissions have failed to convince significant constituencies within the American public that climate change is deserving of priority attention. Kahan responds to that dilemma by advocating “[e]xpressive overdetermination [that] would oblige political actors—legislators as well as ordinary citizens—to integrate appeals to cultural values into their justifications for law.”¹⁸⁶ That advice wisely accounts for the multiplicity of pollution beliefs that are familiar to anthropologists, but foreign to environmental law.

¹⁸⁰ See Nagle, *supra* note 19, at 7–15 (tracing the development of the idea of pollution); Rome, *supra* note 19, at 6 (explaining how “pollution” gained its environmental connotation).

¹⁸¹ MARY DOUGLAS, A HISTORY OF GRID AND GROUP CULTURAL THEORY 9, *available at* <http://www.chass.utoronto.ca/epc/srb/cyber/douglas1.pdf>.

¹⁸² *Id.*

¹⁸³ ANTHONY LEISEROWITZ ET AL., GLOBAL WARMING’S “SIX AMERICAS” 8–19 (2008), *available at* <http://www.pewclimate.org/docUploads/SixAmericas.pdf>.

¹⁸⁴ See Dan M. Kahan, *The Cognitively Illiberal State*, 60 STAN. L. REV. 115, 139–42 (2007).

¹⁸⁵ *Id.* at 144.

¹⁸⁶ *Id.* at 145. A similar lesson can be drawn from DANIEL R. ABBASI, AMERICANS AND CLIMATE CHANGE: CLOSING THE GAP BETWEEN SCIENCE AND ACTION 12–13 (2006), *available at* http://research.yale.edu/environment/climate/americans_and_climate_change.pdf (reporting the extremely thoughtful recommendations of a 2005 Yale conference).

2. Applying the Broader Understanding of Pollution to Climate Change

The use of the broader, historical understanding of pollution as a frame for climate change has several consequences. Four aspects of the idea of pollution that are common to environmental law and to other pollution claims are especially relevant to our understanding of climate change: humans engage in polluting activity, individuals and large businesses alike are polluters, pollution is morally unacceptable, and the law should not blame the victims of pollution. Additionally, the broader idea of pollution suggests four strategies for responding to climate change: we should encourage adaptation to climate change, we should adopt alternatives to regulation such as funding new energy technologies and promoting carbon sequestration, we should not expect a single answer to the challenges presented by climate change, and we should emphasize how controlling greenhouse gases also controls other pollutants. A broader understanding of pollution also recognizes that efforts to avoid climate change will help to remedy traditional air pollution problems as well.

Begin with the idea that pollution is emitted by polluters. It is not the fact that the climate is changing that merits regulation, but the fact that human actions are changing it. Natural processes that release greenhouse gases are not subject to the same legal scrutiny as the anthropogenic release of the same chemicals. Forest fires release vast amounts of CO₂ into the atmosphere.¹⁸⁷ Volcanoes are a significant source CO₂ as well.¹⁸⁸ The fact that such contaminants are “natural,” though, precludes regulation. The broader view of pollution offers a different perspective. As Douglas Kysar has observed,

[T]he word pollution has always been used in a moralized sense to denote those activities that should be treated by a political community as defiling or desecrating, and hence restricted. The word therefore does not depend on an outmoded nature-humanity divide; instead, it actively works to construct a divide between permissible and impermissible human activities.¹⁸⁹

So viewed, the focus upon anthropogenic climate change rather than climate change *simpliciter* makes sense, and the task becomes the identification of which human activities are permissible and which are impermissible.

That task is aided by another consequence of framing climate change as a pollution problem. Polluters are bad. In the words of Mary Douglas, “A

¹⁸⁷ See, e.g., David Fogarty, *Australia Fires Release Huge Amount of CO₂*, REUTERS, Feb. 26, 2009, <http://www.reuters.com/article/environmentNews/idUSTRE51P12120090226> (last visited Jan. 24, 2010).

¹⁸⁸ See DECKER & DECKER, *supra* note 33, at 202; U.S. GEOLOGICAL SURVEY, U.S. DEP’T OF THE INTERIOR, REDUCING THE RISK FROM VOLCANO HAZARDS 1 (2004), *available at* <http://pubs.usgs.gov/fs/fs002-97/fs002-97.pdf>.

