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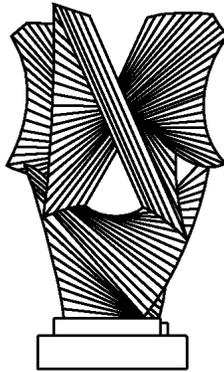
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Is the Clean Air Act Unconstitutional?

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Is the Clean Air Act Unconstitutional?

*Cass R. Sunstein**

The American people are suffering from what can be called “a syndrome of paranoia and neglect” about potential dangers to their health, safety, and the environment. This leads to a paradox that is becoming increasingly recognized. Large amounts of resources are devoted to slight or speculative dangers while substantial and well-documented dangers remain unaddressed.

John Graham¹

The last third of the twentieth century is not too late a time for turning the rule of law and the non-delegation doctrine into effective and useful legal tools for minimizing injustice from improper discretionary power.

Kenneth Culp Davis²

I. Introduction: Environmental Policy and Administrative Law

In issuing and revising a national ambient air quality regulation under the Clean Air Act, the Environmental Protection Agency (EPA) should provide a detailed “benefits analysis.” To this end, it should undertake two tasks. *First*, it should specify the range of benefits that it believes will result from the regulation, along with a specification of the range of benefits that it believes would result from at least two reasonable alternative approaches, one stricter and

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¹ John D. Graham, Making Sense of Risk: An Agenda for Congress, in *Risks, Benefits, and Lives Saved* 183, 183 (Robert Hahn ed. 1996).

² Kenneth Culp Davis, *Discretionary Justice* 51 (1969).

one more lenient. In the process EPA should identify the *residual risk* left under the competing regulatory regimes; it should also acknowledge scientific uncertainty, to the extent that uncertainty exists and requires guesswork. This proposal is an effort to strengthen the role of sound science in environmental protection. *Second*, the EPA should explain why it believes that the chosen rule is preferable to the less and more stringent alternatives—why the set of benefits to be received from the selected rule justifies that rule, whereas the set of benefits to be received from the less and more stringent rule does not. In the process it should explain why the residual risk left by the selected rule is acceptable, while the residual risk left by the less stringent rule is not. This proposal is an effort to strengthen the role of democratic forces in environmental protection.³

If necessary, reviewing courts should require the EPA to perform these tasks. Taken together, the two proposals should increase the level of consistency across regulations, reducing the power of well-organized private groups, and also diminishing the risks associated with both insufficient and excessive environmental regulation. If the EPA has undertaken the two tasks, and carried them out in a reasonable way, judicial review is at an end; courts should uphold the EPA's decision.

Ideas of this kind have potentially broad implications, extending well beyond the Clean Air Act and even the EPA, to the work of the Occupational Safety and Health Administration, the Consumer Product Safety Commission, and the National Highway Traffic and Safety Administration as well. They would mark a key moment in the movement toward a system of environmental protection that is at once more democratic and better informed. At the same time, they would accelerate the continuing shift from 1970s environmentalism and indeed 1970s regulation in general, away from recognizing the existence of problems of safety and health and toward assessing their magnitude, in such a way as to reduce both regulatory paranoia and

³ Of course costs are important too; the two proposals are based on the current understanding that benefits, but not costs, may be taken into account in issuing primary standards. The question of costs is taken up later, see below.

regulatory neglect, and to put a premium on the acquisition of information.⁴

If agencies undertook tasks of this kind, there would be little point to the recent resurgence of interest in the nondelegation doctrine. The sensible impulses that underlie those innovations—impulses that involve accountability, deliberation, and sound policymaking—can be taken care of through other means, a point that casts a more general light on the proper role of the nondelegation doctrine in American public law. Taken together, judicial requirements of this kind would constitute a form of “democracy-promoting minimalism”⁵ in the distinctive context of administrative law. These are the basic claims that I will attempt to defend in this Article.

A. The Clean Air Act

The Clean Air Act may well be the most important of all environmental statutes. Its effects include a wide range of beneficial consequences for human health and well-being and extremely high costs on the private sector. The Environmental Protection Agency (EPA) estimates overall compliance costs at \$0.5 trillion.⁶ The Act’s claim to success rests on enormous improvements in ambient air quality and corresponding health benefits. The EPA estimates that the Act prevents at least 45,000 deaths annually and that it also prevents a minimum of 13,000 heart attacks and 7000 annual strokes.⁷ On a standard (though not undisputed) view, the benefits

⁴ For general discussion in this vein, see Stephen Breyer, *Breaking the Vicious Circle* (1993).

⁵ See Cass R. Sunstein, *One Case At A Time: Judicial Minimalism on the Supreme Court* (1999), on the general topic of judicial minimalism.

⁶ J. Clarence Davies and Jan Mazurek, *Pollution Control in the United States* 130 (1998).

⁷ *Id.* Judgments about benefits, nonmonetized but especially monetized, are highly sensitive to contentious assumptions, and hence the “bottom line” numbers should be taken with many grains of salt. See Randall Lutter, *An Analysis of the Use of EPA’s Benefit Estimates in OMB’s Draft Report on the Costs and Benefits of Regulation* (October 1998), urging the use of plausible alternative assumptions and that EPA’s benefit calculations are inflated. See also Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 *Yale LJ* 1981 (1998) (urging that cost per lives saved are inflated, also because of contentious assumptions). Though

of the Act, ranging between \$5.6 trillion and \$49.4 trillion, far exceed its costs.⁸

The Act has nonetheless been subject to telling criticism. The foundation of clear air regulation consists in the EPA's issuance of nationally uniform ambient air quality standards⁹; but in light of the extraordinary diversity of the fifty states, it is not clear that the idea of national standards can be rationally defended.¹⁰ Both lower courts and the EPA seem to think that the standard-setting process does not and cannot involve consideration of costs.¹¹ But does it make sense, or is it even feasible, to say that national standards will be founded on an assessment of benefits alone, conducted in a cost-vacuum?¹² If an improvement in ambient air quality would produce health benefits that are small but not trivial, isn't it clear that the improvement is justified if compliance costs are trivial, but perhaps not if the costs are very high? There is reason to think that at least in some cases, an understanding of costs has affected the EPA's decision about appropriate standards—but that the cost-benefit balancing has been left implicit and free from public scrutiny and review.¹³

coming from different directions, Lutter and Heinzerling both argue, convincingly, that characterization of both benefits and costs can shift dramatically with small changes in assumptions, an argument that much bears on the central claims of this Article. See below.

⁸ See J. Clarence Davies and Jan Mazurek, *Pollution Control in the United States* 130, 147 (1998).

⁹ 42 USC 7409(a).

¹⁰ See James E. Krier, *The Irrational National Air Quality Standards: Macro- and Micro-Mistakes*, 22 *UCLA L. Rev.* 323 (1974). For an instructive recent discussion of how the “slippage” between law on the books and law in the world actually allows a degree of flexibility, and converts seemingly rigid standards into a basis for negotiation and pragmatism, see Daniel Farber, *Taking Slippage Seriously*, 23 *Harv. Env. L. Rev.* 297 (1999).

¹¹ See *Lead Industries v. EPA*, 449 U.S. 1042 (DDC 1980); *American Trucking v. EPA*, 175 F.3d 1027 (DC Cir. 1999).

¹² See Marc K. Landy, Marc J. Roberts, and Stephen J. Thomas, *The Environmental Protection Agency: Asking the Wrong Questions from Nixon to Clinton* 49-82, 279-83 (1994).

¹³ See *id.*; see also Boyden Gray, *The Clean Air Act Under Regulatory Reform*, 11 *Tul. Envtl. L.J.* 235 (1998).

Perhaps the largest question involves the criteria by which EPA decides whether one or another level of regulation is (in the statutory phrase) “requisite to protect the public health.”¹⁴ For most pollutants, air quality at various levels is not either “safe” or “not safe”; there are diminishing degrees of risk associated with diminishing degrees of exposure. On what basis is a particular level of residual risk said to be the appropriate one? What judgments do, or should, enter into that conclusion? The EPA has been criticized for sometimes suggesting, in an unhelpful and conclusory fashion, that it chooses the “safe” level, as if this were solely a technocratic judgment and as if “safety” were an on-off switch,¹⁵ when its decision about permissible levels rests instead on a series of political, scientific, and economic judgments and compromises.

There are two problems with this state of affairs. The first involves democratic deliberation.¹⁶ If the EPA does not give a clear sense of the range of adverse effects, and if it does not say why one set of such effects calls for regulation and another does not, the public and their representatives are not informed of the nature of the underlying questions, and they are unable to evaluate the choices actually made. Under the EPA’s articulated position, a purely technical issue (would a certain level be safe?) is sometimes substituted, at least publicly, for the real and more complicated ones (what level of safety is appropriate in light of all the relevant factors? why should one level of regulation be preferred to another?).

The second problem involves sound regulatory policy. Any proposed national standard could be loosened or tightened, and the question is whether the agency has chosen the optimal, or at least a reasonable, regulatory “point.” Without a clear and (to the extent possible) quantified presentation of the expected environmental benefits of the various alternatives,¹⁷ there can be no assurance that

¹⁴ 42 USC 7409.

¹⁵ See Landy et al., *supra* note, at 379-83. The criticism is not sound as applied to the particulates and ozone regulations, but here too, the EPA’s explanation leaves many open questions.

¹⁶ See *id.*

¹⁷ Costs are of course important too. As discussed below, the prevailing view forbids EPA from considering costs, and my basic proposal does not challenge that prevailing view. I do, however, raise some doubts about it below.

the agency has chosen that point, rather than one that is too strict or too lenient.

B. A Remarkable Decision and a New Doctrine

In its extraordinary decision in *American Trucking Association v. EPA*,¹⁸ the United States Court of Appeals for the District of Columbia Circuit responded to this last concern in the strongest possible terms. It held that as interpreted by the EPA, the key provisions of the Clean Air Act—those that give the EPA authority to issue national air quality standards—represent an unconstitutional delegation of legislative power.¹⁹ The decision announces the birth of a new nondelegation doctrine, one with potentially large implications for regulatory policy. Under the new doctrine, open-ended statutory terms will be invalidated unless agencies are able to specify the governing legal criteria—to discipline their own authority through narrowing interpretations.

The new nondelegation doctrine is remarkable for many reasons. First, the Supreme Court has not used the doctrine to invalidate a federal statute since (or for that matter before) 1935,²⁰ and hence any such decision by a court of appeals is reasonably taken to mark a fresh departure. Second, the new doctrine does not require *Congress* to legislate with clarity. It says instead that if Congress has not been clear, agencies must act on their own, to set out limits on their own legal authority. Third, there now appears to be a genuine doctrine in place; *American Trucking* represents no isolated decision, but the culmination of a line of lower court cases, one of which was a similar decision about the Occupational Safety and Health Act.²¹ The decision therefore signals a distinctive approach to judicial review of agency action. Fourth, the doctrine is conspicuously responsive to what the court of appeals saw (and often sees²²) as a general problem in federal regulation: the difficulty of knowing why

¹⁸ 175 F.3d 1027 (DC Cir 1999).

¹⁹ *Id.* at 1030-1034.

²⁰ See *Schechter Poultry v. United States*, 295 U.S. 495 (1935); *Panama Refining Co. v. Ryan*, 293 U.S. 388 (1935).

²¹ See *Industrial Union v. OSHA*, 37 F.2d 605 (DC Cir. 1994).

²² See below.

an agency chooses one level of regulation rather than another that is somewhat higher or somewhat lower.

The new doctrine raises a number of questions. The narrowest (though far from unimportant) issue has to do with the fate of EPA rulemaking with respect to national ambient air quality standards. What, if anything, can the EPA do in the future? The question is significant both because of its consequences for implementation of the Clean Air Act and because of its implications for regulatory policy in general. On its face, the *American Trucking* decision would seem to draw into serious constitutional question not only the EPA's ozone and particulates regulations, but also a wide range of other regulations by the EPA, and indeed a wide range of decisions by many other agencies involved in the protection of health and welfare (and other areas as well; consider the Federal Communications Commission). And what, exactly, is the relationship between the new doctrine and ordinary judicial review to test whether agency action has been "arbitrary" or "capricious"? An especially large question, and the central focus here, has to do with how *American Trucking* exposes continuing problems with the design and implementation of environmental regulation as a whole and the Clean Air Act in particular, a statute whose key provisions seem to depend on implausible assumptions, and under which EPA has sometimes hidden crucial questions of value with uninformative platitudes.

C. Goals and Plans

In this Article my most general goal is to understand current difficulties with environmental policy, the Clean Air Act, and EPA promulgation of ambient air quality standards, and to see how courts might perform a constructive role in making things better rather than worse. My simplest claim is that the EPA should undertake the two tasks identified above; it should specify the range of benefits that it believes will follow from the regulation it seeks to impose, including a discussion of the benefits from more lenient and more stringent alternatives and a treatment of the residual risks under the various regulatory regimes. It should also explain why it believes that the chosen regulation is preferable to the alternatives.

Steps in these directions would satisfy the legitimate concerns of most critics of the EPA's performance under the Clean Air Act and also of the court of appeals in *American Trucking*. Such steps also have broad applicability and would represent a new departure of their own in administrative law, covering the activities of the EPA under a wide range of statutes and also the activities of (for example) the Occupational Safety and Health Administration (OSHA), the Consumer Product Safety Commission, and the National Highway Traffic Safety Administration. Steps of this sort would not amount to a nondelegation doctrine, new or old. But they are designed to promote both rule of law values and sound regulatory policy, in a way that should respond to growing understandings about current problems in environmental policy and the administrative state.

I have three more particular goals. The first is to evaluate the nondelegation doctrine, both old and new, as a way of ensuring better and more transparent policy analysis by EPA and other agencies. That issue raises large questions about democratic accountability and about the appropriate role of courts in reviewing agency action. I suggest that although the new doctrine has considerable appeal, this is not really a nondelegation doctrine at all, and the relevant goals would be better accomplished through a form of more conventional (but better informed) judicial review of agency action. The Clean Air Act is hardly unconstitutional, for it is possible to generate an interpretation of the Act that imposes both "floors" and "ceilings" on agency action.

My second goal is to propose a contemporary role for the nondelegation doctrine in American public law. I claim that the doctrine is properly held in reserve for extreme cases—that it serves as a genuine, but judicially underenforced, constitutional norm—and that it operates as a legitimate tool of statutory construction. More importantly, I contend that the doctrine is not so much dead as relocated. Its current home can be found not in cases invalidating open-ended grants of authority, but in the many decisions using various "clear statement" principles to discipline legislative and administrative action.²³ When courts require Congress to speak

²³ See William N. Eskridge and Philip P. Frickey, *Quasi-Constitutional law: Clear Statement Rules as Constitutional Lawmaking*, 45 *Vand. L. Rev.* 593 (1992), for a catalogue.

clearly in order to authorize an agency to raise a serious constitutional problem, or to apply a statute extraterritorially or retroactively, they are applying a narrower and more targeted version of the nondelegation doctrine—a version that requires Congress to focus, with particularity, on certain especially sensitive questions. By requiring congressional rather than merely executive deliberation on those questions, the various “clear statement” principles operate as a nondelegation doctrine in another guise. As such, the principles are easily defended, for they promote the key functions of the nondelegation doctrine without carrying the risks of the old and new versions.

My third goal is to discuss possible improvements in the operation of the Clean Air Act, at the legislative, administrative, and judicial levels, improvements that might respond to various concerns about EPA performance, including the concerns expressed in *American Trucking*. I attempt to explain how the Act seems based on the (false) assumption that pollutants generally have “safe thresholds,” and how this assumption has seriously impaired both regulatory policymaking and democratic deliberation. I also suggest that the Act should be interpreted, or if necessary amended, to allow and require EPA to engage in “health-health tradeoffs” and to take account of costs in setting national standards. In particular, I emphasize that EPA should engage in more specific and quantitative assessments of the hazardous effects of pollution at various levels, so as to increase the transparency of its decisions. It would even make sense for EPA to move in the direction of the “quality-adjusted life years” approach designed to provide a concrete sense of the benefits of regulatory alternatives. Under such an approach, EPA would attempt to specify the range of “quality-adjusted life years” likely to be saved by a regulation, and it would also indicate the degree of savings that would justify a regulation. But because of the harmful side-effects of aggressive judicial review, courts should play only a secondary and catalytic role—embodied in certain recent and quite innovative procedural developments in administrative law, above all the “remand without invalidation.” As we will see, this procedural route is administrative law’s newest species of minimalism, indeed a

form of democracy-promoting minimalism.²⁴ The central point is that EPA should undertake such inquiries on its own.

This Article comes in six parts. Part II deals with the Clean Air Act and in particular with the artificiality of the inquiries that it appears to make central to EPA's task. Part III explores the old nondelegation doctrine, the development of the new nondelegation doctrine, and the use of the doctrine in *American Trucking* and related cases. Part IV evaluates the new doctrine, explains why the Clean Air Act is constitutionally unproblematic, and suggests an alternative approach. Part V discusses the proper approaches to the Act from Congress, the EPA, and reviewing courts. Part VI is a brief conclusion.

II. The Clean Air Act

Taken as a whole, the benefits of the Clean Air Act seem clearly to outweigh the costs.

J. Clarence Davies and Jan Mazurek²⁵

Congress should not preclude decisionmakers from considering the economic benefits and costs of different policies in the development of regulations.

Kenneth Arrow et al.²⁶

Most environmental initiatives of the past seemed expensive and questionable at the time, and today every one of them appears a bargain in retrospect. Looking back on the present a few decades hence, society will consider every environmental program running now to have been a bargain, and wish more programs had been started sooner.

Gregg Easterbrook²⁷

A. Setting National Standards

1. The key provisions

²⁴ For a general discussion of judicial minimalism, see Cass R. Sunstein, *One Case at a Time* (1999).

²⁵ J. Clarence Davies and Jan Mazurek, *Regulating Pollution: Does the US System Work?* 51 (1997).

²⁶ Kenneth Arrow et al., *Benefit-Cost Analysis in Environmental, Health, and Safety Regulation: A Statement of Principles* (1996).

²⁷ Gregg Easterbrook, *A Moment on the Earth* 210 (1995).

The Clean Air Act was enacted in 1970. Though many hundreds of pages in length, some of them mind-numbingly specific and detailed,²⁸ the Act offers two remarkably brief provisions designed to set the statutory program in motion.

The first of these provisions, and the central focus here, involves primary national ambient air quality standards.²⁹ Here the EPA is asked to set standards “the attainment and maintenance of which in the judgment of the Administrator,” based on air quality criteria documents “and allowing an adequate margin of safety, are requisite to protect the public health.”³⁰ The second of these provisions involves secondary national ambient air quality standards, which the EPA must set at levels “requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air.”³¹ “Welfare” is defined to include “effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.”³² For secondary standards, involving welfare rather than health, there is no provision for an “adequate margin of safety.” But the secondary standards are anticipated to be more stringent than the primary ones; notice in particular the statutory emphasis on plant and animal life.

These provisions have three especially noteworthy features. First, they seem at first glance not to contemplate any consideration of cost in the standard-setting process.³³ Primary standards are based

²⁸ Consider the acid deposition program, which goes so far as to list, by name, every plant entitled to emit sulfur dioxide, 42 USC 7651c, and its permitted emissions level (a flavor: 13,570 tons for Colvert generator 1 in Alabama, 15,430 tons for the Armstrong plant, generator number 2, in Pennsylvania)—alongside an exceptionally specific program for the granting and trading of emissions rights.

²⁹ 42 USC 7409 (b).