¹⁸⁹ Douglas A. Kysar, *The Consultants’ Republic*, 121 HARV. L. REV. 2041, 2058–59 (2008) (reviewing NORDAUS & SHELLINGER, *supra* note 14).

polluting person is always in the wrong.”¹⁹⁰ Former Sierra Club President Carl Pope’s response to Nordhaus and Shellenberger exploits that idea. Pope embraces “the well established values frame of the ‘polluter pays’ principle” as demonstrating that “the polluters, the emitters of carbon, ought to be paying for” renewable, nonpolluting technologies that will prevent climate change.¹⁹¹ The same view animates the perception that large facilities such as coal-fired power plants are primary culprits in producing climate change.¹⁹² The House bill targets such facilities.¹⁹³ The proponents of listing the polar bear as endangered under the Endangered Species Act¹⁹⁴ hope that the law’s prohibition upon federal actions that jeopardize a listed species will prevent federal agencies from licensing new power plants whose emissions could “harm” the polar bear.¹⁹⁵ Kansas gained national attention in 2008 when it denied a permit for a new coal-fired power plant, though that prompted a lawsuit accusing the state of treating the plant differently from the thousands of other sources of greenhouse gases that are not being regulated throughout the state.¹⁹⁶

The work of Michael Vandenbergh has begun to challenge the misplaced assumption that only large industrial businesses are responsible for pollution. His earlier writing demonstrated that in fact individuals have become the leading sources of pollution, including air pollution, in the United States.¹⁹⁷ He then extended his analysis to climate change, explaining that the actions of individuals account for about one-third of CO₂ emissions in the United States, more than the entire American industrial sector.¹⁹⁸ Vandenbergh’s message is that people are polluters, too, contrary to the common assumption that pollution only comes from factories, power plants,

¹⁹⁰ DOUGLAS, *supra* note 19, at 113.

¹⁹¹ Press Release, Carl Pope, Sierra Club, Response to “The Death of Environmentalism”: There Is Something Different About Global Warming (Dec. 2004), http://www.sierraclub.org/utilities/printpage.asp?REF=/pressroom/messages/2004december_pope.asp (last visited Jan. 24, 2010); see also Eileen Gauna, *El Dia de los Muertos: The Death and Rebirth of the Environmental Movement*, 38 ENVTL. L. 457, 469 (2008) (“Far from being a central failure of the conventional environmental movement, the focus on the technicalities of pollution control, risk, and resource management is perhaps its greatest contribution.”).

¹⁹² Robert L. Glicksman, *Coal-Fired Power Plants, Greenhouse Gases, and State Statutory Substantial Endangerment Provisions: Climate Change Comes to Kansas*, 56 KAN. L. REV. 517, 524 (2008).

¹⁹³ See American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. § 116 (as passed by House, June 26, 2009).

¹⁹⁴ Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2006).

¹⁹⁵ See Matthew Gerhart, *Climate Change and the Endangered Species Act: The Difficulty of Proving Causation*, 36 ECOLOGY L.Q. 167, 176, 195 (2009).

¹⁹⁶ See Complaint for Declaratory and Injunctive Relief at 1–2, *Sunflower Elec. Power Coop. v. Sebelius*, 2009 WL 774340 (D. Kan. 2009) (No. 08-2575-EFM-DWB).

¹⁹⁷ See Michael P. Vandenbergh, *From Smokestack to SUV: The Individual as Regulated Entity in the New Era of Environmental Law*, 57 VAND. L. REV. 515, 518 (2004).

¹⁹⁸ See Michael P. Vandenbergh & Anne C. Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. REV. 1673, 1694 (2007). Vandenbergh and Steinemann counted “only those behaviors that are under the direct, substantial control of the individual and that are not undertaken in the scope of the individual’s employment,” including personal travel and household electricity use, but excluding business travel and the production of household goods. *Id.* at 1690.

and similar large facilities whose emissions are much more obvious.¹⁹⁹ And while “[f]raming pollution as an industrial problem generates remedies that involve industrial regulation,”²⁰⁰ the prominent role of individuals counsels in favor of alternative strategies for addressing climate change.

The first reported case to characterize CO₂ as pollution supports Vandenberg’s thesis, albeit in a very unusual context.²⁰¹ Back in 1919, the City of East Cleveland, Ohio, adopted a zoning ordinance that prevented a landowner from building an apartment building on his property.²⁰² The landowner’s constitutional challenge to the zoning law failed spectacularly in the Cuyahoga County Court of Common Pleas. The court labeled apartments “a monstrosity,” “a deadly menace to life, health, and morals,” and “a thing of evil.”²⁰³ It blamed apartments for all of the ills of modern life, including epidemics, safety hazards, and “asphyxiating gases which poison the air.”²⁰⁴ Amidst its diatribe, the court observed that the small size of apartment dwellings could threaten public health because the CO₂ exhaled by too many people in one space could result in “pollution” that threatened public health.²⁰⁵ That is hardly the kind of pollution that environmentalists are concerned about, and the fears of apartments contradict the contemporary concerns about the environmental effects of “McMansions” and suburban sprawl. Such attention to the individual respiratory contributions to CO₂ emissions has thus far eluded policymakers concerned about climate change.

Another effect of labeling climate change as a pollution problem is that pollution is unacceptable. To be sure, we sometimes acknowledge that some pollution is inevitable in our modern society, but that recognition quickly disappears when we begin to confront actual polluters.²⁰⁶ The Clean Water Act²⁰⁷ famously envisioned a time—1985, to be precise—when all water pollution would end.²⁰⁸ Of course, that did not happen, but we still aspire to eliminate as much pollution as we can. The Pollution Prevention Act (PPA)²⁰⁹ states that it is “the national policy of the United States that pollution should

¹⁹⁹ *Id.*

²⁰⁰ *Id.* at 1688.

²⁰¹ See *State ex rel. Morris v. East Cleveland*, 31 Ohio Dec. 98, 1919 WL 1012, at *10 (Ohio Ct. Com. Pl. 1919).

²⁰² *Id.* at *1.

²⁰³ *Id.* at *7, *10. The court also warned that “these devouring profiteers” who own apartment buildings “in sowing the wind of selfishness may reap a whirlwind of justice.” *Id.* at *7.

²⁰⁴ *Id.* at *9–11. Indeed, “modern civilization is a failure” if society cannot provide adequate open spaces and pure air, unless we are content “to become a nation of cave men.” *Id.* at *8–9.

²⁰⁵ *Id.* at *10.

²⁰⁶ See generally WILLIAM F. BAXTER, *PEOPLE OR PENGUINS: THE CASE FOR OPTIMAL POLLUTION* 8–9 (1974) (advocating that there is an optimum pollution level that balances desires for a clean environment with other public goods).

²⁰⁷ Federal Water Pollution Control Act, 33 U.S.C. §§ 1251–1387 (2006).

²⁰⁸ *Id.* § 1251(a)(1) (“[I]t is the national goal that the discharge of pollutants into navigable waters be eliminated by 1985 . . .”).

²⁰⁹ Pollution Prevention Act of 1990, 42 U.S.C. §§ 13101–13109 (2006).

be prevented or reduced at the source whenever feasible.”²¹⁰ Going further, several state constitutions guarantee a right to a clean environment.²¹¹

The unacceptability of pollution follows from the moral connotation of “pollution.” The original sense of “pollution” as defiling and sinful dominated the usage of the word until the twentieth century, and anthropologists still study the pollution beliefs of cultures that label sexual practices, bodily functions, food, and other things as polluting.²¹² There are other synonymous words, but “pollution” imagery remains our favorite description of the introduction of unwanted substances into an environment.²¹³ The opponents of climate change seem to have learned that lesson when they “adopted a similar vocabulary” of targeting “greenhouse gas pollution” or “carbon pollution” instead of “climate change,” thereby yielding “a subtle linguistic shift in the ongoing climate debate.”²¹⁴ Those on the other side of the debate acknowledge the effectiveness of that approach, complaining that “the cleverest thing that global warming alarmists have done is to categorize carbon dioxide emissions as pollution, because it’s not true.”²¹⁵ A 2006 television advertisement stated the linguistic issue in the starkest terms: “Carbon dioxide. They call it pollution. We call it life.”²¹⁶

Treating climate change as a pollution problem also means that we do not blame the victims. Environmental law either eliminates pollution or it tries to locate polluting facilities far away from those who would be harmed by them.²¹⁷ Environmental law does not require those who are exposed to pollution to exit the polluted environment. The only judicial references to the need to avoid pollution refer to the medical advice given to individuals who are seeking Social Security benefits.²¹⁸ Environmental law does not

²¹⁰ *Id.* § 13101(b).

²¹¹ *See, e.g.*, ILL. CONST. art. XI, § 1 (“The public policy of the State and the duty of each person is to provide and maintain a healthful environment for the benefit of this and future generations.”); PA. CONST. art. I, § 27 (“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment.”). *See generally* J.B. Ruhl, *The Metrics of Constitutional Amendments: And Why Proposed Environmental Quality Amendments Don’t Measure Up*, 74 NOTRE DAME L. REV. 245, 252 (1999) (arguing that environmental quality statements are ill-fitted as constitutional amendments).

²¹² *See generally* Nagle, *supra* note 19, at 5–14, 60–66 (examining the idea of pollution).

²¹³ *See id.* at 45–49.

²¹⁴ Morello, *supra* note 11.

²¹⁵ *Id.* (quoting Myron Ebell of the Competitive Enterprise Institute).