³⁰ 42 USC 7409(b)(1)

³¹ 42 USC 7409(b)(2).

³² 42 USC 7602(h).

³³ American Trucking Association confirms this reading. See 175 F.3d at 1030. For the initial holding to this effect, see *Lead Industries Ass’n, Inc. v. EPA*, 647 F.2d 1130 (DC Cir 1980).

on health, apparently to be assessed in a cost vacuum, while secondary standards are based on welfare, also apparently to be assessed without regard to cost. This is not at all an inevitable reading of the relevant provisions; perhaps the level “requisite to protect the public health” and “welfare” is a function of cost, not only benefit; but the prevailing interpretation is otherwise.³⁴ Second, the standards are fully national—even though political judgments about air quality vary greatly from state to state, and even though the effects of improved air quality (on the cost and benefits sides) are highly variable from one state to another. Finally, both provisions appear to contemplate the existence of “safe thresholds.” The basic idea is that the EPA should ensure that air is “safe” and that public welfare is “protected.” What makes this idea distinctive is its artificiality. To be sure, we could imagine pollutants for which the evidence indicated a point of “no risk” or “de minimis risk.” At least in theory, it is possible to construct a dose-response curve for which risks effectively vanish at a certain defined point. But for most pollutants, there are diminishing degrees of risk, associated with diminishing degrees of pollution.³⁵ “Safety” is not an off-on switch; it is a matter of degree. When it is said that a certain level of pollution is “safe,” what is really meant is that the residual risk is acceptable or tolerable—not that there is no risk at all. Consider, for example, this commendably direct testimony from the Chair of EPA’s Scientific Advisory Committee’s panel on ozone and particulates, unambiguously confessing the impossible nature of the task imposed on the EPA by the Act:

“Based on information now available, it appears that ozone may elicit a continuum of biological responses down to background concentrations. It is critical to understand that a biological response does not necessarily imply an adverse health effect. Nevertheless, this means that the paradigm of selecting a standard at the lowest-observable-effects-level and the providing an ‘adequate margin of

³⁴ *Lead Industries Ass’n, Inc. v. EPA*, 647 F.2d 1130 (DC Cir 1980).

³⁵ See, e.g., Landy et al., *supra* note, at 49-82.

safety' is not possible. It further means that risk assessments must play a central role in identifying an appropriate level."³⁶

How might we explain the enactment of provisions that seem at once so vague, rigid, and artificial? Much of the answer lies in the distinctive political dynamic of environmental debates in the late 1960s and early 1970s, in which citizens wanted air to be "safe" and politicians who failed to respond were at great risk.³⁷ We might even describe the result as "1970s environmentalism," a form of thinking that accomplished a great deal of good, by producing rapid decreases in pollution levels, but that also seems increasingly anachronistic, even counterproductive. In the 1970s in particular, politicians would proceed at their peril if they asserted that "safety" could be compromised by other goals.³⁸ At the same time, politicians were affected by, and doubtless catered to, the pervasive psychological urge for certainty, as confirmed by evidence that people are willing to pay a great deal for "no risk" and much less for "substantially less risk."³⁹ Thus, for example, people are willing to pay more for a reduction of a risk from 0.1 to 0.0 than from 0.3 to 0.1.⁴⁰ The idea that the Clean Air Act would produce "safety" rather than "reduced risk" made it far easier to support, and far harder to challenge.

Undoubtedly Congress believed that it was delegating to EPA the power to be reasonable rather than unreasonable, and in any case the Act allowed various safeguards in the event that compliance proved to be excessively costly.⁴¹ As we will see, the most important safeguard consisted in a form of (implicitly authorized) civil disobedience on the part of all relevant actors, including the EPA,

³⁶ Prepared Testimony of George T. Woolf, Chair, EPA's Clean Air Scientific Advisory Committee's Panel on Ozone and PM, Before the House Judiciary Committee, July 29, 1997.

³⁷ See Bruce Ackerman, John Millian, and Donald Elliott, *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J. L. Econ. & Organization 313 (1985).

³⁸ See *id.*

³⁹ See Daniel Kahneman and Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *Econometrica* 263 (1979); George Loewenstein et al., *Risk As Feelings* (unpublished manuscript 1999).

⁴⁰ See Daniel Kahneman and Amos Tversky, *Prospect Theory*, *supra*.

⁴¹ For an outline, see *Union Electric v. EPA*, 427 US 246 (1977).

which was simply not prepared to shut down automobile traffic in Los Angeles, a step that would have been necessary to produce compliance with national air quality standards.⁴²

2. Problems and puzzles

All of these points have created serious difficulties for the EPA in practice. For nonthreshold pollutants, it seems both natural and sensible to assess further reductions in terms of their cost. If, for example, the expense of reducing sulfur dioxide from .3 ppm to .2 ppm is trivial, then the reduction is almost certainly worthwhile (unless the dose-response curve has a most peculiar shape⁴³). Even if there is little direct evidence of adverse human health effects at .2 ppm, this is likely to be because of the limited data, rather than because of an absence of such effects. But matters look very different if the cost would run into the tens of billions of dollars. When benefits are highly uncertain, it is peculiar to say that EPA cannot consider cost, especially since health gains are almost inevitable as permissible exposure levels decline.⁴⁴

In light of this point, some critics have suggested that some kind of cost-benefit balancing inevitably occurs at EPA.⁴⁵ At least publicly, EPA denies this claim.⁴⁶ Consider Administrator Browner's suggestion: "Costs of meeting the standards and related factors have never been considered in setting the national ambient air quality standards themselves. . . . [T]he focus has been entirely on health, risk, exposure and damage to the environment. . . . And the

⁴² See Krier, *supra* note; see also below.

⁴³ For example, one that would show no health benefits from a reduction from .3 ppm to .2 ppm, notwithstanding health benefits from a reduction from .4 ppm to .3 ppm.

⁴⁴ As noted below, there is reason to think that costs were relevant to the EPA's decision not to reduce the particulates standard further than it did, since the data indicated significant benefits from further reductions. See Table 11, Appendix.

⁴⁵ See George Eads, *The Confusion of Goals and Instruments: The Explicit Consideration of Cost in Setting National Ambient Air Quality Standards*, in *To Breathe Freely: Risk, Consent, and Air* (Mary Gibson ed. 1985). See also the suggestion in Farber, *supra* note, about the distinctive "slippage" between law and reality in the context of environmental law.

⁴⁶ See 45 Fed. Reg. 55066 (1990).

American public deserves to know whether the air in its cities and counties is unsafe or not; that question should never be confused with the separate issues of how long it may take or how much it may cost to reduce pollution to safe levels. Indeed, to allow costs and related factors to influence the determination of what levels protect public health would be to mislead the American public in a very fundamental way.⁴⁷

Only insiders know for certain whether EPA does in fact consider costs in issuing national ambient air quality standards.⁴⁸ But consider, by way of contrast and as a possible clue, the Administrator's explanation of the 1979 revision of the ozone standard:

“The Clean Air Act, as the Administrator interprets it, does not permit him to take factors such as cost or attainability into account in setting the standard; it is to be a standard that will adequately protect public health. He recognizes that controlling ozone to very low levels is a task that will have significant impact on economic and social activities. This recognition causes him to reject as an option the setting of a zero-level standard . . . However, it is public health, and not economic impact, that must be the compelling factor in the decision.”⁴⁹

This explanation, difficult to follow though it is, is most naturally taken as suggestion that despite the nominal irrelevance of cost, costs do matter in the context of standard-setting for nonthreshold pollutants.

With respect to state-by-state variations, there is little question that the exceedingly high costs of attainment will, for many states,

⁴⁷ Testimony of Carol Browner before the Senate Environment and Public Works Committee, Feb. 12, 1997.

⁴⁸ As noted, some evidence is provided by the EPA's failure to require more stringent regulation of particulates, in spite of the fact that on the EPA's own numbers, more stringent regulation might have provided \$4 billion in increased benefits. See Table 11, Appendix. If this was possible, why did the EPA not require it, if not because of some cost consciousness?

⁴⁹ See 45 Fed. Reg. at 55072.

produce frequent violations of national requirements—and this has in fact turned out to be the case.⁵⁰ Several decades after the initial issuance of ambient air quality standards for ozone, for example, over 50 million people live in areas that are frequently in violation of national standards.⁵¹ Smaller numbers—but still many millions—of people live in nonattainment areas for other pollutants.⁵² Indeed it is contemplated, by the 1990 revision of the Act, that one of the nation's largest urban areas, Los Angeles, will not be in compliance until 2010 at the earliest.⁵³

The upshot is that in theory, the Act requires nationally uniform standards; but in practice, it authorizes an enormous amount of variation among states. National standards have mostly served not as real law, but as targets or *aspirations*⁵⁴—flexible goals to which the federal government can point without, however, insisting on compliance unless or until it is reasonable. The aspirational quality of national standards has led Congress to enact an increasingly complex set of provisions for nonattainment areas, provisions that anticipate compliance in certain areas over a period of many years and that, in practice, therefore recognize the existence of reasonable variations across states.⁵⁵

⁵⁰ There are many discussions. See, e.g., Farber, *supra* note; John Dwyer, The Practice of Federalism Under the Clean Air Act, 54 Md. L. Rev. 1183 (1995); James Krier, On the Topology of Uniform Environmental Standards in a Federal System—And Why It Matters, 54 Md. L. Rev. 1226 (1995); Eads, *supra* note; see James A. Henderson, Jr. & Richard N. Pearson, Implementing Federal Environmental Policies: The Limits of Aspirational Commands, 78 Colum. L. Rev. 1429 (1978).

⁵¹ See Davies and Mazurek, *supra*, at 17.

⁵² *Id.* (showing about nine million people live in areas not meeting national standards for particulates; about eleven million live in areas not meeting national standards for carbon monoxide; and about five million live in areas not meeting standards for lead).

⁵³ 42 U.S.C. 7511 et seq. (nonattainment program).

⁵⁴ See George Eads, The Confusion of Goals and Instruments: The Explicit Consideration of Cost in Setting National Ambient Air Quality Standards, in *To Breathe Freely: Risk, Consent, and Air* (Mary Gibson ed. 1985); James A. Henderson, Jr. & Richard N. Pearson, Implementing Federal Environmental Policies: The Limits of Aspirational Commands, 78 Colum. L. Rev. 1429 (1978).

⁵⁵ 42 USC § 7511.

This point leads to a more general one, bearing on cost-benefit balancing as well as federalism. The EPA's official position that standard-setting is cost-blind is complemented by explicit statements to the effect that cost, efficiency, and feasibility are relevant in making choices about compliance.⁵⁶ In a way these statements are puzzling, for the Supreme Court has held that cost, and infeasibility, are irrelevant to the EPA's decision whether to approve state implementation plans.⁵⁷ But the EPA appears to acknowledge that state implementation plans will themselves consider control costs, and also that cost will be relevant in setting schedules for compliance.⁵⁸

Finally, EPA must make hard choices about how safe is safe enough—choices that involve not merely the facts, but also evaluative judgments about acceptable degrees of risk. A central question has to do with the ingredients of any judgment that a certain risk is too high; there are many important questions here. These include:

- The *size* of the population at risk, that is, whether 100,000, a million, or tens of millions of people are at risk.⁵⁹
- The *nature* of the population at risk, e.g., whether it involves a large number of children, whether only elderly people are affected, whether those affected have a preexisting condition, such as asthma.⁶⁰ An important question is whether any “lives saved” number would involve young people or old people; there is less need for a policy that would (say) increase life expectancy by one year for those over 80 than for a policy that would increase life expectancy by sixty years for those under 10. This point suggests that the EPA might reasonably concern itself not with lives saved, but with life-years saved, a point to which I will return.

⁵⁶ See Statement of Carol Browner, *supra* note.

⁵⁷ See *Union Electric v. EPA*, 427 US 246 (1976).

⁵⁸ See the outline of the EPA's “Common Sense Implementation Plan” in Robert Percival et al., *Environmental Regulation*, 1998 Supplement 123-24 (1998).

⁵⁹ See the discussion of lead in R. Shep Melnick, *Regulation and the Courts* (1983).

⁶⁰ See *id.*

- The *likelihood of harm* for particular members of the affected population, that is, whether the likelihood of incurring harm is 1 in 1000, 1 in 10,000 or 1 in a million.⁶¹ Thus, for example, the plurality of the Supreme Court held, in the Benzene Case,⁶² that OSHA to regulate only “significant risks,” and that a risk of one in a billion could not count as significant.⁶³ OSHA now concludes that a lifetime annual risk of 1/1000 would count as significant.⁶⁴ But undoubtedly the importance of addressing such a risk will depend on other factors, notably including the size of the affected population.
- The *severity of the risk*, e.g., whether it involves cancer or mortality risks, or increased hospital admissions, bronchitis, respiratory symptoms, lost work days, or what the EPA calls minor restricted activity days (MRADs).⁶⁵

EPA considers all of these questions in issuing national standards.⁶⁶ But EPA has developed no clear guidelines to discipline its judgment about when one or another level of regulation is appropriate. It has not said, for example, that if 100,000 people face a cancer risk of 1/1000, regulation is presumptively desirable, but if 10,000 face a 1/1000 chance of minor respiratory problems, regulation is presumptively not desirable.⁶⁷ A reading of EPA’s

⁶¹ See Statement of Carol Browner, *supra* note.

⁶² *Industrial Union Department v. American Petroleum Institute*, 448 US 607 (1980).

⁶³ *Id.* at 612.

⁶⁴ See *Building and Construction Trades v. Brock*, 838 F.2d 1258, 1265 (DC Cir 1988).

⁶⁵ United States Environmental Protection Agency, *Regulatory Impact Analysis* 12-43 (1996).

⁶⁶ See, e.g., Testimony of Carol Browner Before the House Science Energy and Environment Subcommittee, May 21, 1997: “I determined that setting an appropriate air quality standard for a pollutant for which there is no discernible threshold means that factors such as the nature and severity of the health effects involved, and the nature and size of the sensitive populations exposed, are very important.” See also the discussion of lead in Melnick, *supra* note; the discussion of ozone in Landy et al., at 44-82

⁶⁷ Compare OSHA, which has said that if a risk is 1/1000, regulation will be presumed desirable and the risk will be found significant, see below.

voluminous documents on the major air pollutants provides an enormous amount of data, but little information on the answers that would trigger a decision to increase or decrease regulation. As we will see, all of the various points noted above might reasonably be turned into a kind of global figure, “quality-adjusted life years,” attempted to quantify the various benefits from regulation.⁶⁸

One final note: An obvious and important question has to do with the *distributional* effects of national ambient air quality standards. Who bears the costs? Who receives the benefits? Full information is not available. But an early study finds that under the Act, poor people, and African-Americans, are net gainers, whereas wealthy people, and whites, are net losers⁶⁹—perhaps not a shocking finding in light of the fact that many of the adverse effects of air pollution are concentrated in large cities.

III. Revising National Standards, and the Tyranny of the Status Quo

In 1971, EPA issued six national standards, governing ozone, particulates, carbon monoxide, nitrogen oxides, and particulates 2.5.⁷⁰ In 1978, EPA issued a seventh standard, involving lead; it did so as a result of a court order.⁷¹ These seven regulations amount to the centerpiece of EPA’s regulatory system for the control of national ambient air quality.

Of course it would be extremely surprising if the standards originally adopted in 1971 and 1978 turn out to survive new scientific evidence, and many people have urged that adjustments are desirable, in the direction of both tightening and loosening existing requirements. Congress has thus created an “agency-forcing” mechanism designed to require EPA reconsideration of primary and secondary standards. Under the Act, EPA is required to review the relevant criteria and standards at least once every five years, and to

⁶⁸ Richard Zeckhauser and Donald Shepard, *Where Now for Saving Lives?*, 40 L. & Contemp. Probs 5 (1976).

⁶⁹ See Henry M. Peskin, *Environmental Policy and the Distribution of Benefits and Costs*, in *Current Issues in Environmental Policy* (Paul Portney ed. 1978).

⁷⁰ See Appendix for details.

⁷¹ See *id.*

revise them “as appropriate” under the statutory guidelines.⁷² EPA is specifically required to consider, and to explain any significant departures from, the recommendations of CASAC, an independent committee established specifically in order to advise the Administrators on air quality criteria and standards.⁷³

So much for the statutory requirements; the possibility of litigation raises further complexities. The most general point is that EPA is highly vulnerable to suits by those seeking more stringent controls and new regulations based on apparent evidence of hazards at existing levels.⁷⁴ If EPA does not act within the statutory period, or if it decides not to impose more stringent controls, it will predictably be faced by a suit from environmental organization—one that, in view of likely scientific evidence, has a nontrivial chance of success.⁷⁵ This is so especially in light of a recent judicial suggestion that the Administrator may be barred from declining “to establish a margin of safety in the face of documented adverse health effects.”⁷⁶ But the EPA is also highly vulnerable to challenges by industry whenever it tightens a standard. Creative lawyers have a quite good chance of successfully challenging an EPA regulation whether it has tightened, or refused to tighten, existing standards.⁷⁷

It is therefore possible to venture a prediction: The day will eventually come when the same court of appeals holds that the EPA has behaved unlawfully both for regulating *above* a certain level and also for not regulating *below* that level! The basic point is that the centrality of litigation to environmental protection creates a new form of tyranny of the status quo—a great deal of inertia in favor of the existing regulatory framework, whatever its content. The general

⁷² 42 USC 7409(d)(1).

⁷³ *Id.* 7409 (d)(2)(B), 7607 (d)(3).

⁷⁴ For recent evidence, see, e.g., *American Lung Association v. EPA*, 134 F.2d 388 (DC Cir 1998); *American Trucking Co. v. EPA*, 175 F.2d 1027 (DC Cir 1999); *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir. 1991).

⁷⁵ See, e.g., *American Lung Association v. EPA*, 134 F.3d 388 (DC Cir 1998) (requiring EPA to give a better justification for its failure to establish a new standard for sulfur dioxide emissions).

⁷⁶ *Id.* at 393 (leaving the issue undecided on the ground that the Administrator did not adequately explain her judgment that no public health threat exists).

⁷⁷ See, e.g., *American Trucking*, *supra*.

problem for modern administrative law is that because of the complexity of the scientific evidence, skilled advocates are highly likely to be able to find a serious problem in the agency's rationale, a factor that makes rulemaking extremely cumbersome and increasingly encourages agencies to avoid it altogether.⁷⁸

IV. The Record

Thus far it might be tempting to be quite skeptical of the Act—to think that it rests on false assumptions, that it foolishly ignores costs and state-by-state variations, that it invites excessive litigation, and that it is an extremely crude foundation for regulatory policy. There is considerable sense in these skeptical reactions. But it must also be acknowledged that the Act has done a great deal of good—indeed, that reductions in air pollution can plausibly be counted among the substantial success stories in regulatory government in the last half-century.⁷⁹ The good news is that for all of the pollutants, there have been large improvements in ambient air quality. Consider the Table 1.

Even the cost-benefit ratio appears to be quite good, at least according to most studies. A general review contains many criticisms of American efforts at environmental protection, but concludes that “the benefits of the Clean Air Act seem clearly to outweigh the costs.”⁸⁰ Thus a study of EPA rule between 1990 and 1995 found that the costs outweighed the benefits by no less than \$70 billion.⁸¹

On the other hand, better tools could have produced similar results at a far lower cost. Thus there is evidence that with better tools, especially economic incentives, EPA could have achieved that same benefits at one-quarter of the costs.⁸² There is also a problem of poor priority-setting. EPA's own studies suggest that it is not devoting resources to the most serious problems and indeed that

⁷⁸ See Richard Pierce, *Seven Ways to De-Ossify Agency Rulemaking*, 47 *Ad. L. Rev.* 59, 60-62 (1995).