²¹⁶ *Id.* (quoting a Competitive Enterprise Institute advertisement).

²¹⁷ *See, e.g.*, Federal Water Pollution Control Act, 33 U.S.C. § 1251(a)(1) (2006) (noting the national goal that “the discharge of pollutants into navigable waters be eliminated by 1985”); Clean Air Act, 42 U.S.C. § 7503(c) (2006) (requiring new sources of air pollution to offset in areas in nonattainment of national ambient air quality standards, thereby reducing the number of sources of pollution in a locality); Rachel Godsil, *Viewing the Cathedral from Behind the Color Line: Property Rules, Liability Rules, and Environmental Racism*, 53 EMORY L.J. 1807, 1863, 1879 (2004) (describing the use of zoning laws to separate polluting facilities and (white) residential communities).

²¹⁸ *See, e.g.*, *Herron v. Shalala*, 19 F.3d 329, 332 (7th Cir. 1994) (containing a case where a worker who suffered from lung disease was advised “to avoid polluted environments”); *Kichline v. Consol. Rail Corp.*, 800 F.2d 356, 357 (3d Cir. 1986) (containing a case where a doctor advised a diesel mechanic “that he would be well-served by avoiding pollutants”); *Smith v. Astrue*, No.

require that choice. The CAA directs EPA to regulate the effects of air pollution even on those who are especially sensitive to those effects, such as children, the elderly, and those with medical conditions.²¹⁹ Advocates of environmental justice have taught us to prevent the creation of “hot spots” where pollution is centralized as a result of government regulation or of pollution trading schemes.²²⁰ The common law remedies for pollution share a similar disdain for such claims. Property law is reluctant to award a prescriptive easement to a landowner who had been polluting the neighboring property for the requisite statutory period.²²¹ Nuisance law refuses to privilege polluting activities when newcomers arrive and complain about them; the “coming to the nuisance” doctrine has been rejected when the nuisance to which one comes is a polluter.²²² To suggest otherwise is “brutal,” as Judge Posner once put it, even if economics teaches that the situations are the same.²²³ In each instance, the law rejects the claim that pollution is something that one must either accept or flee.

That is one reason why adaptation strategies have been disfavored in debates regarding climate change. If pollution is the fault of polluters, then we should not ask its victims to adapt to the harms of pollution. There is no CAA precedent, for example, for the law telling individuals or communities to adapt to traditional air pollutants such as lead or the sulfur dioxide that produces smog. Instead, the law works to reduce the pollution and to keep the air clean in areas that have thus far escaped the effects of pollution.²²⁴ Environmentalists fear that adaptation proposals could distract from the “real” need to prevent climate change, rather than accept it.²²⁵

The traditional understanding of environmental pollution is doing much of the work to champion the regulation of CO₂ emissions instead of

07-10980, 2008 U.S. Dist. LEXIS 11428, at *7 (E.D. Mich. Feb. 15, 2008) (containing a case where an administrative judge found that a claimant “would need to avoid work environments with polluted air”); *Brown v. Astrue*, No. 2:06-2143-TLW-RSC, 2008 WL 509064, at *3 (D.S.C. Oct. 9, 2007) (containing a case where a commissioner found that a claimant “needs to avoid concentrated exposure to pollutants”).

²¹⁹ See Clean Air Act, 42 U.S.C. § 7408(f)(1)(C) (2006) (requiring EPA to consider sensitive populations in the establishment of National Ambient Air Quality Standards).

²²⁰ See, e.g., EILEEN GAUNA ET AL., ENVIRONMENTAL JUSTICE (2005), available at http://www.progressivereform.org/articles/EJ_505.pdf.

²²¹ See Richard A. Epstein, *Lucas v. South Carolina Coastal Council: A Tangled Web of Expectations*, 45 STAN. L. REV. 1369, 1385 (1993) (“In order to obtain the right to pollute neighboring lands, the far more exacting requirements for prescriptive easements must be satisfied, including continuous and open pollution over long periods of time without permission from the neighboring landowner.”).

²²² See *Patrick v. Sharon Steel Corp.*, 549 F. Supp. 1259, 1267 (N.D. W.Va. 1982) (“[The coming to the nuisance] doctrine is out of place in modern society where people often have no real choices as to whether or not they will reside in an area adulterated by air pollution.” (internal quotation marks omitted) (quoting *Lawrence v. E. Airlines, Inc.*, 81 So. 2d 632, 634 (Fla. 1955))).

²²³ *Ind. Harbor Belt R.R. Co. v. Am. Cyanamid Co.*, 916 F.2d 1174, 1181 (7th Cir. 1990).

²²⁴ 42 U.S.C. §§ 7401(b)(2), 7470 (2006).

²²⁵ See Daniel A. Farber, *Adapting to Climate Change: Who Should Pay*, 23 J. LAND USE & ENVTL. L. 1, 2–3 (2007).

promoting adaptation to the effects of a changing climate. If the climate was changing naturally, then we would have to try to adapt to it. That has been the response to episodes of localized climate change in the past.²²⁶ Such adaptation is partially explained by human inability to control natural climatic processes, but it is also explained by the connotation of blameworthiness that attaches to the description of today's climate change as a problem of pollution.

A broader understanding of pollution offers a justification for adaptation. Consider claims of cultural pollution that are often leveled against pornography. As early as 1971, Robert Bork wrote in 1971 that "pornography is increasingly seen as a problem of pollution of the moral and aesthetic atmosphere precisely analogous to smoke pollution."²²⁷ The analogy suggests that the presence of pornography in the cultural environment is just as harmful to some individuals as the presence of air pollutants in the natural environment. Yet the law has a much different response to such pollution claims. *Erznoznik v. City of Jacksonville*²²⁸ provides the best illustration. In response to the complaints that a local drive-in movie theater was showing a pornographic movie that could be seen from residential homes, the Court held that "the burden normally falls upon the viewer to 'avoid further bombardment of [his] sensibilities simply by averting [his] eyes.'"²²⁹ In other words, if you regard this as a pollution problem, then it is your responsibility to avoid it.

No one is making that argument for responding to climate change, but adaptation efforts are beginning to gain traction nonetheless. Adaptation is already happening in affected communities, and much proposed legislation would encourage adaptation efforts.²³⁰ Existing statutes ranging from the federal Coastal Zone Management Act²³¹ and Endangered Species Act to local land-use and building laws have been employed to encourage or require adaptations to climate change.²³² Such steps are justified as adaptation's

²²⁶ See, e.g., Hubert H. Lamb, *An Approach to the Study of the Development of Climate and Its Impact in Human Affairs*, in CLIMATE AND HISTORY: STUDIES IN PAST CLIMATES AND THEIR IMPACT ON MAN 291, 305–06 (T.M.L. Wigley et al. eds., 1981).

²²⁷ Robert H. Bork, *Neutral Principles and Some First Amendment Problems*, 47 IND. L.J. 1, 29 (1971).

²²⁸ 422 U.S. 205 (1975).

²²⁹ *Id.* at 210–11 (quoting *Cohen v. California*, 403 U.S. 15, 21 (1971)).

²³⁰ See W. Neil Adger et al., *Assessment of Adaptation Practices, Options, Constraints and Capacity*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY 717, 724 (Martin Parry et al. eds., 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter17.pdf> (describing adaptations to climate change that have already occurred); Pew Center on Global Climate Change, *Adaptation Proposals from the 110th Congress*, <http://www.pewclimate.org/federal/congressional-proposals/110/Adaptation> (last visited Jan. 24, 2010) (listing 62 proposed federal bills that would address adaptation to climate change).

²³¹ Coastal Zone Management Act of 1972, 16 U.S.C. §§ 1451–1464 (2006).

²³² See *Natural Res. Def. Council v. Kempthorne*, 506 F. Supp. 2d 322, 370 (E.D. Cal. 2007) (holding that the federal government failed to manage water projects in the way necessary to protect an endangered fish from the effects of climate change); WILLIAM E. EASTERLING III ET AL., PEW CTR. ON GLOBAL CLIMATE CHANGE, *COPING WITH CLIMATE CHANGE: THE ROLE OF ADAPTATION*

“important complement” to prevent the harms from climate change from occurring.²³³ They also imply that some climate change is inevitable—that efforts to control greenhouse gas emissions have not yet succeeded—so a different approach than that used to address previous environmental pollution problems is necessary.

Nordhaus and Shellenberger believe that climate change is so different from other pollution problems that it is misleading to think in terms of pollution at all. They conclude that “the anomaly that most frustrates the environmentalists’ pollution paradigm: the fact that overcoming global warming demands something qualitatively different from limiting our contamination of nature. It demands unleashing human power, creating a new economy, and remaking nature as we prepare for the future.”²³⁴ The correct approach comes “from the very thing environmentalists have long imagined to be the driver of pollution in the first place: economic development.”²³⁵ Thus climate change “is better understood as a problem of *evolution*, not pollution.”²³⁶