⁷⁹ See, e.g., Gregg Easterbrook, *A Moment On the Earth* 181-83 (1996).

⁸⁰ J. Clarence Davies and Jan Mazuerk, *Regulating Pollution: Does the US System Work?* 31 (1996).

⁸¹ *Id.*

⁸² See Tom Tietenburg, *Emissions Trading* (1985).

inadequate priority-setting is a particular problem for clear air regulation, where large problems (such as indoor air pollution) receive relatively little attention.⁸³ An important task for the future is to ensure that EPA devotes limited public and private resources to the most serious environmental hazards.⁸⁴

Table 1. Air Quality and Emissions Trends 1986-95

	<i>Air quality change (%)</i>	<i>Emissions change (%)</i>
Carbon monoxide	-37	-16
Lead	-78	-32
Nitrogen dioxide	-14	-3 (nitrogen Oxides)
Ozone	-6	-9 (VOCs)
PM-10*	-22	-17
Sulfur dioxide	-37	-18

*PM-10 changes are based on 1988-95 data.

Source: U.S. Environmental Protection Agency. 1996. *National Air Quality and Emissions Trends Report, 1995*. Office of Air Quality Planning and Standards Research. EPA 454/R-96-005. Research Triangle Park, North Carolina; p. 1.

V. Particulates and Ozone at EPA: A Case in Point

These issues are hard to understand in the abstract; it will be useful to understand them in light of the EPA's recent effort to revise its regulations governing particulates and ozone. Notably, the origins of the new particulates standards can be found not in an independent decision by the EPA, but in a 1993 suit by the American Lung Association, which sought to compel EPA to complete its review of the PM standard.⁸⁵ The district court ordered EPA to issue a

⁸³ Davies and Mazurek, *supra*, at 24-30.

⁸⁴ This is a general theme of Stephen Breyer, *Breaking the Vicious Circle* (1993). In a claim of direct relevance to the central claims of this Article, Breyer rejects the idea of congressional priority-setting and makes a plea instead for executive branch oversight of regulatory activity. See *id.* at 90-102.

⁸⁵ Citation

proposed rule by November 29, 1996, and a final rule by July 18, 1997,

The final rules for particulates and ozone were based on a massive amount of evidence, involving thousands of pages of documents. Here are the key points in the EPA's justification, which raise recurring issues about standard-setting in the environmental arena.

- A general review of the evidence suggests that there would be both high benefits and high costs from the new particulates standard.⁸⁶ For the new ozone standard, both costs and benefits would be significantly lower.⁸⁷ EPA offered a great deal of detail about the harms apparently caused by particulates and ozone at existing levels. It also acknowledged uncertainties in the evidence. There are extensive discussions of the scientific literature.
- EPA ultimately chose a standard of 15/65 for particulates—more specifically, an *annual* standard, for PM sub2.5, of 15 mg/m³, based on the three-year average of annual arithmetic PM sub2.5 concentrations; it also set an *hourly* standard of 65 mg/m³, based on the three-year average of the 98th percentile of 24-hour PM sub2.5 concentrations.
- EPA set a .08 ppm standard for ozone averaged over an eight-hour period, replacing the previous 0.12 ppm standard, averaged over a one hour period.. In an illustrative comment, Administrator Browner publicly defended the 0.08 ppm standard for ozone “because, though it is in the middle of the range recommended for consideration by CASAC and the EPA staff paper, as a policy choice it reflects the lowest level recommended by individual CASAC panel members and it is the lowest level tested and shown to cause effects in controlled human-exposure health studies.”⁸⁸ In its explanation of the final rules, the EPA did not defend these selections against plausible alternatives. The Regulatory Impact Analysis (RIA), required by Executive Order

⁸⁶ See Appendix, Table 10.

⁸⁷ See Appendix, Table 11.

⁸⁸ See Browner testimony, *supra* note.

12866,⁸⁹ also discusses a more stringent and a less stringent alternative—particulates standards of 16/65 and 15/50, and ozone standards of 0.08 5th max and 0.08 3rd max.⁹⁰ This discussion was designed to give a sense of the cost and benefits of the alternatives.

- The EPA’s own public justification is extremely long and detailed but in important respects vague and conclusory. It is filled with legalistic arguments, with reports on specific studies having unclear implications for the particular issue of what standard to select, and with qualitative judgments that leave a great deal of uncertainty about the magnitude of the effects.⁹¹
- The heart of the EPA’s analysis is as follows.⁹² (I discuss particulates as an illustration.) The EPA begins by referring to “the greatly expanded body of community epidemiological studies.”⁹³ This evidence shows a range of adverse health effects, including premature mortality; and there is also evidence that children, the elderly, and asthmatics are most vulnerable to these effects. More particular evidence emerges from quantitative risk estimates from two “example cities,” estimates that include a judgment that existing standards create residual risks of “hundreds of premature deaths each year, hundreds to thousands of respiratory-related hospital admissions, and tens of thousands of additional respiratory-related symptoms in children.”⁹⁴ (In an inadvertently hilarious qualification, the EPA adds that the “epidemiological findings cannot be wholly attributed to inappropriate or incorrect statistical methods, misspecification of concentration-effect models, biases in study design or implementation, measurement errors” and the like.) But the EPA notes that the results “should be interpreted cautiously” and should be taken to “provide ample reason to be concerned that

⁸⁹ 62 Fed. Reg.

⁹⁰ See Table 11, Appendix.

⁹¹ 62 Fed. Reg. 38650-38681.

⁹² 62 Fed Reg. 38652 (1997).

⁹³ Id. at 38655.

⁹⁴ Id.

there are detectable health effects attributable to PM at levels below the current NAAQS.”⁹⁵

- The EPA’s basic claim is that “the increase in relative risk is small for the most serious outcomes” but “significant from an overall public health perspective, because of the large number of individuals in sensitive populations that are exposed to ambient as well as the significance of the health effects involved.”⁹⁶ International evidence, and evaluations by over 1,000 experts, supported the view that the existing standard was insufficiently protective.⁹⁷ Much of the EPA’s discussion involves the fact that existing evidence does not reveal mechanisms to explain the range of reported adverse effects.⁹⁸ And frequently the EPA repeats what appears to be a key phrase, almost a mantra, to the effect that the data “provides the basis for decisions on standard levels that would reduce risk sufficiently to protect public health with an adequate margin of safety, recognizing that such standards will not be risk-free.”⁹⁹
- To the EPA’s credit, it does offer some discussion of both less stringent and more stringent alternatives.¹⁰⁰ But the discussion is quite brief, especially considering the centrality of the comparative question. As against the less stringent possibilities, EPA says that “despite well recognized uncertainties, the consistency and coherence of the epidemiological evidence and the seriousness of the health effects require a more protective response.”¹⁰¹ As against those who argued for more stringent regulation, EPA said that “the inherent scientific uncertainties are too great” and also that such regulation “might result in regulatory programs that go beyond those that are needed to effectively reduce risks to public health.”¹⁰² Studies “provide some

⁹⁵ Id. at 38656.

⁹⁶ Id. at 38657.

⁹⁷ Id.

⁹⁸ See, e.g., id. at 38664-38665.

⁹⁹ Id. at 38665.

¹⁰⁰ Id. at 38674-38677.

¹⁰¹ Id. at 38665.

¹⁰² Id. at 38675.

suggestion of risks extending to lower concentrations, but they do not provide a sufficient basis for establishing a lower annual standard level.”¹⁰³ Because this point is so important, it is worthwhile noting that the EPA spoke in similar terms for ozone, saying that more stringent regulation would produce more “certain . . . effects, [that] while judged to be adverse, are transient and reversible, and the more serious effects, with greater immediate and potential long-term impacts on health are less certain, both as to the percentage of individuals exposed to various concentrations who are likely to experience such effects and as to the long-term significance of these effects.”¹⁰⁴

- Hence any reader is likely to be puzzled about exactly why EPA chose the particular regulations it did—about why it did not regulate either somewhat more or somewhat less. A special puzzle is why the EPA did not impose more stringent controls on particulates; the Regulatory Impact Analysis shows that a more stringent regulation would have produced \$4 billion in increased health benefits.¹⁰⁵ The problem is not that the EPA was careless or off-hand; its exhaustive documentation was anything but that. The problem is that in the explanation accompanying the final rules, EPA did not attempt to quantify the risks under competing standards, nor did it show the basic value judgment that would deem one risk too high, another risk acceptable, and another risk too low (that is, below the level requisite to protect the public health.)
- In many ways, the most informative document is the RIA. This is the most informative document because it provides actual numbers on the benefit (including nonmonetized and monetized quantities) and cost sides. It is also a tribute to Executive Order 12866, requiring cost-benefit analysis even when CBA cannot be the basis for decision. The problem is that in its justification, EPA made little use of this document. Indeed, the RIA was written by a contractor, not by EPA personnel, and it had little

¹⁰³ Id.

¹⁰⁴ 62 Fed. Reg at 38,868/2.

¹⁰⁵ See appendix, table 11. Note that this compares the highest benefit estimate; unfortunately, the RIA does not give lowest bound benefits estimates for the two alternatives.

or no influence on the ultimate decision. Some of the benefits calculations appear to have been rejected by EPA itself. Nonetheless, the RIA provides the only systematic discussion of the consequences of the approach chosen and of alternative approaches. Here is some of what the RIA says:

- The new particulates regulation would prevent 350 annual mortalities; 6,800 cases of chronic bronchitis; 1,100 cases of acute bronchitis; about 1200 hospital admissions averted, from, for example congestive heart failure (130) and respiratory problems (470 cases averted); 106,000 lost work days prevented; and 879,000 minor restricted activity days.¹⁰⁶
- For the selected ozone standard, it finds that the new regulation would prevent 0-80 deaths; 130 emergency department visits for asthma, 29,840 acute respiratory symptoms, 0-530 chronic bronchitis cases, 0-20 hospital admissions for congestive heart failure, 0 to 50,440 lost work days, 0 to 420,300 minor restricted activity days.¹⁰⁷ (Note that in both cases the RIA specifies a range, which is a tribute to candor in the midst of scientific uncertainty.)
- All these benefits are monetized: \$4.8 million per life saved, \$120,000 per life-year saved, \$12,700 per respiratory illness, \$16,600 per congestive heart failure for those over 65, \$9000 for emergency department visits for asthma, \$260,000 for chronic bronchitis, \$83 per lost work day, \$38 per minor restricted activity day.¹⁰⁸
- The overall cost benefit analysis¹⁰⁹ shows: for the health regulation of ozone in 2010, benefits of \$0.4 billion (low end estimate) to \$2.1 billion (high end estimate), and costs of \$1.1 billion. For particulates, the benefits range from \$19 billion to \$104 billion, whereas the costs are anticipated to be \$8.6 billion. A noteworthy point is that the ozone rule might have negative net benefits of -\$0.7 billion, if the low end estimate is correct; note also that if the health benefits of ground-level ozone

¹⁰⁶ Appendix, table 2.

¹⁰⁷ Appendix, table 3.

¹⁰⁸ Appendix, table 4.

¹⁰⁹ Regulatory Impact Analysis at 13.4.

(discussed below) are included in the calculation, the negative net benefits—or more simply net costs—of the rule are higher still. (In an unfortunate typographical error in the crucial table, the net benefits are described as \$0.7 billion - \$1.0 billion, rather than \$-0.7 billion - \$1 billion.¹¹⁰)

- The RIA also suggests the costs and benefits of the two alternatives.¹¹¹ The more stringent particulates standard would have high end benefits of \$108 billion and costs of \$9.4 billion; the less stringent would have high end benefits of \$90 and costs of \$5.5 billion.¹¹² The less stringent ozone standard would have high end benefits of \$1.6 billion and costs of 0.9 billion; the more stringent would have high end benefits of \$2.9 billion and costs of \$1.4 billion.¹¹³ The most noteworthy point here is that by the EPA's own accounting, the more stringent particulates standard would have produced \$4 billion in greater benefits (on the high end estimate). This would seem to count as a substantial improvement in public health, especially considering the fact that each life is valued at \$4.8 million; translated into lives, the more stringent regulation would prevent more than 200 additional deaths each year. EPA did not square this conclusion with its decision not to choose more stringent regulation. Indeed, it seems clear that EPA's own calculations showed that a tighter particulates standard would have produced far greater health benefits than the ozone standard; this leaves a serious unexplained anomaly in the two standards taken together.¹¹⁴ A possible explanation for not tightening the particulates standard is that the consensus of CASAC members did not support doing so, a consensus that raises questions about the RIA itself; but EPA did not offer a "benefits analysis" that would resolve these uncertainties.

¹¹⁰ Id. at 13.4

¹¹¹ Id. at 13-2, 13-3.

¹¹² Id. at 13-3.

¹¹³ Id. at 13-4.

¹¹⁴ See Randall Lutter and Christopher DeMuth, *Ozone and the Constitution At EPA, On the Issues* 3 (July 1999).

- A serious gap in the RIA is that it does not give low end estimates for the benefits associated with the alternatives; only high-end estimates are given for these. For the options actually chosen, a range is specified, which greatly assists assessment of the EPA's judgment. But without the range, it is hard to compare the options not chosen. An additional problem, reflected in the EPA's explanation as a whole, is the absence of a detailed assessment—even a wholly benefits-based assessment—of why the options that were chosen were deemed superior to those that were not chosen.

In this light, what overall evaluation would be reasonable? If the EPA's conclusions are correct, the particulates regulation promises significant benefits and the ozone regulation promises relatively small benefits. The basic problem is that the agency has not explained, in concrete terms, why it chose one level of regulation rather than another. Now let us shift to the nondelegation issue.

VI. The Path of the Law

If we can just get our legislators to legislate we'll be able to understand their goals well enough. I'm not saying we may not still end up with a fair number of clowns as representatives, but at least then it will be because clowns are what we deserve.

John Hart Ely¹¹⁵

The non-delegation doctrine is almost a complete failure. . . . The time has come for the courts to acknowledge that the non-delegation doctrine is unsatisfactory

Kenneth Culp Davis¹¹⁶

A. The Old Nondelegation Doctrine: One Good Year, Two Hundred and Two Bad Years

Despite its extremely infrequent use, the old nondelegation doctrine should be quite familiar. In a nutshell, it requires Congress to state an "intelligible principle" by which to guide and limit agency

¹¹⁵ John Hart Ely, *Democracy and Distrust* 134 (1981).

¹¹⁶ Kenneth Culp Davis, *A New Approach to Delegation*, 36 U. Chi. L. Rev. 713 (1969).

action.¹¹⁷ The motivating idea is that Article I, section 1 vests legislative power in the Congress and that this vesting cannot be waived, even if Congress and the public want to do so. If Congress gives the executive a “blank check,” or states no intelligible principle, it has violated Article I.

According to a standard view, the nondelegation doctrine was a core part of the original Constitution, and its abandonment, in the aftermath of the New Deal, represented a kind of capitulation to perceived national needs.¹¹⁸ I believe that the Constitution does contain a nondelegation doctrine; but the standard view is much too simple. For one thing, there is no express nondelegation doctrine in the text of the Constitution, which must therefore be counted ambiguous on the point.¹¹⁹ To be sure, legislative power is vested in Congress, and it is reasonable to infer that the power thus vested cannot be given to someone else. But there is no clear textual barrier to delegations, and in fact there is no explicit evidence that the framers and ratifiers of the original Constitution believed that it contained a nondelegation doctrine.¹²⁰ Actually the early practice suggested considerable willingness to “delegate” authority. In the

¹¹⁷ See, e.g., *Amalgamated Meat Cutters v. Connally*, 337 F. Supp. 737 (DC 1971)

¹¹⁸ See David Schoenbrod, *Power and Responsibility* (1997); John Hart Ely, *Democracy and Distrust* (1981); Gary Lawson, *The Rise and Rise of the Administrative State*, 100 Harv. L. Rev. (1995).

¹¹⁹ Compare the German Constitution, which does contain an explicit nondelegation principle. See Art. 80(1), requiring that the content, purpose, and extent of the legislative authorization be specified in the statute itself; see also the discussion in David Currie, *The Constitution of the Federal Republic of Germany* 125-34 (1995).

¹²⁰ Consider in this regard the revealingly cavalier treatment of the interpretive question in Ernest Gellhorn, *Returning to First Principles*, 36 Am. U L Rev 345. 347-48 (1987), which attempts to show the constitutional roots of the nondelegation (a) by showing that John Locke believed in a nondelegation principle, (b) by emphasizing that the framers believed in Locke’s contractarian view, and (c) by referring to the Constitution’s provision for lawmaking. None of this establishes that the framers accepted a nondelegation doctrine. I use this example because Gellhorn is one of the outstanding administrative law scholars of the last thirty years, and also an enthusiast for the nondelegation doctrine; his inability to show a direct constitutional source for the doctrine shows that any judgment on its behalf is largely a matter of inferences.

very first year of the Republic, Congress gave the President the power to grant licenses to trade with the Indian tribes “under such rules and regulations as the President shall prescribe.”¹²¹ The first Congress also provided for military pensions “under such regulations as the President of the United States may direct.”¹²² In neither case did Congress issue standards by which to limit the President’s discretion.

The standard view also fits uncomfortably with judicial practice. It is often remarked that the Supreme Court last used the nondelegation doctrine to invalidate a federal statute in 1935. *What is less often remarked is that the Court first used the nondelegation doctrine to invalidate a federal statute in exactly the same year.* While earlier cases had suggested the existence of a nondelegation doctrine,¹²³ the Court upheld a number of broad delegations,¹²⁴ and hence for the first 138 years of the nation’s existence—as well as the last 64 years—no Supreme Court decision struck down a statute on nondelegation grounds. Let us briefly explore the two decisions of 1935, the nondelegation doctrine’s only good year.

In *Panama Refining Co. v. Ryan*,¹²⁵ the Court invalidated a section of the National Industrial Recovery Act, saying that “the President is authorize to prohibit the transportation in interstate commerce” of oil priced in violation of state-imposed production quotas. The Court said that the defect lay in the absence of standards specifying exactly when the President was to exercise this power.¹²⁶ This is a controversial ruling, fitting poorly with post-World War II decisions,¹²⁷ and it is most unlikely that the Court would follow it today. But the largest decision, one that has not been

¹²¹ 1 Stat. 137.

¹²² 1 Stat. 95.

¹²³ *The Brig Aurora*, 11 US 382 (1813); *Field v. Clark*, 143 US 649 (1892); *United States v. Grimaud*, 220 US 506 (1911); *JW Hampton, Jr. v. US*, 276 US 394 (1928).

¹²⁴ See, eg, *US v. Grimaud*, 220 US 506 (1911); *JW Hampton, Jr. v. US*, 276 US 394 (1928).

¹²⁵ 293 U.S. 388 (1935).

¹²⁶ *Id.* at 395.

¹²⁷ See below.

overruled even implicitly, was *Schechter Poultry Co. v. United States*,¹²⁸ where the Court invalidated the National Industrial Recovery Act as a whole.¹²⁹ In invalidating the Act, the Court made three critical points. *First*, the statutory standards were open-ended and self-contradictory—no constraint at all on government approval of “codes.”¹³⁰ From the statutory language, it was very hard to generate ceilings and floors on governmental action. *Second*, the Court said that the Act essentially delegated public power to private groups.¹³¹ Congress could not legitimately authorize private persons to create law in their preferred form. Because accountable officials did not “filter” efforts at private lawmaking, this did not merely raise the spectre of faction, it was the thing itself—the cooptation of public power by self-interested private groups. *Third*, and in a discussion of particular relevance to the general subject here, the Court distinguished other statutes, most notably the Federal Trade Commission Act, partly by reference to the procedural safeguards provided by those statutes. “What are ‘unfair methods of competition’ are thus to be determined in particular instances, upon evidence, in the light of particular competitive conditions and of what is found to be a specific and substantial public interest. To make this possible, Congress set up a special procedure.”¹³² As we will see, the seeds of the new nondelegation doctrine can be found in this passage.

In the decades since *Schechter Poultry*, however, nondelegation challenges have been routinely repudiated.¹³³ Indeed, the Court has upheld some apparently extreme grants of authority to the executive

¹²⁸ 295 US 495 (1935).

¹²⁹ It is an interesting historical fact that on the day of the decision, President Roosevelt did not seem much to object to judicial invalidation of a centerpiece of his New Deal, apparently on the theory that the NIRA experiment had been a failure. See Kenneth C. Davis, *FDR: The New Deal Years* (1988).

¹³⁰ *Id.* at 523.

¹³¹ *Id.* at 537.

¹³² *Id.* at 533.

¹³³ See, eg, *Yakus v. US*, 321 US 414 (1944); *Lichter v. US*, 334 US 742 (1948); *US v. Southwestern Cable Co.*, 392 US 157 (1968); *Mistretta v. US*, 488 US 361 (1988).

branch.¹³⁴ But there have been a few conflicting signals. In the most visible opinion, then-Justice Rehnquist suggested that Occupational Safety and Health Act should be struck down on nondelegation grounds.¹³⁵ In *Industrial Union Department v. American Petroleum Institute*,¹³⁶ better known as the Benzene case, the basic question was whether the Act called for (a) cost-benefit balancing (as urged in a concurrence by Justice Powell),¹³⁷ (b) demonstration that any regulated risk be “significant” (as urged in the plurality opinion of four justices, written by Justice Stevens¹³⁸), or (c) agency action whenever there was any risk at all (as urged in a dissenting opinion of four justices, written by Justice Marshall¹³⁹). In Justice Rehnquist’s view, Congress had made no choice among the three alternatives.¹⁴⁰ The statute was therefore an unconstitutional delegation. Justice Rehnquist contended that the statute was a kind of “mirage,” in which Congress “simply avoid[ed] a choice which was both fundamental for purposes of the statute and yet politically so divisive that the necessary decision or compromise was difficult, if not impossible, to hammer out in the legislative forge.”¹⁴¹

Notably, Justice Stevens’ plurality opinion also referred to the nondelegation doctrine, not to invalidate the Act but as a tool of statutory construction.¹⁴² In the plurality’s view, the agency’s position would allow the agency such massive power over the private sector as to be a possibly unconstitutional delegation of power.¹⁴³ Partly for this reason, the Court read the statute to require OSHA to show a “significant risk” before it could undertake regulation.¹⁴⁴ For the

¹³⁴ See Yakus, *supra*; Southwestern Cable Co., *supra*; Mistretta, *supra*.

¹³⁵ *Industrial Union Department v. API*, 448 US 607, 684 (1980) (Rehnquist, J., dissenting).

¹³⁶ 448 US 607 (1980).

¹³⁷ 448 US at 664 (Powell, J., concurring).

¹³⁸ 448 US. at 611 (plurality opinion of Stevens, J.).

¹³⁹ 448 US at 688 (Marshall, J., dissenting).

¹⁴⁰ 448 US at 672.

¹⁴¹ *Id.* at 687.

¹⁴² *Id.* at 646.

¹⁴³ *Id.* at 646.

¹⁴⁴ *Id.* at 651.

plurality, then, the nondelegation doctrine operated as a kind of clear statement principle, requiring Congress to speak unambiguously if it sought to give (what the Court saw as) open-ended authority to administrators.¹⁴⁵ Note, however, that the Court left the definition of the key term—“significant risk”—to the agency, and that OSHA has yet to give a rule-like understanding of that highly ambiguous term.¹⁴⁶

In the immediate aftermath of the Benzene Case, there were occasional lower court suggestions that the nondelegation doctrine was “no longer . . . moribund.”¹⁴⁷ A handful of lower courts cases have now invoked the doctrine. Thus in *Massieu v. Reno*,¹⁴⁸ a district court struck down a provision of a federal deportation statute saying that “an alien whose presence or activities in the United States the Secretary of State has reasonable grounds to believe would have potentially serious adverse foreign policy consequences for the United States is deportable.” On the court’s view, this was an open-ended grant of power, because the notion of “potentially serious adverse foreign policy consequences” could be construed in numerous different ways, thus raising a risk of arbitrariness. And *in South Dakota v. Department of Interior*,¹⁴⁹ a court of appeals invalidated the Indian Reorganization Act insofar as it authorized the secretary of the Interior “in his discretion, to acquire . . . any interest in lands . . . within or without existing reservations . . . for the purpose of providing land for Indians.” But these are extremely unusual cases, and it is unlikely that other courts would follow them, even on identical facts.

¹⁴⁵ There is much reason to question the plurality’s analysis. OSHA did not urge that it could do whatever it wanted; it did not say that the statute allowed it to regulate on whatever terms it chose. On the contrary, it said whenever there was an identifiable risk to workers, the statute required OSHA to regulate to the point where compliance was not feasible. This is a severe, even draconian statute, not so different from the Delaney Clause, which barred any carcinogens in food additives. 21 USC 376(b)(5)B). But a draconian statute is not an open-ended delegation of authority. If Congress told the EPA, eliminate any pollutant that causes any risk at all, EPA’s discretion would be sharply constrained.

¹⁴⁶ See below.

¹⁴⁷ *Fort Worth & Denver v. Lewis*, 693 F.2d 432, 435 n. 8 (5th Cir. 1982).

¹⁴⁸ 915 F. Supp. 681 (D.N.J. 1996).

¹⁴⁹ 69 F.3d 878 (DC Cir 1995).

B. What, if Anything, is the Nondelegation Doctrine For?

The opinions of Justice Rehnquist and the plurality in the Benzene Case have spurred renewed interest in the nondelegation doctrine, and many have argued for its revival.¹⁵⁰ There has thus been a spirited debate over what purposes such a revival would serve, and whether, in light of those purposes, a revival would be justified.¹⁵¹

1. Nondelegation values

It is possible to isolate several possibilities. First and foremost, the doctrine is designed to promote a distinctive kind of accountability—the kind of accountability that comes from requiring specific decisions from a deliberative body reflecting the views of representatives from various states of the union. This is hardly to say that the executive branch lacks accountability; of course the President is subject to the will of people.¹⁵² But the nondelegation doctrine should be associated less with accountability in the abstract than with the particular constitutional goal of ensuring a deliberative democracy, one that involves not only accountability but also reflectiveness.¹⁵³ The vesting of lawmaking power in Congress is designed to ensure the combination of deliberation and accountability that comes from saying that government power cannot be brought to bear on individuals unless diverse representatives, from diverse places, have managed to agree on the details. Consider, as an extreme example, the early decision by the German legislature to confer on Adolf Hitler the power to rule by

¹⁵⁰ See Schoenbrod, *supra* note; Theodore Lowi, Two Roads to Serfdom: Liberalism, Conservatism, and Administrative Power, 36 Am. U. L.Rev. 295 (1987).

¹⁵¹ Leading discussions include Schoenbrod, *supra* note 65; Symposium, 36 Am. U. L. Rev. 277 (1987); Jerry Mashaw, Chaos, Greed, and Governance (1998); Aranson, Gellhorn, and Robinson, A Theory of Legislative Delegation, 68 Cornell L Rev 1 (1982).

¹⁵² As emphasized in Jerry Mashaw, *supra* note, at 145-48, 152-56.

¹⁵³ See William Bessette, *The Mild Voice of Reason* (1994). On deliberative democracy generally, see *Deliberative Democracy* (Jon Elster ed. 1998); Jurgen Habermas, *Between Facts and Norms* (1996).

“decree”; this delegation made possible lawmaking exercises that would otherwise have been extremely cumbersome, and hence removed an important check on arbitrary rule.¹⁵⁴

A closely related point has to do with the extent to which law and particularly national legislation can amount to an infringement on liberty. If no law may be brought to bear against the public unless diverse members of Congress have been able to agree on a particular form of words, then perhaps there is an important safeguard of freedom. The underlying idea is that people may not be subject to national legal constraints unless and until there has been specific legislative authorization for the constraints. This idea can in turn be associated with social contract theory, allowing people to maintain certain private law rights unless there has been explicit authorization for what would otherwise be a common law wrong.¹⁵⁵

The nondelegation doctrine also promotes rule of law values. Indeed, the doctrine can be understood as a kind of “backdoor” void-for-vagueness doctrine, serving the same fundamental goals.¹⁵⁶ It

¹⁵⁴ See Currie, *supra* note, at 109.

¹⁵⁵ See Stephen Breyer et al., *Administrative Law and Regulatory Policy* 27 (4th ed. 1999). There is, however, a problem with this conception of freedom, a particular problem in the aftermath of the New Deal: Why should we think that the status quo embodies freedom, and that the new law at issue would threaten to abridge freedom? It is far from clear, for example, that the common law system for regulating pollution—itsself a regulatory system, and anything but prepolitical—should be taken as an embodiment of liberty, and that a Clean Air Act is a liberty-threatening abridgement of that freedom. Compare the area of discrimination: Is a law forbidding discrimination on the basis of race, sex, or disability something that threatens liberty, such that it is crucial to obtain legislative agreement on its details, lest liberty be threatened? Or might the discriminatory status quo be the real threat to freedom? Questions of this kind seem to me to raise serious doubts about the idea that a strictly enforced nondelegation doctrine would promote liberty, properly conceived. On the general topic of status quo neutrality, see Cass R. Sunstein, *The Partial Constitution* (1993).

¹⁵⁶ Similarly, the void for vagueness doctrine might be seen as a backdoor nondelegation doctrine, requiring a legislature to speak with clarity. Both doctrines are also cousins of the plain meaning rule in statutory construction, see John Manning, *Textualism As A Nondelegation Principle*, 97 *Colum. L. Rev.* 673 (1997). They are also closely connected with the project of democracy-forcing minimalism. See Sunstein, *supra* note.

does this, first, by promoting planning by those subject to law, by giving them a sense of what is permitted and what is forbidden. It does this, second, by cabining the discretionary authority of enforcement officials, who might otherwise act abusively or capriciously. In all these ways the nondelegation doctrine might be seen as a safeguard against the framers' core concerns, self-interested representation and factional power. These points can be collected with the suggestion that the nondelegation doctrine reflects the Constitution's commitment to dual-branch lawmaking—a commitment that cabins arbitrary power, and promotes deliberation as well as accountability, by ensuring that governmental authority can be exercised only when both the legislature and the executive have made a particular decision to that effect.

2. Against the nondelegation doctrine

Those who challenge the doctrine emphasize several points. Part of their concern is institutional, involving judicial competence rather than the doctrine on its merits.¹⁵⁷ The difference between a permissible and impermissible delegation—between “legislative” and “executive” conduct—is one of degree, not one of kind. From what has been said thus far, it should be clear that the line involves not anything qualitative but the precise amount of delegated discretion, and there is no simple metric to tell when how much discretion is too much. It is for this reason that Justice Scalia, among others, has urged that the nondelegation is largely unenforceable by the federal judiciary, simply because it is not subject to principled judicial application.¹⁵⁸ If understood in these terms, the doctrine might be taken as a judicially underenforced constitutional norm—but a constitutional norm nonetheless.

These are largely institutional points; but other objections cut deeper against the doctrine. Sometimes Congress has good reasons to delegate. It may lack relevant information, not only about

¹⁵⁷ See Richard B. Stewart, *Beyond Delegation Doctrine*, 36 *Am. U. L. Rev.* 323, 324-28 (1987).

¹⁵⁸ See *Mistretta v. United States*, 488 U.S. 361, 375 (Scalia, J., concurring). Justice Scalia's skepticism about judicial implementation of the nondelegation doctrine fits very well with his skepticism about rule-free law. See Antonin Scalia, *A Matter of Interpretation* 5-15 (1997).

pollutants like particulates and ozone, but about the social consequences of one or another approach to regulation. It may also be aware of the existence of rapidly changing circumstances, which may make any particular approach increasingly anachronistic. For a multimember body, there are serious problems in achieving closure on any particular course of action, and the result can be to push law in the direction of incompletely specified abstractions.¹⁵⁹ These points are independent of the phenomenon of delegating to escape the political consequences of specificity, a phenomenon that undoubtedly plays a large role as well.¹⁶⁰

The latter point is often taken as a reason for invigorating the nondelegation doctrine in the name of accountability¹⁶¹; but Jerry Mashaw has urged that administrators should be making political decisions, precisely on grounds of accountability.¹⁶² As Mashaw notes, agencies are themselves politically accountable through their relationship to the President. Indeed, public choice theory may well suggest that Congress is more, not less, susceptible to factional power than bureaucrats acting under the arm of the President. There is evidence that factional power is most influential precisely when Congress legislates with particularity.¹⁶³ In any case the issue cannot be resolved in the abstract. And it is hard to come up with any a priori reason why decisions by agencies would be worse, from the standpoint of promoting social well-being, than decisions by Congress.

There is an empirical point here. It is not clear that from any point of view, things have gone systematically better when Congress is clear than when Congress is not.¹⁶⁴ If we ask about promoting public welfare, or about agency reputation for competence and fair-dealing, it appears unimportant to know whether Congress has

¹⁵⁹ See Aranson et al., *supra* note; Cass R. Sunstein and Edna Ullmann-Margalit, *Second-Order Decisions, Ethics* (forthcoming 1999); Cass R. Sunstein, *Legal Reasoning and Political Conflict* (1996).

¹⁶⁰ See Aranson et al., *supra* note.

¹⁶¹ See *id.*; Schoenbrod, *supra* note.

¹⁶² See Mashaw, *supra* note.

¹⁶³ See Bruce Ackerman and William Hassler, *Clean Coal/Dirty Air* (1983).

¹⁶⁴ See Stewart, *supra* note.

spoken with clarity. The Interstate Commerce Commission, for example, was one of the least well-respected agencies, and it operated under open-ended statutory terms; the Securities and Exchange Commission is highly regarded, though its organic statute is similarly open-ended. The Department of Agriculture is one of the least well-regarded agencies, and the statutes it administers are frequently all too clear. The Internal Revenue Service is highly regarded, and many of the provisions that it must enforce are highly detailed. In short: There seems to be no link between clear statutory terms and agency competence or agency contribution to social well-being.

3. The centrality of floors and ceilings

Thus it might be questioned whether a reinvigoration of the nondelegation doctrine would be a sensible response to any of the problems and pathologies of the modern administrative state.¹⁶⁵ Indeed it would be foolish to suggest that such a revival would ensure better regulatory policy, or even that it would mark a significant improvement in terms of democratic values. But it would be almost equally foolish to suggest that the nondelegation doctrine deserves to play no role at all in the constitutional regime.

Contrary to Mashaw's suggestion, administrators are often weakly accountable to the President (or the electorate), and in any case Congress has a distinctive kind of accountability, and it is that kind of accountability that leads to its role as the institution entrusted with the making of federal law. The Constitution would not tolerate a legislative grant of authority to the President to enact such environmental regulations as he deemed best, even though it is not clear that such a grant would lead to inferior environmental policies. The special form of political accountability anticipated by Article I, section 1 does call for limitations on executive discretion. As we shall see, this requirement is best promoted by clear statement principles—the real place where contemporary American law recognizes a nondelegation doctrine, and where that doctrine now flourishes—and also by judicial invalidation in the rare cases where

¹⁶⁵ See *id.*; in the same spirit, see Breyer, *supra* note.

even aggressive statutory construction is able to identify neither floors nor ceilings.

IV. The New Nondelegation Doctrine

Even with all its Frankensteinlike warts, knobs, and (concededly) dangers, the unconstitutional delegation doctrine is worth hewing from the ice.

Antonin Scalia¹⁶⁶

In our increasingly complex society, replete with ever changing and more technical problems, Congress simply cannot do its job absent an ability to delegate power under broad general directives.

*Mistretta v. United States*¹⁶⁷

A. Kenneth Culp Davis' Interesting Innovation

Beginning with an important essay in 1969,¹⁶⁸ Kenneth Culp Davis proposed a new approach to the nondelegation doctrine. In its original form, he claimed, the doctrine was dead, and quite properly so. Congress could not be expected to legislate specifically, and it should not be asked to do so. But much of the doctrine could be rescued, and could perform a salutary function, if agencies could be required to develop protections against uncontrolled discretionary power, and to adhere to them. "The key should no longer be statutory words; it should be the protections that administrators in fact provide, irrespective of what the statutes say or fail to say."¹⁶⁹ Thus Davis urged "a much broader requirement, judicially enforced, that as far as is practicable administrators must structure their discretionary power through appropriate safeguards and must confine and guide their discretionary power through standards, principles, and rules."¹⁷⁰ Davis thus argued for proposed a shift from a requirement of *statutory clarity* to a requirement of *administrative clarity*. In Davis' view, a central problem for the regulatory state is

¹⁶⁶ Scalia, A Note on the Benzene Case, 4 Reg., July-Aug., 1980, at 25, 28.

¹⁶⁷ 488 U.S. 361, 372 (1989).

¹⁶⁸ See Kenneth Culp Davis, A New Approach to Delegation, 36 U. Chi L Rev 713 (1969).

¹⁶⁹ Id. at 713.

¹⁷⁰ Id.

excessive discretion—a system of “discretionary justice.”¹⁷¹ The remedy would be to require administrators to limit their own room to maneuver.

The consequence of this requirement would be that rule of law values would operate at the agency level. This would promote predictability and minimize the arbitrary exercise of power. Synthesizing a long period of work, Davis wrote that “the basic purpose of the traditional non-delegation doctrine is unsatisfactory and should be changed. It should no longer be either to prevent delegation of legislative power or to require meaningful statutory standards.”¹⁷² In Davis’ view, the “crucial consideration is not what the statute says but what the administrators do. The safeguards that count are the ones the administrators use, not the ones mentioned in the statute. . . . The alteration in the nondelegation doctrine in this respect can be a rather small one: The courts should continue their requirement of meaningful standards, except that when the legislative body fails to prescribe the require standards for discretionary action in particular cases, the administrators should be allowed to satisfy the requirement by prescribing them within a reasonable time.”¹⁷³

Davis was not entirely clear about the legal source for this proposed requirement. He did not say whether courts should act pursuant to the due process clause, Article I, the APA, or the common law. In a remarkably short treatment, he said that “[p]erhaps the non-delegation doctrine will gradually turn into a facet of due process But in the longer term, perhaps the constitutional base will give way to a common-law base.”¹⁷⁴ This was less than a decade before the Court’s ruling in *Vermont Yankee*, the *Erie Railroad* of administrative procedure, that there is no common law of administrative law.¹⁷⁵ Though Davis did not specify the source of his requirement, he clearly contemplated judicial enforcement of his innovation.

¹⁷¹ See Kenneth Culp Davis, *Discretionary Justice* 10-35 (1969).

¹⁷² See Kenneth Culp Davis, *Administrative Law Treatise* (1975).

¹⁷³ *Id.*

¹⁷⁴ *Id.* at 733.