Again, this argument presumes a narrow understanding of pollution. It reacts against what Douglas Kysar has called the “game of spot-the-externality” in which scientific evidence of a harm is thought to lead inexorably to government regulation of the causes of that harm.²³⁷ If the idea of pollution means that we must simply add pollution-control devices to the offending smokestacks or pipes, then Nordhaus and Shellenberger are right that “pollution” is of little help to efforts to restructure a global economic system that depends upon the burning of fossil fuels. Technologies designed to sequester carbon so that it does not enter the atmosphere are at an early stage of development, and there is no equivalent of the catalytic converter or an all-purpose filter that can capture CO₂ emissions.²³⁸ What Nordhaus and Shellenberger advocate instead is massive governmental investment in new energy technologies that would eliminate the need for generating energy by burning fossil fuels. They argue that such investment will drive down the costs of alternative energy sources and have a much greater likelihood of success than trying to regulate, tax, or otherwise raise the price of carbon.²³⁹

IN THE UNITED STATES, at vi (2004), *available at* http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Global_warming/pew_climate_0704.pdf (containing a Pew Center report noting the importance of coastal zone management, land-use planning, and local building codes in promoting adaptation).

²³³ *Id.* at ii.

²³⁴ NORDHAUS & SHELLENBERGER, *supra* note 14, at 113.

²³⁵ *Id.*

²³⁶ *Id.* at 8.

²³⁷ Kysar, *supra* note 189, at 2056.

²³⁸ See generally Alexandra B. Klass & Elizabeth J. Wilson, *Climate Change and Carbon Sequestration: Assessing a Liability Regime for Long-Term Storage of Carbon Dioxide*, 58 EMORY L.J. 103, 107 (2008) (“Carbon capture and sequestration . . . is a promising technology that could enable the continued use of inexpensive fossil fuels while dramatically reducing accompanying greenhouse gas emissions.”).

²³⁹ See Michael Shellenberger et al., *Fast, Clean, & Cheap: Cutting Global Warming’s Gordian Knot*, 2 HARV. L. & POL’Y REV. 93, 94, 104–12 (2008); Ted Nordhaus & Michael Shellenberger,

That is an attractive vision, but it does not conflict with thinking about pollution. The Clean Water Act, for example, addressed the problem of obsolete municipal sewer systems by providing millions of dollars in federal subsidies for new systems with improved technologies.²⁴⁰ One historian credits the emphasis upon spending programs rather than regulatory mandates for the political popularity of the CWA's approach to sewage treatment.²⁴¹ The CWA's history even confirms "the connection between pollution control and pork,"²⁴² a lesson that was learned again in the successful effort to convince reluctant House members to support ACES in 2009. President Nixon lamented that members of Congress succumbed to "the false glitter of public works money for their districts or states" when they voted for the CWA in 1972, but Congress quickly overrode his veto.²⁴³

The CWA also promotes technological advances by dictating the specific pollution control devices that must be used by each type of industry, depending upon factors such as cost and availability.²⁴⁴ In both instances, the law encourages the development of new technologies that prevent the harms associated with pollution. It does so in a different way than Nordhaus and Shellenberger promote, for they correctly observe that more fundamental changes are needed to address CO₂ emissions than traditional air pollutants.²⁴⁵ Those changes are best evidenced by the PPA, which encourages the redesign of industrial processes to avoid the generation of any pollution.²⁴⁶ By combining the CWA and PPA, the idea of pollution readily accommodates the massive investment in clean technologies that Nordhaus and Shellenberger see as the solution to climate change. What Nordhaus and Shellenberger really protest is the Obama Administration's preference for a regulatory approach to pollution rather than a spending approach. They complain that the Administration believes in "a magical climate thinking that promised a painless and even prosperous transition to a low-carbon future with the tools already at hand," and they blame House leaders for "using virtually all of the money raised from carbon auctions to buy off fossil fuel interests, leaving virtually nothing for technology innovation."²⁴⁷

Getting Real on Climate Change: We'll Never Succeed in Making Dirty Energy Too Expensive. Let's Make Clean Energy Cheap, AM. PROSPECT, Dec. 2008, at 32, 33–35; see also JAY INSLEE & BRACKEN HENDRICKS, APOLLO'S FIRE: IGNITING AMERICA'S CLEAN-ENERGY ECONOMY (2008).

²⁴⁰ See Federal Water Pollution Control Act, 33 U.S.C. §§ 1281–1301 (2006) (authorizing grants to build sewage treatment facilities).

²⁴¹ See PAUL CHARLES MILAZZO, UNLIKELY ENVIRONMENTALISTS: CONGRESS AND CLEAN WATER, 1945–1972, at 30–32, 250–51 (2006).

²⁴² *Id.* at 86.