¹⁷⁵ See *Vermont Yankee Nuclear Power Corp. v. NRC*, 435 US 519 (1978).

B. The (Early) Fate of an Idea

It is not clear to what extent subsequent judicial developments were actually influenced by Davis' suggestion. But it is clear that in the 1970s, a number of cases required administrators to generate rules and criteria, and several such cases seemed to adopt an approach quite close to that proposed by Davis.¹⁷⁶

In a series of cases, courts held that an agency violated the due process clause if it did not generate criteria by which to limit its own exercise of discretion. Thus, for example, courts held that liquor licenses could not be given out without publicly articulated criteria,¹⁷⁷ and that agencies were constitutionally obliged to say something about the grounds on which they would give out public housing.¹⁷⁸ But by far the most prominent use of the idea came in Judge Leventhal's opinion in the celebrated case upholding the wage and price freeze statute, *Amalgamated Meat Cutters v. Connally*.¹⁷⁹

The remarkably broad statutory provision at issue authorized the President "to issue such orders and regulations as he may deem appropriate to stabilize prices, rents, wage and salaries at levels not less than those prevailing on May 25, 1970."¹⁸⁰ Thus Congress essentially gave no guidance to the President, at least not in the text of the statute. A key part of Judge Leventhal's response—and a somewhat desperate one under the circumstances—was to suggest that there was a requirement that the executive develop "subsidiary" administrative law, and stick to it.¹⁸¹ Thus a "feature that blunts the 'blank check' rhetoric is the requirement that any action taken by the Executive under the law, subsequent to the freeze, must be in

¹⁷⁶ See *Martinez v. Iberia*, 759 F. Supp. 664 (D Colo 1991); *Burke v. US*, 968 F. Supp. 672, 680 (M.D. Ala. 1997); *Jensen v. FAA*, 641 F.2d 797 (9th Cir. 1981); *Ressler v. Pierce*, 692 F.2d 1212 (9th Cir. 1982); *Carey v. Quern*, 588 F.ed 7309 (7th Cir. 1978); *White v. Roughton*, 530 F.2d 750 (7th Cir. 1976); *Baker-Chaput v. Cammett*, 406 F. Supp. 1134 (D NH 1976).

¹⁷⁷ *Hornsby v. Allen*, 326 F.2d 605 (5th Cir. 1964).

¹⁷⁸ *Holmes v. New York City*, 398 F.2d 262 (2d Cir. 1968).

¹⁷⁹ 337 F. Supp. 737 (DDC 1971).

¹⁸⁰ Economic Stabilization Act of 1970, 84 Stat. 799 (1970).

¹⁸¹ 337 F. Supp. At 759.

accordance with further standards as developed by the Executive.”¹⁸² This requirement was said to be “inherent in the Rule of Law and implicit in the Act.”¹⁸³ Thus Judge Leventhal emphasized the “requirement of subsidiary administrative policy, enabling Congress, the courts, and the public to assess the Executive’s adherence to the ultimate legislative standard.”¹⁸⁴ In his view, “there is an ongoing requirement of intelligible administrative policy that is corollary to and implementing of the legislature’s ultimate standard and objective.”¹⁸⁵

There are several points to notice about this opinion. For those steeped in regulatory policy, the major constraints on the President would come not from the idea of the Rule of Law but from the particular context and background.¹⁸⁶ These suggested that the Act was a response to perceived “cost-push” inflation, that is, a situation in which wage demands and price increases had created a kind of inflationary spiral, in which the anticipation of one would fuel an increase in the other. Whatever the merits of this understanding of the economic situation, it suggests a real constraint on the President’s authority: He may not favor particular industries or particular workers; all of his decisions must be made in terms of the underlying problem that Congress meant to solve. This point suggests a much broader one, to which I will return. An understanding of particular regulatory programs, and their public rationale, will often lead both courts and agencies to a narrower understanding of statutory terms, one that will sharply discipline agency discretion. We might understand this as a more modern approach to regulatory questions, one that diverts understanding from the traditional lawyerly concern with “discretion,” writ large, and shifts the focus to a better understanding of regulatory policy.¹⁸⁷ But Judge Leventhal did not take this approach.

¹⁸² Id. at 758.

¹⁸³ Id. at 757.

¹⁸⁴ Id. at 759.

¹⁸⁵ Id. at 759.

¹⁸⁶ See Stephen Breyer and Richard B. Stewart, *Administrative Law and Regulatory Policy* 112 (1983).

¹⁸⁷ This approach to administrative law is best associated with Justice Breyer, see Stephen Breyer, *Regulation and its Reform* (1981); Stephen Breyer, *Breaking the*

In a sense, the approach that Judge Leventhal chose has a commonality with *Schechter Poultry* itself, where, it will be recalled,¹⁸⁸ the Court pointed to procedural safeguards in the FTC Act as an important distinguishing feature. Procedural guarantees can be seen as a check on arbitrary judgment, operating as a kind of (partial) surrogate for clear statutory standards. The requirement of subsidiary administrative law belongs in the same category—finding surrogate safeguards in anything that operates as a constraint on the uncontrolled discretion of the administrator.

Notably, Judge Leventhal invoked the requirement of “subsidiary administrative law” to uphold a statute, not to invalidate agency action. And in the two decades after *Amalgamated Meat Cutters*, the decision was generally understood to provide a tool by which otherwise troublesome delegations would be upheld.¹⁸⁹ Indeed, it can be understood as part of a range of surrogate safeguards, operating in Davis’ spirit and promoting nondelegation goals without invoking the nondelegation doctrine.¹⁹⁰ Thus much of the work of the doctrine, and of Davis’ proposal, ultimately came from judicial review of agency action for arbitrariness. Thus courts have required extremely detailed justifications for agency rules under the “hard look” doctrine and in particular they have required agencies to explain departures from past practices.¹⁹¹ The result has

Vicious Circle (1993). It suggests a significant shift from the legal culture’s preoccupation with the control of discretion, which is not the central problem for regulatory policy, toward a better understanding of regulatory substance. In the same vein, see Richard B. Stewart, *Beyond Delegation Doctrine*, 36 *Am U L Rev* 823 (1987); Richard Posner, *The Problematics of Moral and Legal Theory* (1999).

¹⁸⁸ See above.

¹⁸⁹ See, eg,

¹⁹⁰ See Richard B. Stewart, *The Interest-Representation Model of Administrative Law*, 88 *Harv. L. Rev.* 1669 (1975).

¹⁹¹ See *Motor Vehicle Manufacturers Assn. V. State Farm Mutual Ins. Co.*, 463 US 29 (1983); *Citizens to Preserve Overton Park v. Volpe*, 401 US 402 (1971); Harold Leventhal, *Environmental Decisionmaking and the Role of the Courts*, *U Pa L Rev*; Cass R. Sunstein, *Deregulation and the Hard Look Doctrine*, *Supreme Court Review*; Merrick Garland, *Harv. L. Rev. Note the revisionist attack on the doctrine*, see Jerry Mashaw, *Chaos, Greed, and Governance*; Peter Strauss, *Revisiting Overton Park*, 39 *UCLA* 1251 (1992); Thomas McGarrity, *Some Thoughts on “Deossifying” the Rulemaking Process*, 1992 *Duke LJ* 1385; Richard

been to require, on nonconstitutional grounds, at least some of what Davis proposed: *clear articulation of agency policy choices, a defense of those choices, and a requirement of adherence to those choices unless there was reason not to do so*. But as we will see, these requirements have been confounded, or proved inadequate, in some modern contexts; and because of their unanticipated systemic effects on agency rulemaking, they raise serious difficulties of their own.¹⁹²

C. The Rise of the New Nondelegation Doctrine

Amalgamated Meat Cutters came to enjoy a rebirth, and also to be understood differently, in an extremely important case, *International Union, UAW v. OSHA*.¹⁹³ The case involved a large-scale regulatory effort by OSHA to protect workers, by “lock-outs” and by informational “tags,” from the hazards of energy released from industrial machinery. To simplify a complex story, the regulation at issue required employers to place a “lock” on energy isolating devices connected to the equipment, or, if the equipment could not be locked or if another approach were equally effective, to place a warning “tag” on the energy isolating device, saying that employees should not operate the device until the tag is removed.

The only governing statutory language was remarkably brief. It said that OSHA should issue regulations “reasonably necessary or appropriate to provide safe or healthful employment and places of employment.”¹⁹⁴ The first question was the meaning of this apparently open-ended statutory term OSHA said that this language required it to regulate (a) any “significant risk” to (b) the point of “feasibility,” that is, to the point where compliance would not be feasible for the industry, either technologically or economically.¹⁹⁵ In this way, OSHA interpreted the “reasonably necessary or appropriate” language in a way quite similar to the interpretation of

Pierce, *Seven Ways to Deossify Agency Rulemaking*, 47 Admin. L. Rev. 59 (1995)..

¹⁹² See Jerry Mashaw and David Harfst, *The Struggle for Auto Safety* (1992).

¹⁹³ 938 F.2d 1310 (DC Cir. 1991).

¹⁹⁴ 29 USC 652(8).

¹⁹⁵ 938 F.2d at 1315.

statute insofar as it governed toxic substances in the Benzene Case.¹⁹⁶ Notice that on the agency's interpretation, at least two ideas require a great deal of interpretive work. How do we know whether a risk is "significant"? What are the ingredients of that inquiry? And how do we know whether an expenditure is "feasible"? Surely feasibility, like safety, is not an off-on switch. It is not as if at a certain, naturally identifiable point, an expenditure that had been feasible for some industry is no longer so.

But the court did not press these points. Instead it said that as the agency had interpreted the statute, the agency had free-wheeling authority in individual cases to go from "no standard at all" to "adopting the most stringent standard feasible."¹⁹⁷ In the court's view, the statute, so interpreted, might well violate the nondelegation doctrine. Hence the court remanded the case to the agency in order to give it an opportunity to adopt an interpretation that would be both "reasonable and consistent with the nondelegation doctrine."¹⁹⁸ Clearly the court, or at least Judge Williams, wanted the agency to use cost-benefit analysis as the basis for decision,¹⁹⁹ but it did not require that approach. What is noteworthy here is that the court borrowed the *Amalgamated Meat Cutters* idea, requiring agencies to discipline their own discretion through "subsidiary administrative policy," so as to hold an agency construction invalid unless it sufficiently limits agency discretion.

On remand, the agency added to its "significant risk" and "feasibility" constraints three different points: (1) the standard must use the most cost-effective protective measures; (2) the agency must publish an explanation of why any standard differing from an existing national consensus standard would better promote the purposes of the Act; and (3) the agency must support its choice of standard with record evidence and explain any inconsistency with prior agency practice.²⁰⁰ The agency added that when it identified any significant risk, it must provide "a high degree of worker

¹⁹⁶ See above.

¹⁹⁷ 938 F.2d at 1317.

¹⁹⁸ *Id.* at 1313.

¹⁹⁹ See 938 F.2d at 1326.

²⁰⁰ 37 F. 2d at 606-08.

protection,” and would not be allowed to do “nothing at all.”²⁰¹ Thus the agency attempted to meet the court’s challenge by suggesting that on any showing of evidence of harm, there were clear ceilings and floors to discipline agency discretion.

With evident ambivalence, the court concluded that this was sufficient to satisfy the nondelegation doctrine.²⁰² The court said that as construed by the agency, its statutory authority for regulation in general would be quite close to its authority for toxic substances, which did not violate the nondelegation doctrine.²⁰³ In both cases, an agency must choose a “high degree of worker protection” once it finds a “significant risk,” and it could not regulate past the point of “feasibility.” Even though these notions left a degree of residual discretion, the agency was not given a blank check, and hence the statute was acceptable as construed. The question left by the court’s decision was whether its invocation of the nondelegation doctrine was a kind of sport, or whether it signalled a broader development in administrative law.

D. Particulates and Ozone in Court

The EPA’s regulations of particulates and ozone were challenged on a wide variety of grounds.²⁰⁴ The most ambitious of the challenges, based on *Amalgamated Meat Cutters* and *International Union*, was a claim that the EPA’s construction of the Act resulted in an unconstitutional delegation of power. In a remarkable decision, the court of appeals agreed.²⁰⁵

The court’s analysis was similar to that in *International Union*. As the court noted, “the only concentration for ozone and PM that is utterly risk-free, in the sense of direct health impacts, is zero.”²⁰⁶

²⁰¹ *Id.* at 608.

²⁰² *Id.* at 610.

²⁰³ *Industrial Union v. OSHA*, 37 F.2d 605 (DC Cir. 1994).

²⁰⁴ In fact the court accepted many of these challenges. It held, for example, that EPA could not enforce its ozone standards, and that the ozone standard was arbitrary because the agency had not adequately justified its refusal to consider the health benefits of ground-level ozone, which, it is claimed, helps prevent cancer and cataracts. See below.

²⁰⁵ *American Trucking Assn. V. EPA*, 175 F.3d 1027 (1999).

²⁰⁶ *Id.* at 1034.

The problem was therefore that the EPA lacks “any determinate criterion for drawing lines. It has failed to state intelligibly how much is too much.”²⁰⁷ To be sure, the EPA pointed to some relevant considerations: the nature and severity of the adverse health effects, the size of the sensitive population at risk, and the degree of uncertainties involved. The court thought it perfectly sensible to point to these considerations. The problem is that they “do not themselves speak to the issue of degree.”²⁰⁸ On the court’s view, “EPA’s formulation of its policy judgment leaves it free to pick any point between zero and a hair below the concentrations yielding London’s killer fog.”²⁰⁹

With respect to particulates, the EPA defended its shift from the existing level of 0.09 to 0.08 on the ground that more people are exposed to more serious effects at 0.09 than at 0.08.²¹⁰ But a shift to 0.07 would be still more effective in decreasing exposure levels, and “EPA never contradicts the intuitive proposition, confirmed by data in its Staff Paper, that reducing the standard to that level would bring about comparable changes.”²¹¹ Hence the EPA’s rationale pointed to no disciplining criteria. To be sure, the EPA said that a reduction to 0.07 would produce more transient and reversible effects, and the more serious effects would be less certain at that level. But this “seems to be nothing more than a statement that lower exposure levels are associated with lower risk to public health.”²¹² The fact that the EPA finds less severe and more speculative effects at lower levels shows only that “the agency rightly recognizes that the question is one of degree, but offers no intelligible principle by which to identify a stopping point.”²¹³

In the most ambitious part of the opinion, the court said that in order for the EPA to make rational decisions, it must be necessary to

²⁰⁷ Id. at 1034.

²⁰⁸ Id. at 1035.

²⁰⁹ Id. at 1037.

²¹⁰ Fed. Reg.

²¹¹ 175 F.3d at 1035.

²¹² Id. at 1035.

²¹³ Id. at 1037.

“assign[] weights” to a “range of ailments short of death.”²¹⁴ The court referred with some approval to apparent decisions suggesting “some readiness to adopt standards that leave non-zero residual risk,” as, for example, by using clinical criteria to decide what counts “as an adverse health effect.”²¹⁵ And likelihood judgments might draw “from other areas of the law, such as the familiar ‘more probable than not’ criterion.” The court emphasized that “a one-size-fits-all criterion of probability would make little sense.” Thus “all the relevant variables seem to range continuously from high to low: the possible effects of pollutants vary from deaths to trivialities, and the size of the affected population, the probability of an effect, and the associated uncertainty range from ‘large’ numbers of persons with point estimates of high probability, to small numbers and vague ranges of probability.”²¹⁶ The court added, “Nonetheless, an agency wielding the power over American life possessed by EPA should be capable of developing the rough equivalent of a generic unit of harm that takes into account population affected, severity, and probability.”²¹⁷

The court referred in this regard to the approach used by Oregon in devising a health plan for poor people; Oregon has used the notion of “quality-adjusted life years” to assess health gains, and a similar approach might be used to assess health risks. Hence the Court held that the regulations, as justified, were unlawful; but it left undecided the question whether they should be vacated, an issue addressed below.²¹⁸

VII. Evaluating the New Nondelégation Doctrine

Hard work will be needed to devise and secure the adoption of reconstitutive solutions to the central overload and political irresponsibility generated by our prevailing reliance on command law. The energies of academic lawyers . . . should be centered on this task,

²¹⁴ Id. at 1039.

²¹⁵ Id. at 1038.

²¹⁶ Id. at 1039.

²¹⁷ Id. at 1039.

²¹⁸ Note that other grounds were invoked in the case. See note supra; see also the discussion of health-health tradeoffs below.

not on supposed constitutional solutions that, in the end, can solve nothing.

Richard Stewart²¹⁹

“[T]he nondelegation doctrine should be applied only as a second, perhaps last resort. Initial consideration should be given to reading the statutory authority of the agencies and the President more narrowly if the language permits.

Ernest Gellhorn²²⁰

A. Is This a Nondelegation Doctrine at All?

1. The appeal of the new doctrine: surrogate safeguards

The new nondelegation doctrine has unquestionable appeal, and in one respect, it has long historic roots. To see why this is so, consider the posture of a court presented with a statute that may or may not amount to an unconstitutional delegation. If the statute contains open-ended terms, but also requires agencies to act only after fulfilling elaborate procedural requirements, the nondelegation concern appears to be diminished. As emphasized in *Schechter Poultry*, the procedures serve as surrogate safeguards.

To be sure, procedural rights do not ensure that Congress will make the fundamental value judgments; in this sense they do not promote the key purpose of the doctrine. But if the nondelegation doctrine is designed to promote rights of participation and accountability, a right to be heard, and to receive a public response to what is said, can serve some of the goals of the doctrine. As we have seen, this was part of the rationale on which the Court said, in *Schechter Poultry*, that the Federal Radio Act and the Federal Trade Commission Act were unobjectionable, despite their apparently broad terms.

It is not a long step from this idea—of procedures as surrogate safeguards—to the notion that if administrators discipline their own discretion through requirements laid down in advance, an otherwise troubling delegation might be upheld— Judge Leventhal’s suggestion in *Amalgamated Meat Cutters*. While constrained administrative discretion does not mean congressional lawmaking, it

²¹⁹ Stewart, *Beyond Delegation Doctrine*, *supra*, at 434.

²²⁰ Ernest Gellhorn, *Returning to First Principles*, 36 *Am U L Rev* 345, 353 (1987).

does tend to promote predictability, consistency, and visibility in law, and to ensure against ad hoc discretion by administrators, discretion that might be exercised arbitrarily. This is the sense in which *Amalgamated Meat Cutters* can be seen as of a piece with *Schechter Poultry*—with procedures and agency self-constraint operating, in the former case, as a kind of “shield” against nondelegation doctrine attack.

The innovation in *Industrial Union* and *American Trucking* is to treat the notion of agency self-constraint not as a shield but as a sword—to suggest that if an agency has not engaged in self-binding via clear, articulable standards, the nondelegation doctrine has been violated. An approach of this kind might well increase the consistency and intelligibility of administrative policy, and it might make agency decisions more reflective and even on balance better. As a matter of policy analysis, *American Trucking Association* is quite sophisticated, and as we will see, there is a great deal to be said for encouraging the EPA to attempt a more refined and (to the extent possible) quantitative assessments of severity of effects, likelihood of effects, and size of population exposed.²²¹ Such an approach could well help in the development of “floors” and “ceilings” for EPA judgment, and an understanding of what counts as the legitimate “strike zone” could be a substantial improvement in regulatory law.

2. Problems

There are, however, serious problems here.

Taken together, these problems amount to decisive objections to the new nondelegation doctrine.