²⁴³ Veto of the Federal Water Pollution Control Act Amendments of 1972, 1972 PUB. PAPERS 990, 992 (Oct. 17, 1972).

²⁴⁴ 33 U.S.C. § 1311(b)(2)(A) (2006).

²⁴⁵ Shellenberger et al., *supra* note 239, at 94.

²⁴⁶ See Pollution Prevention Act of 1990, 42 U.S.C. § 13101(a)(2) (2006) ("There are significant opportunities for industry to reduce or prevent pollution at the source through cost-effective changes in production, operation, and raw materials use.").

²⁴⁷ Ted Nordhaus & Michael Shellenberger, *The End of Magical Climate Thinking*, FOREIGN POL'Y, Jan. 13, 2010, http://www.foreignpolicy.com/articles/2010/01/13/the_end_of_magical_climate_thinking (last visited Jan. 24, 2010).

Nordhaus and Shellenberger are probably correct that we need to spend more to develop new technologies that do not contribute to climate change, but they err in asserting that we must choose between regulation and technology subsidies. They note that “[t]here is no silver bullet when it comes to clean energy alternatives,”²⁴⁸ but they presume that some combination of clean energy alternatives will provide the silver bullet for addressing climate change.²⁴⁹ It is more likely that neither new energy technologies, nor greenhouse gas regulations, nor any other measure will constitute the elusive silver bullet—or “magic Tylenol” to bring down the earth’s temperature overnight, as Mary Wood put it so well.²⁵⁰ The law employs a combination of prevention, control, toleration, and avoidance to address pollution problems as different as water pollution and noise pollution and violent entertainment.²⁵¹ The scope of the issues raised by climate change merit a similarly broad list of responses. There is a surprising lack of theoretical writing that analyzes the appropriate choice of responses to particular pollution claims, but generally the choice will depend upon the nature of the harm associated with the pollution and the costs of avoiding those harms. For example, predictions of thousands of deaths resulting from future climate change would support a strong prevention response, whereas more modest impacts upon the livability of certain places may be addressed through adaptation and avoidance. The appropriate level of regulation depends not only on the amount of climate change that we are willing to tolerate, but also upon the regulatory costs that we are willing to tolerate in order to avoid the harms resulting from climate change.²⁵² Likewise, the

²⁴⁸ TED NORDHAUS & MICHAEL SHELLENBERGER: THE EMERGING CLIMATE CONSENSUS: GLOBAL WARMING POLICY IN A POST-ENVIRONMENTAL WORLD 41 (2009), *available at* <http://www.thebreakthrough.org/blog/PDF/EmergingClimateConsensus.pdf>.

²⁴⁹ *Id.*

²⁵⁰ Mary Christina Wood, *Nature’s Trust: A Legal, Political and Moral Frame for Global Warming*, 34 B.C. ENVTL. AFF. L. REV. 577, 581 (2007); *see also* 155 CONG. REC. S9076 (daily ed. Aug. 7, 2009) (statement of Sen. Udall of Colo.) (defending proposed legislation as “like silver buckshot,” not “a silver bullet answer”).

²⁵¹ *See e.g.*, Federal Water Pollution Control Act, 33 U.S.C. §§ 1251–1387 (2006) (containing a command and control statute dealing with water pollution); 4 RESTATEMENT (SECOND) OF TORTS § 821A (1977) (describing loud noises as possibly giving rise to common law tort liability through nuisance).

²⁵² The argument that “we” includes those living in other nations today and future generations has generated much of the controversy about the appropriate level of regulation of greenhouse gases. *See* United Nations Framework Convention on Climate Change pmbl., *opened for signature* June 20, 1992, S. TREATY DOC. NO. 102-38 (1992), 1771 U.N.T.S. 107, 168 (expressing in the preamble the determination “to protect the climate system for present and future generations”); Cass R. Sunstein, *The World vs. the United States and China?: The Complex Climate Change Incentives of the Leading Greenhouse Gas Emitters*, 55 UCLA L. REV. 1675 (2008) (arguing that obstacles to international agreement on climate change could be eliminated if countries that bear a disproportionate share of regulatory costs understood that international agreement was either to their benefit or was their moral obligation). Likewise, the uneven distribution of the regulatory costs explains the arguments about the amount of costs that “we” are willing to tolerate. *See* Letter from U.S. Senator Sherrod Brown et al. to President Barack Obama 1 (Aug. 6, 2009), *available at* <http://brown.senate.gov/imo/media/doc/>

amount of public investment in new energy technologies will be shaped by the contested evaluation of the urgency of steps to avoid future climate change.