(a) Administrative rather than legislative lawmaking

If a statute creates a genuine nondelegation problem, why would an administrative construction eliminate it? The fundamental point of the nondelegation doctrine is to ensure legislative rather than administrative judgments about the content of federal law. It seems odd to say that a statute violates the nondelegation doctrine because of how it has been construed by the relevant agency. It is one thing for a court, eager not to overstep its constitutional role, to

²²¹ See below.

rescue a statute from nondelegation attack by saying that the agency has construed the statute in such a way as to reduce risks of arbitrary judgment. It is another thing for a court to invalidate a statute on nondelegation grounds with the thought that the agency has failed to construe the statute with sufficient clarity. This idea converts the nondelegation doctrine into something else altogether—a general requirement of administrative transparency, a requirement with no obvious constitutional foundation.

(b) Reinterpretation and discretion

Perhaps the *American Trucking* court's answer is that an agency interpretation can confine administrative discretion, and in that way, at least, promote some of the purposes of the doctrine, rooted in rule of law values, including transparency. But there is oddity here too. Under *Chevron*,²²² agencies are permitted to construe ambiguous statutory terms, and no agency interpretation is set in stone. Suppose that in *International Union*—the lockout-tagout case—a future OSHA accepted the court's explicit invitation and decided that cost-benefit analysis would be the basis for regulatory judgments. Would this be unlawful? Surely not. And if not—if the agency is entitled to reinterpret the statute in his (reasoned) discretion—then how, exactly, does one agency construction avoid a nondelegation problem?

Perhaps it does so because any agency construction makes the basis for regulation visible to all, and in such a way as to constrain agency choice unless and until a new interpretation has been issued publicly and through the required channels. But this seems to be a pale echo of the nondelegation principle. It is a pale echo, first, because it imposes no requirements on Congress. It is a pale echo, second, because it does not bar agencies, over time, from construing open-ended statutory terms in radically different ways.

(c) Institutional difficulties and very slippery slopes

There is also a serious problem of judicial role. Judge Leventhal used the idea as a basis for permitting a consensual arrangement between Congress and the executive branch; the effort was to find a

²²² *Chevron v. NRDC*, 467 US 837 (1984).

way to validate the statute while also giving a signal to the executive. The notion that open-ended statutes become unconstitutional unless accompanied by agency specification would entail a far larger judicial role. Indeed, that role would extend far beyond the setting of regulate of particulates and ozone. Consider the following:

- It would raise serious constitutional doubts about most and perhaps all of the rest of EPA's national primary and secondary standards. None of those standards was issued with a clear statement of the criteria that would mark the line between permitted and prohibited exposure levels.
- It could well raise questions about the activities of other agencies, such as the Federal Communications Commission, that operate pursuant to vague statutory terms; note that the FCC is permitted to give out licenses in accordance with "public interest, convenience, and necessity."²²³ What must the FCC say in order to discipline the exercise of its own authority?
- It would raise constitutional questions about OSHA's use of the "significant risk" idea. We have seen that in the Benzene Case, the Court said that OSHA must show that any risk that it seeks to regulate qualifies as "significant." No one seems to think that serious delegation issues are raised by the existence of administrative discretion to decide when a risk so qualifies, notwithstanding the Supreme Court plurality's anticipation that this judgment would be made administratively. But plainly it would not suffice for an agency simply to announce that it deems a certain risk to be significant. But how can a agency distinguish between significant and insignificant risks? Lower courts and OSHA have given some guidance, but not a great deal; under the American Trucking ruling, this raises serious constitutional problems.²²⁴

²²³ USC

²²⁴ The plurality's answer was a mix of the procedural and the substantive. On the procedural side, there is a duty of reason-giving; the agency must "explain in an understandable way" why it deems a certain risk significant. *Industrial Union v. API*, 448 US 607, 646 (1980). With respect to substance, the plurality made a distinction. "If the odds are one in a thousand that regular inhalation of gasoline vapors that are 2% benzene will be fatal, a reasonable person might well consider

the risk significant and take appropriate steps to decrease or eliminate it.” *Id.* At the same time, the plurality said that a risk of one in a billion, from drinking a glass water, could not reasonably be considered significant.

Apart from recognizing the fact that judgments of significance will turn on “policy considerations,” subsequent developments, in the lower courts and in OSHA, have left a high degree of vagueness. To the extent that quantitative judgments have been made, they take the following form. OSHA believes that a working lifetime risk of death of over 1/1000 from occupational causes is “significant.” *Building and Construction Trades v. Brock*, 838 F.2d 1258, 1265 (DC Cir. 1988). This means that if a worker faces a 1/1000 risk of death if he is exposed, for all of his working life, to gasoline vapors that are 2% benzene, that worker is facing a significant risk. The agency has expressly concluded that the significant risk standard is satisfied by a risk by 1.64 excess mesothelioma deaths per thousand. *Id.* at 1265. At the same time, the agency has said that a risk of 0.6 is 100,000 “may be approaching a level that can be viewed as safe,” a qualified statement that, in context, suggests that a risk of 6 in one million would not be regarded as significant. Conclusions of this kind are certainly better than nothing at all. In a metaphor, they suggest a “strike zone” within which OSHA may operate – a domain of risk significance that marks floors and ceilings. But they leave many open questions. What is the relevant risk involves injuries and illnesses rather than fatalities, or some combination of injuries, illnesses, and fatalities? Some version of the “quality-adjusted life years” idea would seem necessary to allow meaningful comparison of, say, a risk of 1/10,000 of death alongside a risk of 1/500 of serious respiratory problems. In addition, OSHA seems to be considering the risk for workers subject to lifetime exposure, a number that seems vulnerable for two reasons. First, there are cases where lifetime exposure is rare; what if, say, only 10% of the exposed population is exposed for all of a working life, and 50% is exposed for a period of ten years or less? Shouldn’t this be taken into account in considering the significance of the risk? Second and more fundamentally: The size of the exposed population would seem to matter. Suppose, for example, that the relevant risk is 1/1000, but that only 500 people are exposed to the risk; is this the same case, in terms of significance, as one in which the relevant risk is 1/1000, and 2 million workers are exposed to the risk? Perhaps it is; perhaps the agency believes that no one should be exposed to a 1/1000 risk of death. This is not an implausible judgment. Even so, what if the risk is 6 in one million, but twenty million workers are in the exposed population? By hypothesis, 120 workers will die as a result of the hazard. Is this so clearly insignificant?

The point can be made more vividly by revisiting the Supreme Court’s suggestion that a one/one billion risk of death from having a risk of chlorinated water “clearly could not be considered significant.” 448 US at 655 (1980). Suppose that every American drinks five glasses of water a day; suppose too that there are 250 million Americans. If Americans drink 1.25 billion glasses of water each day, then 1.25 Americans will contract a fatal illness each day, which is to say that 456 Americans will contract a fatal illness each year from drinking water. Is it so clear

- It would raise serious constitutional problems about statutes that require agencies to engage in cost-benefit balancing, because those statutes typically do not contain anything like an accompanying theory of valuation. Two especially prominent statutes—the Toxic Substances Control Act and the Fungicide, Insecticide, and Pesticide Act—require the agency to regulate “unreasonable risks,” a term that clearly contemplates some form of cost-benefit balancing
- All such statutes raise obvious questions: Should a life be valued at \$500,000 or \$10 million? What about a respiratory illness? And what is the appropriate discount rate for lives saved and illnesses averted (say) twenty years from now?²²⁵ Congress has made no effort to answer these questions.²²⁶ Are such measures

that the relevant risk is insignificant? That a government agency is disabled from reaching that conclusion. A possible reaction to these problems is that it is extremely artificial to assess the significance of a risk without also assessing the cost of eliminating it. If the chlorinated water risk just discussed could be eliminated at a cost of \$10,000, it should by all means be eliminated; things are different if the cost would run to many billions of dollars. But as construed by the Court, OSHA forbids cost-benefit balancing. Hence the agency must make a risk-only determination. We can imagine a range of sensible judgments, such as, 1/1000 is presumptively significant, a presumption that could perhaps be rebutted if the exposed population is sufficiently small; 1/100,000 is presumptively insignificant, a presumption that could be rebutted if the exposed population is sufficiently large; or an approach based on QALYs, one that would find, let us say, savings of over 50 QALYs per year to be a presumptively sufficient basis for regulation.

²²⁵ On the centrality of this question, see Heinzerling, *supra* note, at 2018-2025.

²²⁶ Legislative silence raises many questions. The first is positive: Why has Congress effectively delegated the central issues to the executive branch? Part of the answer lies in the incentives faced by individual legislators. See Aronson et al., *supra* note. For a member of Congress, an insistence on cost-benefit analysis is likely to please relevant constituencies concerned about excessive or irrational legislation. But a judgment about valuation – suggesting, for example, that a statistical life is worth \$2 million – is likely to be exceedingly controversial, a kind of recipe for campaign advertisements by political opponents. In most cases, individual members have far more to lose than to gain from specificity. But this is only part of the explanation. In a sense, people engage in cost-benefit analysis all the time; they decide whether to purchase a Volvo, or to have a smoke alarm, or to live in the city, or to walk across the street at night. But ordinary people are highly resistant to explicit cost-benefit analysis; they do not believe, for example, that

unconstitutional unless and until the agency has come up with a consistent method of valuation? Some observers have suggested that cost-benefit balancing would be a way to avoid the constitutional problems recognized in *American Trucking*.²²⁷ But under the logic of the case, a cost-benefit requirement unaccompanied by some kind of quantification would be unconstitutional unless and until an agency disciplines itself with clear valuation criteria. This would be an extravagant conclusion.

- It would raise questions about much other EPA activity as well. Consider the statute governing calculation of natural resource damages, where Congress simply refers to factors that EPA must consider, without making them exclusive or giving them a specified weight. Is this statute therefore unconstitutional? Until the agency has undertaken the job of weighting?

(d) Alternatives

Perhaps it would be necessary to consider a such a conclusion if there were no alternative to the new nondelegation doctrine. But ordinary judicial review, suitably adapted to this context, offers some promising approaches, as we will soon see. And in the extreme cases, the old nondelegation doctrine would be the best route to follow. In fact *International Union* was the strongest case within memory for judicial invalidation of a statute on nondelegation grounds. The “reasonably necessary or appropriate” language offered no guidance at all, and unlike in *Amalgamated Meat Cutters*, there was, in the statute’s background, no context that could have disciplined the discretion of the agency. If the court had sought to avoid constitutional doubts, *International Union* might have been the

they are assigning a price to their child’s (statistical?) life when they decide whether to put their child in the backseat of the car. There is a kind of moral taboo in explicit cost-benefit analysis, at least with respect to people’s lives. The moral taboo may be a form of irrationality; or it may be a kind of overgeneralization of otherwise sound (or at least salutary) moral intuitions. In any case it should not be surprising to find that law is based on those moral intuitions. Very predictably, elected officials will sometimes require cost-benefit balancing, but they will leave questions of valuation to bureaucrats. The second question has to do with the legal status of such provisions.

²²⁷ See Randall Lutter and Christopher DeMuth, *Ozone and the Constitution at EPA, On the Issues* (July 1999), at 3.

occasion, not for an invitation to the agency to choose an interpretation of its liking, for an authoritative judicial interpretation requiring OSHA to engage in cost-benefit balancing. The court might have so concluded on the ground that “reasonably necessary or appropriate” is far more of a balancing provision than the more specific toxic substance provision, and on the further ground that an interpretation to this effect would have had the advantage of preventing the agency from having the discretion to choose from one of a large number of interpretations of the Act. Certainly this approach seems preferable to a remand to the agency on nondelegation grounds. And as we will see, judicial efforts to require quantification—express identification of risk levels—and to elicit relevant value judgments could accomplish most of the goals of the new nondelegation doctrine without bringing out constitutional artillery at all.

Indeed there is a large puzzle at the heart of *American Trucking*. Why didn’t the court simply construe the Act so as to create floors and ceilings, and then hold that the EPA’s decision was not adequately justified, and therefore must be remanded, because of the failure to explain why one level rather than another had been chosen? The most plausible answer is that the Court sought not simply to invalidate an inadequately explained regulation, but to send the agency a stronger and more global signal, to the effect that any regulation must be defended, on pain of constitutional invalidity, by reference to a close, quantitative explanation of why it is superior to the alternative. But as a constitutional doctrine, this seems implausible. Congress frequently asks agencies to consider a set of factors.²²⁸ Is agency action pursuant to such statutes violative of the

²²⁸ See, e.g., The Emergency Petroleum Allocation Act of 1973, 15 USC 753(b)(1), emphasizing that “to the maximum extent practicable,” the agency should “provide for” no fewer than eight factors, including protection of public health, economic efficiency, maintenance of exploration and production of fuels, equitable distribution of crude oil and petroleum products, and many more. (The statute is discussed as typical in Kenneth Culp Davis and Richard Pierce, *Administrative Law Treatise* 69 (3d ed. 1994). See also, e.g., 42 USC 9622 (f)(4) (listing seven factors as basis for presidential assessment of whether to provide a covenant not to sue); 42 USC 9651 c (2) (providing, as guidelines for regulations determining natural resource damages, that the President should “identify the best

Constitution until the agency has turned the factors into something like a rule? That would be an implausible conclusion.

B. The Place of the Nondelegation Doctrine in Administrative Law

None of this means that the nondelegation doctrine deserves no place in administrative law. Indeed, some of the arguments thus far suggest a far from trivial role for the doctrine.

- *Invalidations in extreme cases.* In the most extreme cases, open-ended grants of authority should be invalidated. *Schechter Poultry* was rightly decided, for the statute did not discipline executive authority, and indeed it operated as a grant of lawmaking power to private groups. And it would not have been at all implausible to conclude, in *International Union*, that if Congress is asking a regulatory agency to reduce occupational risks, it should say something other than that standards should be “reasonably necessary or appropriate” to promote statutory goals. In fact the OSHA statute—outside of the area of toxic substances, where Congress added relevant detail²²⁹—was a good candidate for invalidation on nondelegation grounds.

A Supreme Court decision to this effect could have some of the salutary effects of the *Lopez*²³⁰ decision in the commerce clause area, offering a signal to Congress that it is important to think with some particularity about the standards governing agency behavior. There should not be many such cases; but an occasional signal is highly desirable. It follows that if the Clean Air Act did indeed authorize the EPA to “pick any point between zero and a hair below . . . London’s Killer Fog,” the court would have been right to say that it was invalid. The problem was that this was an implausible construction of the Act.²³¹

available procedures . . . and shall take into consideration factors including, but not limited to, replacement value, use value, and ability of the ecosystem to recover”).

²²⁹ See 29 USC 655(b)(5) (referring, inter alia, to requirement that regulations must be “feasible.”)

²³⁰ *United States v. Lopez*, 115 S Ct 1624 (1995).

²³¹ See below.

- *Statutory construction.* In other cases, the nondelegation doctrine is an appropriate tool of construction: As between an open-ended and less open-ended understanding of agency authority, the less open-ended interpretation should be preferred. The most famous example is *Kent v. Dulles*,²³² where the Court narrowed a seemingly broad grant of authority to the Secretary of State, forbidding him from refusing a passport to a member of the Communist Party. As we will shortly see, the nondelegation doctrine is part of what justifies a narrowing construction of the Clean Air Act, one that gives the agency limited room to maneuver.

Indeed, many statutes are sensibly construed to limit agency discretion, even if their terms are broad, for the context reasonably suggests that the agency is not permitted to do whatever it wishes. Consider, for example, the *Amalgamated Meat Cutters* case. As I have suggested, the best approach here would have involved a recognition that the statute was designed to meet the perceived problem of “cost-push” inflation. So understood, Congress hardly meant to give the President the authority to set wages and prices however he chose. This would be a truly bizarre reading of the statute, taken in context.²³³ The President should be required to justify any wage and price freezes in statutorily relevant terms, a requirement that should go a long way toward alleviating the underlying concerns, which had to do with political favoritism. This is the conventional approach to the Federal Trade Commission Act (banning unfair trade practices²³⁴) and (with a little more difficulty) to the Federal Communications Act, whose key terms (“public interest, convenience, and necessity”) are not understood to allow the FCC to give and deny licenses on whatever terms it likes.²³⁵

²³² 357 U.S. 116 (1958)

²³³ Compare the delegation to Hitler; this was a genuine effort to allow Hitler to rule in his discretion. See Currie, *supra* note.

²³⁴ See Schechter Poultry at 499.

²³⁵ See, e.g., *Syracuse Peace Council v. FCC*, 867 F.2d 654 (DC Cir 1989); *Central Florida v. FCC*, 683 F.2d (DC Cir 1982).

- *Democracy-promoting minimalism: clear statement principles as nondelegation doctrines.* Perhaps most important, the nondelegation doctrine is alive and well, but it operates under another name: “clear statement” principles, or what we might understand as “nondelegation canons,” occupying the contemporary position of the old nondelegation doctrine.

Often courts say that statutes will not be interpreted to allow agencies to engage in certain conduct unless there has been a clear statement of authorization from Congress. For example, it seems to be clear that agencies cannot apply statutes extraterritorially without an express legislative decision to that effect, and courts will not understand statutes to raise serious constitutional questions until Congress has made clear its intention to do so; so too, statutes are not lightly taken to preempt state law.²³⁶ These ideas are best understood as narrower and more targeted versions of the nondelegation doctrine. Unlike the standard version of that doctrine, they do not say that Congress must legislate clearly; they do not result in the invalidation of any statute. But they do so that agencies will not be able to move statutes in certain contested directions on their own. Only a deliberate and specific decision from the national legislature will suffice. By requiring Congress to legislate with particularity on certain topics, clear statement principles serve the same function as the nondelegation doctrine. And they do so with respect to subjects that particularly seem to call for legislative rather than executive judgments.

There is a further point. The nondelegation canons require congressional lawmaking, and in that sense they are connected with Article I goals, but they pose far less serious risks than the old doctrine. Where the old doctrine runs into serious institutional problems, partly because of the difficulty of drawing principled lines between too much and too little delegation, the nondelegation canons are quite simple to apply. Because of they do not require courts to decide hard questions of degree, and

²³⁶ See *EEOC v. Arabian American Oil*, 499 US 244 (1991) (extraterritoriality); *Muscagee Nation v. Hodel*, 851 F.2d 1439 (DC Cir 1988) (construction in favor of Native Americans); William Eskridge, *Dynamic Statutory Construction* (citing numerous canons).

apply in a restricted domain, they impose far less strain on the judicial role. And where the old doctrine might be criticized as a potential source of danger to the fabric of national institutions, the nondelegation canons pose no such risk. They do not require general clarity from Congress; they mean only that where sensitive rights or interests are involved, Congress, rather than agencies, must make the central choices.

It is especially striking that these “little” nondelegation principles trump agency interpretations of law, even in the post-*Chevron* era, which grants agencies a high degree of law-interpreting power.²³⁷ Agency interpretations of ambiguous provisions do not prevail in the face of a clear statement principle, whose point is to ensure congressional rather than merely executive deliberation on the question at hand. Thus understood, the clear statement principles are a paradigmatic form of “democracy-promoting minimalism.” They reflect a cautious judicial role, one that does not preempt democratic processes but instead attempts to fortify them, by ensuring that certain sensitive questions receive explicit and sustained attention from the national legislature.

C. Why the Clean Air Act is Constitutional (and What It Means)

All this helps identify the basic question that must be answered in order to decide whether the Clean Air Act is constitutional: Does the Act authorize the EPA to set standards at whatever level it wishes? Or does it set ceilings and floors?

In answering this question, courts appropriately do whatever might reasonably be done to avoid invalidating the Act—a natural application of the general idea that whenever possible, statutes should be construed so as to be constitutional.²³⁸ The central issue is

²³⁷ See, e.g., *Edward J. DeBartolo Cor. V. Florida Gulf Copast*, 485 US 568, 575 (1988); *Miller v. Johnson*, 515 US 900, 923 (1995) (refusing to defer to agency interpretation because of constitutional doubts); *Williams v. Babbitt*, 115 F.3d 657, 661 (9th Cir 1997); *Boston and Maine Corp. v. ICC*, 911 F.2d 743 (DC Cir. 1990).

²³⁸ See, e.g., *Kent v. Dulles*, 357 US 116 (1958). For a similar sentiment for an enthusiast for the nondelegation, see Ernest Gellhorn, *Returning to First Principles*, 36 *Am Univ L Rev* 345, 352 (1987): “[T]he nondelegation doctrine

therefore one of statutory construction. In fact it is entirely possible to generate an interpretation of the statute that survives constitutional scrutiny. The most reasonable interpretation is that EPA's health-based judgment (a) cannot call for regulation of small or trivial risks (such regulation would not be "requisite to protect the public health"), and (b) must call for regulation of risks that are serious and substantial. Thus if the residual risk of a pollutant is trivial or de minimis—if, for example, the risk involves minor respiratory problems but no more than that—then EPA is not obligated to regulate it. Indeed, EPA regulation of a trivial or de minimis risk should be held unlawful, on the ground that such regulation is not requisite to protect the public health, even with an adequate margin of safety. If EPA seeks to reduce exposure to ground-level ozone below a level that already ensures protection against all serious risks faced by substantial numbers of persons, it is acting unlawfully.²³⁹ On the other hand, EPA is required (not merely permitted) to regulate any substantial or significant risk. If, for example, 10,000 people are likely to die each year as a result of exposure to a certain level of lead, EPA must act; it is not authorized to allow that level of risk.

These points go a long way toward creating floors and ceilings and resolving the polar cases. Suppose, for example, that existing evidence shows increased mortality risks from sulfur dioxide at levels above .8 ppm, and increased hospital admissions at levels about .6 ppm, but no mortality risk from sulfur dioxide levels below .4 ppm, and no increase in hospital admissions below .4 ppm—and also that there is chronic plant injury at .1 ppm, and that respiratory problems increase among a small, sensitive subpopulation at .15 ppm. On the facts as stated, EPA's discretion is confined. It could not issue a primary standard above .6 ppm or so, and it could not issue a standard below .5 ppm or so—unless it could make extrapolations from the evidence that would suggest a substantial risk at lower levels. Of course this is a stylized and artificial example, and often

should be applied only as a second, perhaps last resort. Initial consideration should be given to reading the statutory authority of the agencies and the President more narrowly if the language permits."

²³⁹ Indeed there is a reasonable argument that this was the case for the ozone regulation at issue in *American Trucking*. See *supra*.

the evidence will allow a range of reasonable judgments. But that is a product of the uncertain science, not of any constitutional defect in the statute. Indeed, EPA itself has asserts that on the evidence, it was required to set the ozone standard somewhere between .07 ppm and .09 ppm—a statement that, if true, is decisive on the nondelegation question.

The approach I am suggesting—one that would understand the Act to create ceilings and floors—raises several questions of its own. It might be asked how the Act supports a distinction between trivial and significant risks; isn't this an invention of interpretation, rather than a legitimate reading of the Act? To be sure, the Act does not explicitly make such a distinction, but an interpretation to this effect is far from unnatural and indeed a good deal more compelling than the plurality's similar interpretation of OSHA in the Benzene case,²⁴⁰ Surely such an interpretation should be favored if it is necessary to prevent the Act from being a blank check to EPA.

It might also be stressed that this interpretation continues to allow EPA a large deal of discretion; for reasons stated by the *American Trucking* court, isn't the statute unconstitutional even as construed, at least unless and until the EPA can give more specificity to notions like "substantial" and "trivial"? The answer is that the court was quite wrong on this point. The most important precedent here is the Benzene Case itself. The OSHA statute, as construed by the Supreme Court, requires the agency to regulate "significant" risks to the point of "feasibility," and neither term is defined in the statute. This does not mean that the statute is unconstitutional until OSHA particularizes those terms. What it does mean is that any agency decision is subject to invalidation on grounds of arbitrariness

²⁴⁰ The basic problem for the plurality is that there was no statutory source for the "significant risk" requirement in the OSHA Act. This was a judicial invention, designed to make sense rather than nonsense of the law. See 448 US at 607. By contrasting, the Clean Air Act's requirement of standards that are "requisite to protect the public health" and based on the underlying scientific "criteria document" is quite naturally taken to require the agency not to permit serious risks, while requiring the agency not to regulate small risks. Of course the *American Trucking* court's concern was "how serious is serious?"—a legitimate question, but one best handled via conventional judicial review, as explained below.

if the agency has not adequately explained itself. The upshot: this, not delegation, was the fundamental problem in *American Trucking*.

My basic conclusion is that the nondelegation doctrine should be used in the most extreme cases; that the Clean Air Act is not such a case; that the doctrine properly plays a role as a tool of statutory construction, emphatically with the Clean Air Act; and that the work done by the court under the rubric of the nondelegation doctrine is more reasonably done under review of agency action for arbitrariness. It is now time to turn to the questions that remain—questions that are not constitutional in status, but that are extremely important nonetheless.

VIII. Options, Futures, and Clean Air

[A]n agency wielding the power over American life possessed by EPA should be capable of developing the rough equivalent of a generic unit of harm that takes into account population affected, severity and probability.

American Trucking Association v. EPA²⁴¹

At the rate of progress permitted by . . . judicial decisions, the EPA and OSHA could not possibly perform their statutorily assigned missions through use of rulemaking in less than several centuries.

Richard Pierce²⁴²

A. *EPA on Remand: Ceilings, Floors, and “Benefits Analysis”*

1. *The problem*

I have emphasized that notwithstanding its commendable detail about the underlying evidence, the EPA’s explanation of its rule leaves much to be desired. This is not uncommon for agency explanations in the area of safety and health; similar problems can be found in the OSHA context and also in EPA action under other statutes.²⁴³ The agency’s extensive discussion is abstract and

²⁴¹ American Trucking Association v. EPA, 175 F.3d 1027 (DC Cir. 1999).

²⁴² Richard Pierce, Seven Ways to De-Ossify Agency Rulemaking, 47 Ad L. Rev. 59 (1995).

²⁴³ See Corrosion Proof Fittings v. EPA, 847 F.2d 1201 (1991), where the court rightly found a number of unanswered objections to an agency rule banning asbestos—a rule that would probably have produced far more gain than harm on balance. (No one contradicted the agency’s conclusion that the rule would have

conclusory on the key points. It does provide evidence that ozone and particulates can have adverse effects at current levels. But it does not give a sufficiently clear sense of the level of those adverse effects, nor does it explain why the particular, selected regulation was optimally suited to new information about health effects. The most informative document is the agency's regulatory impact analysis, which could be used as the basis for a simple statement of the anticipated benefits of increased regulation at various levels.

The resulting problems have both technocratic and democratic dimensions. Without specification of the range of benefits to be anticipated from various approaches, there is a weak role for sound science in standard-setting. The best that science can do is to give a range of likely health and welfare gains from alternative initiatives, and the proper role of technocratic factors cannot be served if the EPA speaks in vague, conclusory, or wholly qualitative terms. What is necessary is to have some sense of the magnitude of gains from competing approaches. From the democratic point of view, what is missing is an opportunity for the public, first, to have a sense of those gains, and second, to be able to receive an account of why the government has chosen one set of gains rather than another. Any particular choice reflects an important social judgment; officials should be clear about the values that underlie that choice.

2. Toward benefits analysis

By way of response, I suggest that in issuing national ambient air quality standards, EPA should endeavor to provide a detailed "benefits analysis," designed to strengthen both technocratic and democratic forces. In order to improve the role of science, the benefits analysis should attempt to describe, in both qualitative and quantitative terms, the various savings from the selected regulation and at least two alternatives, one more stringent, the other less so. This is an effort to strengthen the role of technocratic forces by

saved well over 300 lives per year at a reasonable overall cost.) The court's decision eliminated the asbestos regulation, a ten-year effort, and seems in the process to have brought EPA's rulemaking efforts under the Toxic Substances Control Act to a complete halt. Cf. Jerry Mashaw and David Harfst, *supra* note (finding similar systemic effects of judicial review). A possible answer to this problem would have been for the court to remand without vacating the rule.

ensuring that EPA is acting pursuant to a clear understanding of the health and welfare effects of reasonable options, In the process EPA should identify the residual risk left, under alternative approaches, by the pollutant in question and explain why that residual risk is not above the level “requisite the protect the public health.” The EPA should thus take steps to identify the size of the population affected, the severity of the various risks, and the likelihood that members of any particular group will suffer the relevant effects. To the extent possible, it should attempt to quantify each of these items.²⁴⁴ It might say, for example, that forty million people are at risk, that ten million of these people are under the age of eighteen, that five million are over the age of sixty, that there is a 1/1000 chance of cancer as a result of exposure, and that the relevant risks range from respiratory problems to hospitalization and missed work-days to cancer (each of which might be quantified; see Table 2).

The EPA should also explain why one set of savings, thus quantified, justifies regulation, whereas other sets of savings do not. Here there is an inevitable judgment of value, and no purely technocratic exercise. EPA might conclude, for example, that one approach leaves an excessive risk to health, because it would result in between 500 and 1500 annual deaths as compared with the chosen approach—whereas another initiative would go beyond the level required to protect the public health, because it would result in between 0 and 150 annual deaths, most of them involving the elderly. This is an effort to strengthen democratic forces in regulation, by ensuring that the relevant value judgment is made publicly and exposed to democratic view.

EPA should also attempt to reduce its own discretion by showing that at least as a presumption, risks above a certain level will not be tolerated (“risk ceilings”) and that risks below a certain level (“risk floors”) will be acceptable. It should, in short, explain why a

²⁴⁴ An argument against quantification is provided in Heinzerling, *supra* note, at 2042-2069. Even if we accept Heinzerling’s argument against the form of monetizing quantification that is embodied in cost-benefit analysis, it is far from clear that the argument has weight against an attempt quantify (rather than to monetize) benefits. For an argument in favor of both qualitative and quantitative presentations, see Cass R. Sunstein, *Cognition and Cost-Benefit Analysis*, *J. Legal Stud.* (forthcoming 2000).

standard for ozone of 0.08 is to be preferred to a standard of 0.09 or 0.07, and do so by reference to generalizable criteria. If—as seems clear—the risks prevented by the new ozone regulation are far smaller than the risks that would be prevented by more stringent regulation of particulates, EPA should explain the apparent anomaly in terms of statutorily relevant factors. A chief advantage of this approach is that it should ensure inter-regulation consistency, in such a way as to combat, simultaneously, interest-group power, public torpor, and public over-reaction with respect to certain pollutants. I return to this point shortly.

3. Difficulties, uncertainty, contentious assumptions

A proposal of this kind raises several problems. An obvious difficulty is connected with specifying the set of alternatives. Any agency could “frame” the alternatives so as to make its own choice seem plausible, even inevitable. In the context of ozone, for example, the choice of .08 would have seemed entirely reasonable if EPA had compared that option to .12 (much worse on health grounds) and .04 (regulating apparently trivial risks). Thus it is necessary to ensure that the alternatives be reasonable ones—that they be within the domain, or “strike zone,” indicated by the scientific evidence. The CASAC recommendations provide a great deal of help here. They specify the range of options that experts consider plausible, and if EPA compares its choice to both more and less stringent alternatives within the approximate domain suggested by CASAC, the problem of “framing” should be adequately addressed.

Of course any analysis of expected benefits will depend on contentious assumptions. The most serious problem here is that in many cases, scientific uncertainty will confound any attempt to quantify with anything like precision. In these circumstances EPA’s real question is one of timing: Does it act now, or does it wait until the scientific information provides more clarity with respect to health effects? Inaction would create potential problems, possibly even a significant number of preventable deaths; but action could create problems too, in the form of high costs for trivial health benefits. This is certainly a plausible reading of the situation with respect to both particulates and (especially) ozone; in both cases we do not know enough to assign specific numbers to different exposure

levels. When existing evidence does not justify any particular number, then EPA should do the best that it can to specify a reasonable range. (See Appendix for examples, taken from the RIA.) But scientific uncertainty is not the only problem. A projection of benefits must depend on a baseline about what would have happened without regulation, and might also require use of the contingent valuation method, for which estimates are highly vulnerable to the nature of the particular questions asked.²⁴⁵ Perhaps most important, the estimate of benefits will turn partly on the discount rate for future savings; a discount rate of 8% will produce very different numbers from a discount rate of 2%.²⁴⁶ In these circumstances, the benefits analysis should be clear about the assumptions chosen, and should indicate the range of benefits and the numbers that would emerge from different assumptions.

In terms of intergovernmental design, it makes sense to ensure that the analysis of the rule, and the alternatives to the rule, are developed in conjunction with another institution in the executive branch, such as the Office of Management and Budget, which already plays a role of this sort under Executive Order 12866.²⁴⁷ The purpose of intergovernmental review of this kind would be to ensure a form of internal “peer review,” designed to overcome possible biases and errors on the part of any particular bureaucracy. An external check is well-suited to accomplishing this goal.

4. An analogy: from health to the environment

²⁴⁵ See Lutter, *supra*, at 6-10.

²⁴⁶ See Heinzerling, *supra* note.

²⁴⁷ 3 CFR 638 (1993).

A promising approach to the evaluation of benefits comes from the health field, where much attention has focused on evaluating preferences for healthy conditions (or aversion to unhealthy ones) in terms of what are called quality-adjusted life years ("QALYs").²⁴⁸ A QALY is a measure of health based on people's attitudes toward various conditions. It rejects the concept of monetary evaluation of health; instead, it focuses on how people value various health states. It seeks to generate a means of comparing various states of health through a single metric, so that comparisons and trade-offs can be made for public policy purposes. The measure attempts to take into account both quantitative benefits of health improvement, such as increase in life expectancy, and more qualitative improvements, such as quality-of-life benefits.

The QALY approach works by asking people through interview techniques to express their strength of preference for various health states. The most advanced methods disaggregate the process by asking people to describe how they would value a health improvement along several dimensions: mobility, physical activity, social activity, and the kinds of symptom effects involved.²⁴⁹ The answers to these questions are combined into a single scale, ranked 0.0 (for death) to 1.0 (for optimum functioning). The result is an index of utility for health states measured on an interval (or cardinal) scale. By independently determining the cost of various treatments and their likely outcomes, researchers can suggest a cost per QALY of various public programs. Alternative programs can be ranked in what is essentially a utility-based cost-effectiveness scale.²⁵⁰

²⁴⁸ The measure was first described in Richard Zeckhauser and Donald Shepard, *Where Now for Saving Lives?*, 40 *L. & Contemp. Probs.* 5 (1976).

²⁴⁹ An important work in the development of these multidimensional measures is Robert M. Kaplan and James W. Bush, *Health-Related Quality for Life: Measurement of Evaluation Research and Policy Analysis*, 1 *Health Psych.* 61 (1982). For a general survey of QALY approaches, see George W. Torrance, *Measurement of Health State Utilities for Economic Appraisal: A Review*, 5 *J. Health Econ.* 1 (1986). For a more recent general discussion, see *Valuing Health for Policy* at 118-36.

²⁵⁰ An important advantage of the QALY method is that it eliminates the distribution-of-income problems of other methods. The QALY approach rests on a strict egalitarian premise; the value of various states of health should be

In the context of the Clean Air Act, it makes little sense to engage in surveys about how people rank various health risks. In the governing RIA, EPA has already attempted to measure willingness to pay to reduce various risks (see Table IV, Appendix), and it could easily adapt these figures to generate numbers for overall risk reductions, defined in terms of quality-adjusted life years. Lives saved might, for example, be converted into a life-years saved number, and to this EPA could add various numbers representing the other health gains to be brought about by the regulation. The approach to particulates might be compared to, and squared with, the approach to ozone, and these approaches might also be rationalized with existing regulation of lead, sulfur dioxide, nitrogen oxides, and carbon monoxide (see Appendix).

5. Toward a (new) common law of regulatory protection

Through such a route EPA could begin to develop what it should have provided at least a decade ago: a common law of public health protection. This would reflect a system of judgments indicating when a given set of harms are sufficient to trigger additional regulation, and also when a set of harms is too trivial to count as a legally cognizable public health problem. And eventually it should be possible to have quite disaggregated data, showing the geographical areas in which health problems are most concentrated. For example, the health risks of lead were concentrated in the inner city²⁵¹; the same may well be true of particulates. If this is so, a careful “benefits analysis” could pave the way toward an understanding of where regulatory activity would accomplish the most good, in a way that would diminish some of the problems associated with a nationally uniform policy. Such an approach could also help to invigorate local processes for environmental protection,

independent of the economic status of the particular people in those states. Willingness to pay and contingent valuation treat health like any other market commodity, while QALY approaches view health as a distinct good that should be distributed according to a nonmarket logic. Costs are still relevant, of course, but they are not brought in at the level of individual decisions.

²⁵¹ See Melnick, *supra* note, at 112-120.

so as to allow a higher degree of coordination between the national government and states and localities.²⁵²

This final point raises a general question about the content of any such common law: the status, for purposes of law and policy, of *inter-regulation inconsistency*. Suppose, for example, that the EPA leaves a much higher residual risk for particulates than for ozone, as indeed it plainly appears to have done here.²⁵³ Is this indefensible, or even unlawful? As we have seen, one of the virtues of the approach suggested here is that it attempts to promote consistency in the rulemaking process, in such a way as to reduce the power of well-organized private groups. It might seem to follow that if EPA allows a much higher residual risk for one substance than for another, it should be vulnerable on judicial review; and so too if it allows a much lower residual risk for a particular pollutant. This does indeed follow. The question is whether EPA can defend apparent inter-regulation inconsistency in statutorily relevant terms (as, for example, by showing that children are at particular risk from one or another problem). If it cannot, it has acted unlawfully.

There is a still broader point in the background here. The case for clear standards is strongest in a “mass justice” situation—a context in which an agency must decide a wide range of cases. In such situations, standardlessness is unacceptable, a recipe for abuse, for the unequal treatment of the similarly situated.²⁵⁴ When an agency is making a one-shot decision, or two or three decisions, the argument for binding standards is less insistent. The point helps explain the decision of the court of appeals in *American Trucking*, where two regulations were before the court, not easily reconciled with one another, and where many years of NAAQS decisions make the situation resemble more closely a “mass justice” problem. In these circumstances, the proposal for “benefits analysis” is designed to ensure a set of relatively uniform and transparent standards, more suitable to the future of environmental protection, where the whole area will achieve a degree of maturity. The development of a

²⁵² See Charles Sabel et al., *After Backyard Environmentalism*, Boston Review (forthcoming 1999).

²⁵³ See Appendix.

²⁵⁴ See Jerry Mashaw, *Bureaucratic Justice* (1983).

common law of regulatory protection, generated in the first instance by agencies rather than judges, would be a crucial step in this endeavor.