There is a final implication of the idea that pollution that may salvage efforts to combat climate change even if those efforts are judged to be unnecessary. A number of writers have advocated “no-regrets” options that would achieve other societal goals regardless of the ultimate harms resulting from climate change.²⁵³ These goals include energy independence, establishing new employment opportunities, reducing energy costs, and protecting against natural disasters.²⁵⁴ They also include the control of traditional environmental pollution.²⁵⁵ The development of sources of renewable energy or the redesign of existing facilities can be justified as a means of reducing pollution that coincidentally aid in reducing climate change as well. The premise of such an argument for addressing climate change, by emphasizing other pollutants, is that there is a constituency that is more concerned about traditional environmental issues than about climate change. It may come as a surprise to those who proclaim that climate change is the greatest threat that the world has ever known,²⁵⁶ but such a constituency exists. A recent study released by the Pew Center for Climate Change reported that climate change ranked last among a list of twenty societal problems confronting the United States today, with only thirty percent of the respondents rating climate change a “top priority.”²⁵⁷ Forty-one percent of the respondents viewed environmental issues generally as a top priority.²⁵⁸ The identity of the mysterious ten percent of the population who are worried about the environment, but not about climate change is unknown, but a no-regrets strategy that emphasizes the need to control traditional environmental pollution may appeal to them even when calls for action against climate change do not.

ClimateChange_Manuf.pdf (emphasizing the need for “[m]easures to ensure that U.S. manufacturers do not bear the brunt of our climate change policy”).

²⁵³ See NAT’L RESEARCH COUNCIL, ABRUPT CLIMATE CHANGE: INEVITABLE SURPRISES 164–66 (2002); Kirsten H. Engel & Scott R. Saleska, *Subglobal Regulation of the Global Commons: The Case of Climate Change*, 32 *ECOLOGY L.Q.* 183, 218–19 (2005) (describing state and local government no-regrets efforts); Bruce Yandle, *A No-Regrets Carbon Reduction Policy*, PERC REPORTS, Spring 2008, at 28, 29–31, available at <http://www.perc.org/files/spr08%20Carbon%20Reduction.pdf>.

²⁵⁴ See generally NAT’L RESEARCH COUNCIL, *supra* note 253, at 164–66 (1977) (describing the benefits of “no-regrets” options); Engel & Saleska, *supra* note 253, at 218–19 (same).

²⁵⁵ See, e.g., Engel & Saleska, *supra* note 253, at 218–19; Yandle, *supra* note 253, at 30–31.

²⁵⁶ See, e.g., AL GORE, AN INCONVENIENT TRUTH: THE PLANETARY EMERGENCY OF GLOBAL WARMING AND WHAT WE CAN DO ABOUT IT 10 (2006); Bill McKibben, *Civilization’s Last Chance*, L.A. TIMES, May 11, 2008, <http://articles.latimes.com/2008/may/11/opinion/op-mckibben11> (last visited Jan. 24, 2010).

²⁵⁷ THE PEW RESEARCH CTR. FOR THE PEOPLE & THE PRESS, ENVIRONMENT, IMMIGRATION, HEALTH CARE SLIP DOWN THE LIST: ECONOMY, JOBS TRUMP ALL OTHER POLICY PRIORITIES IN 2009, at 2 (2009), available at <http://people-press.org/reports/pdf/485.pdf>.

²⁵⁸ *Id.*

IV. CONCLUSION

Now that the Court has spoken in *Massachusetts v. EPA*, EPA must decide what to do with its newly discovered power to regulate the pollutants that produce climate change, and Congress must then decide whether it favors a different approach. In doing so, they should remember that anything can be a pollutant, and the real question is how to deal with pollution. We tolerate some pollution (think of violent entertainment), prevent or control other kinds of pollution (such as really toxic chemicals or obscenity), and try to separate some pollution from those who could be harmed (say by zoning factories apart from residences). Climate change presents a particular challenge because of the global nature of the problem, but it is also a typical pollution problem that raises familiar questions of tolerable harms, proof of causation, and the appropriate balance between legal mandates and voluntary actions. In other words, the Supreme Court's decision is just the first step in deciding how to address the pollutants that result in climate change.

The next steps should be informed by our experience with pollution of all sorts. The idea of pollution shows that there is no single answer to climate change, just as there is no law that could address every kind of environmental pollution and claims of the pollution of human cultural environments. Emissions regulations may reduce the amount of CO₂ in the atmosphere. New technologies may render the emission of CO₂ and other greenhouse gases unnecessary. Adaption may avoid some of the harms resulting from climate change. The choice between such strategies should be based upon such concerns as efficiency and equity, and not because the perceived wrongfulness of the polluters or the ways in which environmental law has treated its kinds of pollution.