B. Ordinary (Not Extraordinary) Judicial Review: Democracy-Promoting Minimalism in Practice

As I have suggested, conventional judicial review could have accommodated the *American Trucking* court's reasonable concerns. In order to explore how democracy-promoting minimalism might work, I suggest here that the appropriate approach would be to hold both regulations invalid on the ground that the agency did not adequately explain its choice of the particular levels that it prescribed. The most serious problem with this approach is that it threatens excessive judicial entanglement with the rulemaking process, in a way that would likely have unfortunate systemic effects, in the form of a powerful bias toward protecting the status quo. The best response to this concern is to choose one of the two recent innovations in judicial review of administrative action: allowing the agency to issue an interim rule, or (better still) remanding the regulations without vacating them.

1. Failing the hard look

A quite standard opinion would have invalidated the agency's rules on the ground that there was an insufficiently clear explanation of the key policy decisions. On this view, the problem was not one of delegation, but of a lack of clarity about why lines were drawn exactly where the EPA drew them. Why did the EPA choose 0.08 ppm rather than 0.07 ppm, or 0.06 PPM? The difficulty of answering that question in concrete terms would have justified a remand to the agency.

This approach might be generalized. It could apply, for example, to a judgment of OSHA that a regulation is necessary to address a "significant risk," or to an administrative decision to proceed against an "unreasonable risk." In such cases, courts might require agencies to quantify the problem that they are attempting to reduce, and explain why they chose the approach at issue rather than one more or less stringent. A simple requirement of this kind might strengthen the hand of technocratic and policy-analytic forces in the

regulatory state, thus weakening the hand of self-interested private groups, and also promote transparency about the relevant value judgments.

2. Surviving a softer look

A conventional opinion, more deferential to the agency and also reasonable, might have upheld both the ozone and the PM standards, on the ground that neither had been shown to be arbitrary or capricious, because the agency sufficiently explained why the risk was less severe below the standard it set, and also why the risk was too severe at any point above that standard. The agency did show that significant risks could be expected, especially from particulates, where thousands of people, on a reasonable view of the evidence, were at risk each year. To be sure, significant challenges were made to the science underlying both decisions. But the record contained substantial support for the EPA's particular choices—at least enough support to satisfy a court engaged in the ordinary scrutiny of EPA decisions. This approach might also be generalized. For example, a court might uphold OSHA action so long as the agency has explained why a particular risk is significant and explained, at least in broad terms, why it did not select a more or less stringent alternative.

3. The problem of ossification and the tyranny of the status quo revisited

Both of these opinions would have been entirely responsible, and the choice between them, both for the case at hand and for future approaches to judicial review, is very close. If the second is to be preferred, it is not because the EPA was necessarily doing its job well, but for reasons that go to institutional competence and that involve the harmful systemic effects of the seemingly innocuous, one-shot remand.

With respect to institutional competence: The EPA is of course accountable to the President, and environmental issues tend to be highly visible and well-ventilated publicly—as well ventilated, perhaps, as any other issue of regulatory policy. Certainly the PM and ozone rules were subject to high degree of public scrutiny. At the same time, these are technically complex questions on which EPA has a strong comparative advantage over the judiciary. If there is a clear blunder, or a judgment that does not depend on a

reasonable assessment of the scientific evidence or (where the evidence leaves gaps) a reasonable and articulated judgment of value, of course the court should interfere. But otherwise it should not.

With respect to systematic effects: A great deal of attention had been paid to the phenomenon of the “ossification” of notice-and-comment rulemaking,²⁵⁵ and indeed a high priority, for the future of administrative law, is to devise means to overcome the problem. Originally intended as a quick and effective alternative to formal, on-the-record rulemaking, executive and especially judicial innovations have converted notice-and-comment rulemaking into an exceptionally time-consuming affair, often consuming many years, frequently half a decade and more. In fact the EPA estimates that informal rulemaking typically takes five years.²⁵⁶ Consider, for example, the fact that the EPA’s only rulemaking under the Toxic Substances Act, involving asbestos, cost millions of dollars and over a decade—and that the rule that emerged was eventually struck down as inadequately justified.²⁵⁷ Aggressive judicial review contributes to these delays, and when the result is to remand a rule, the ultimate consequence can be to discourage rulemaking altogether. The impressive study of Mashaw and Harfst shows that the National Highway Traffic Safety Administration has come close to abandoning rulemaking, largely because of the problems introduced by “hard look” judicial review.²⁵⁸ Instead of rulemaking, NHTSA acts largely by after-the-fact recalls, to which courts are far more sympathetic. It is far from clear that American drivers are better off with this shift. Nor is this an isolated example. Something similar appears to have happened with the Consumer Safety Administration, and the EPA seems to have abandoned enforcement of the Toxic Substances Control Act, largely as a result of intense judicial scrutiny of EPA activity.²⁵⁹

²⁵⁵ See McGarrity, *supra* note; Mashaw and Harfst, *supra* note.

²⁵⁶ Carnegie Commission, *Risk and The Environment* 108 (1993).

²⁵⁷ See Pierce, *supra* note, at 61.

²⁵⁸ See Mashaw and Harfst, *supra* note.

²⁵⁹ See *id.*; see also Pierce, *supra* note; Kenneth Culp Davis and Richard Pierce, 1 *Administrative Law Treatise* 372-73 (1994).

Now we cannot conclude that a certain judicial role is inappropriate simply because it leads to agency inactivity. Perhaps it is good for exactly that reason. The problem is when strict judicial supervision has the effect of freezing the status quo, whatever the status quo happens to be. This is an unintended systemic effect of hard look review. Particular judges, reviewing particular rules, can be made alert to particular problems in those rules, especially when the rules are under attack by experienced, inventive lawyers. For some rules, it is easy to imagine seemingly decisive objections from both sides—as public interest lawyers show, quite convincingly, why a certain rule should have been made more stringent, and as industry lawyers show, with respect to the same rule, why greater leniency was legally mandated. Nor is this fanciful; something of this kind has happened on several occasions in the “hard look” era.

There is no simple cure for the problem, especially in light of evidence that hard look review has often accomplished considerable good. But it makes sense to say that in the absence of a violation of statute, courts should not invalidate regulations unless the objection goes to the heart of the agency’s conclusions—unless there has been a quite serious error of analysis, or there is good reason to think that the rule will make things worse rather than better in light of statutorily relevant criteria. Of course advice of this sort will not decide concrete questions. But it suggests serious problems with invalidation of the EPA’s ozone and particulates regulations.

4. Procedural innovations: administrative law minimalism

Thus far a court might seem to be in equipoise between two reasonable alternatives: a decision to uphold the regulations on the grounds just stated, and a decision to invalidate them on the theory that the agency offered no clear explanation of the particular level it chose. The choice between the alternatives might turn on assessment of the systemic effects of one or another course. The danger of invalidation is that it could greatly delay this or any other EPA rulemaking, in a way that would cause a powerful status quo bias, one that could not be defended. The danger of validation is that it would allow EPA rules that have not been persuasively defended and that might do less good than harm.

But two recent procedural innovations help resolve the dilemma, and point the way to a sensible resolution of the case. Courts of appeals now appear prepared to allow agencies to issue “interim rules” on remand,²⁶⁰ so as to ensure against the harm that may come from returning to the pre-rule status quo; and courts are also prepared, in appropriate circumstances, to remand rules without vacating them.²⁶¹ The “interim rules” approach makes best sense when the agency can show that without such rules, people will face serious risks of one kind or another; the “remand without vacating” approach makes best sense when it can also be shown that the agency may well be able to justify its action on remand. Both of these ideas are designed to ensure that rules that are highly likely to be reasonable are not struck from the books, in a way that could produce considerable harm. Properly understood, they do not allow agencies to proceed with inadequately justified rules if it appears unlikely that those rules could be lawfully explained, or if it appears that little will be lost with invalidation.

Hence we arrive at an appropriate approach to these cases, one with general application: The rules should be held unlawful, and remanded to the agency; but they should not be vacated, at least when the agency can show (a) that it may be able to generate a justification that will satisfy judicial review and (b) that invalidation of the rule may generate significant risks (by, for example, allowing people to be exposed to nontrivial dangers, or by preventing the agency from initiating a program for reducing such risks).²⁶² After

²⁶⁰ See *Chemical Manufacturers v. EPA*, 28 F.3d 1259 (DC Cir 1994); *Checkosky v. FCC*, 23 F.3d 452 (DC Cir 1994); *Mid-Tex Electric Cooperative v. FERC*, 822 F.2d 1123 (DC Cir 1987); *Pierce*, supra note.

²⁶¹ *Id.*; *Idaho Farm v. Babbitt*, 58 F.3d 1392 (9th Cir 1995); *AMA v. Reno*, 57 F.3d 1129 (DC Cir 1995); *Davis County v. EPA*, 108 F.3d 1454 (DC Cir 1997); *Allied Signal, Inc. v. NRC*, 988 F.2d 146 (DC Cir 1993) (announcing that court will not vacate rules because of inadequacy in agency reasoning if agency has a serious possibility of correcting the deficiency on remand and vacation may be disruptive);

²⁶² Some support for the agency’s choices, to be sure not decisive, comes from the fact that California made quite similar decisions not less than a decade ago. See James Lents, *A Review of National Ozone and Particulate Matter Air Quality Standards In Light of Long-Standing California Air Quality Standards*, 11 *Tul. Env’t. L. J.* 415 (1998).

the agency attempts to justify its regulation on remand, its decision may be appealed to the court, which can evaluate the new justification and uphold or invalidate the regulation as appropriate. An approach of this kind seems especially sensible for the particulates regulation, which is designed to counteract what, on a reasonable reading of the evidence, count as quite serious risks to life and health. The problem with invalidation is that it would require the agency to start largely from scratch, a process that may require years or more of rulemaking activity. A remand without invalidation would allow the agency to proceed if (as appears quite possible) the regulation can be adequately defended by reference to the criteria I have outlined. Things are more difficult for ozone, because the risks are far lower, and for a reason to be suggested shortly; but here as well, a remand without invalidation would probably be the best way to proceed.

There is a broader point in the background here. The techniques of remand without invalidation, and of allowing interim rules, can be seen as a form of administrative law “minimalism,” akin to judicial minimalism in constitutional law generally.²⁶³ Such techniques do no more than is necessary to resolve a case. Indeed, these forms of minimalism are democracy-reinforcing insofar as they attempt to ensure that agency decisions are based on grounds that are both transparent to the public and sufficient to justify the regulation in light of statutory criteria.

5. A health-health wrinkle

A difficult question, not addressed thus far, is raised by a particular claim with respect to EPA’s ozone regulation: that ground-level ozone has health benefits, and that these benefits were not taken into account by the agency. There is evidence that ozone reduces the risk of both cataracts and cancers.²⁶⁴ If taken into account, the health benefits of ozone may well be roughly equivalent to the health costs of ozone. But the EPA refused to consider those

²⁶³ See Cass R. Sunstein, *One Case At A Time* (1999).

²⁶⁴ See Randall Lutter, *supra* note.

health benefits. In an interesting application of “health-health” analysis, the court of appeals held that the refusal was unlawful.²⁶⁵

In general, it is right to say that agencies should be required to take account of the health problems sometimes produced by regulation designed to reduce health problems. This kind of health-health tradeoff can take many different forms.²⁶⁶ In typical cases, the regulation of one risk, like those associated with asbestos, may give rise to further risks as a result of the substituted products. The most adventurous claims for “health-health” comparisons arise when a costly regulation imposes health risks simply by virtue of its cost.²⁶⁷ If a regulation produces less employment and more poverty, it may result in worse health as well. But these are adventurous claims, because they depend on contentious projections about the disemployment effects of particular regulations.

For the ozone rule, the argument for taking those problems into account seemed especially insistent, for the claim was far from indirect, and there was nothing speculative or abstruse about the causal chain. If ozone protects against cancers and cataracts, it is possible that a regulation of ozone will cause serious health problems. The text of the Act is quite ambiguous on the point, and the court was wrong to say that it unambiguously required the agency to address the beneficial effects of some pollutants.²⁶⁸ But the court was right to hold that even if it was ambiguous, the agency interpretation was unreasonable. The rule was properly found inadequately explained on this ground, and it may well be that after remand, the agency will be unable to explain its failure to take account of the effects of ozone in combating cataracts and cancer.

C. Congress: Safety and its Cost

Should Congress amend the national ambient air quality provisions of the Clean Air Act? This is not the place for an

²⁶⁵ 175 F.3d at 1027.

²⁶⁶ See John Graham and Jonathan Wiener, *Risk vs. Risk* (1997); Cass R. Sunstein, *Health-Health Tradeoffs*, in Cass R. Sunstein, *Free Markets and Social Justice* (1997).

²⁶⁷ See *id.*

²⁶⁸ See 175 F.2d at 1027.

extended discussion of that question; but the analysis thus far suggests three possibilities.

1. How safe is safe enough?

As emphasized throughout, a crucial defect of the national ambient air quality provisions is that they seem to assume that whether air is “safe” can be assessed solely on the basis of the facts. The truth is that the facts might be able to show the degree of risk (at least within a range), but they cannot show whether any particular degree of safety is “safe enough.” Whether pollutants lack safe thresholds, “the paradigm of selecting a standard at the lowest-observable-effects-level and then providing an ‘adequate margin of safety’ is not possible.”²⁶⁹ The result of the statutory framework is to misframe the key question and also to give EPA little guidance for answering and asking that question. As we have seen, EPA has greatly struggled with the resulting difficulties.

Congress should amend the statute to identify the factors for EPA to consider in making the judgment about appropriate national standards. Congress might offer substantive guidance by saying, for example, that the EPA must consider risk severity, size of affected population, and likelihood of adverse effects at various exposure levels. On the procedural side, it might require EPA to identify, to the extent possible, the nature of the risks that it is reducing, and at the same time to attempt to quantify the relevant risk reductions. The strongest argument against an amendment to this effect is that it is unnecessary; if the EPA moved in the directions suggested above, it would essentially be interpreting the current statute as if it contained instructions of exactly this sort. But an amendment of this kind would at least provide a clear legislative signal, and move EPA judgments in the direction of greater transparency.

2. More flexible tools

We now know that significant cost savings can be achieved by using more flexible, market-oriented instruments.²⁷⁰ Sometimes,

²⁶⁹ See note *supra*.

²⁷⁰ See generally National Academy of Public Administration, *The Environmental Goes to Market* (1994).

however, the EPA does not choose such instruments even when it is legally authorized to do so.²⁷¹ It would make sense to amend the statute should require the EPA, wherever feasible, to use economic incentives rather than a “command-and-control” approach.²⁷²

It is clear that an approach of this kind could save substantial resources, and if the instruments are properly chosen, it should do so without at the same time compromising air quality goals.²⁷³ An effort to encourage the EPA to select less burdensome alternatives could send a desirable signal to attempt the least-cost methods of obtaining regulatory goals, and might in addition spur creative experimentation.

3. Costs and benefits

A possible lesson of EPA experience with national standards is that EPA should be required or at least permitted to consider costs when setting such standards. Indeed, it is not entirely clear that the statute should be construed to forbid cost-benefit analysis from EPA,²⁷⁴ though lower courts have unanimously concluded otherwise.²⁷⁵ If the Supreme Court does not reject the lower court’s view, it is worth giving serious consideration to a statutory change.

²⁷¹ See Gray, *supra* note.

²⁷² Cf. Statement of Jonathan Wiener Before the Committee on Governmental Affairs, March 8, 1995 (urging general amendment to allow agencies to choose incentive-based regulation).

²⁷³ See Robert Hahn and Gordon Hester, *Marketable Permits: Lessons for Theory and Practice*, 16 *Ecology LQ* 361 (1989).

²⁷⁴ After *Chevron v. NRDC*, 467 US 837 (1984), ambiguities in statute are to be resolved by the agency, and there is a good argument that the key provision of the Act is ambiguous. Recall that the statute requires standards to be set at a level “requisite to protect the public health,” and it is not unreasonable to say that that level is at least partly a function of the costs of the regulation. What level is “requisite” may well depend on the costs as well of benefits of getting there. Ironically, however, the view that the agency can choose, or fail to choose, cost-benefit analysis seems to aggravate rather than to diminish the old nondelegation doctrine, even though an agency choice of that kind would seem to satisfy the new nondelegation doctrine. See *Industrial Union*, *supra* (concluding that the nondelegation problem would be eliminated if OSHA chose cost-benefit analysis).

²⁷⁵ See note *supra*.

The basic reasoning here is straightforward. If a reduction from 0.8 to 0.7 would be a trivial expense, surely it should be required; if it would cost trillions of dollars, there had better be good grounds to believe in very substantial health benefits. A possible argument to the contrary is that national standards operate as aspirations, not ordinary law, and aspirations, at least, should be set on a health-only basis—not because there is a magic place where air quality is “safe,” but because it is valuable to obtain, and use, a technocratic judgment that people should have air quality of a certain specified sort.²⁷⁶ The problem is that it is impossible to assess “safety” in a cost-vacuum.

A better argument against an amendment to require cost-benefit analysis is that the statute, complex as it is, actually embodies a better accommodation of costs and benefits than would a statute that required cost-benefit analysis at the level of standard-setting.²⁷⁷ On this view, the optimal system is one in which EPA makes an initial, purely health-based judgment, and then the process of implementation allows costs to play a role at various stages, emphatically including an expectation that implementation will not be immediate and will in fact be a product of a continuing inquiry into whether compliance is worthwhile, all things considered.²⁷⁸ A possible virtue of this state of affairs is precisely the aspirational quality of the health-based standard, setting a target against which various state performances can be measured. The aspirational quality can also contribute to technology-forcing, an important and often

²⁷⁶ See the quotation from Administrator Browner, *supra*. Administrator Browner goes on to say: “While cost-benefit analysis is a tool that can be helpful in developing strategies to implement or nation’s air quality standards, we believe it is inappropriate for use to set the standards themselves. In many cases, cost-benefit analysis has overstated costs. In addition, many kinds of benefits are virtually impossible to quantify—how do I put a dollar value on reductions in a child’s lung function or the premature aging of lungs or increased susceptibility to respiratory infection?” Ironically, the Regulatory Impact Analysis required by President Clinton engages in monetization of just this kind. See Appendix.

²⁷⁷ This seems to be the conclusion of William Pederson, *Science and Public Policy: A Case Study of the Clean Air Act*, *Pace Univ. Law Rev.* (forthcoming 1999).

²⁷⁸ See Farber, *supra* note, for an illuminating discussion of this point.

highly desirable phenomenon in environmental protection,²⁷⁹ and a phenomenon to which cost-benefit analysis is, at least in practice,²⁸⁰ unlikely to contribute.

In the abstract, it is hard to know whether this argument is valid.²⁸¹ What is clear is that the statutory scheme, pragmatically defensible as it may be, is far from transparent, and provides a set of confusing signals to the American public.

IX. Conclusion

Whenever an agency issues a regulation designed to diminish risks to health, safety, or the environment, it should attempt to identify the gains sought by the particular regulation it has chosen, and it should compare these gains to those under at least two reasonable alternative regimes, one stricter and one more lenient. In this light, the most serious problem with the EPA's performance in issuing national air quality standards is that it usually fails to explain, in simple, concise terms, its decision to require a particular level of ambient air quality. Sometimes the EPA acts as if it were pursuing "safety" and ensuring "safe levels," without sufficiently acknowledging that for most pollutants, the serious question is what degree of safety. To its credit, the EPA invariably offers extensive discussions of the underlying data, demonstrating that there is a genuine health risk at current levels. But to the extent that it provides an explanation of its particular choices, the discussion often

²⁷⁹ Technology-forcing is not desirable if the costs of the forcing greatly exceed the benefits—if, for example, the new technology contributes little to air quality, but substantially increases prices and diminishes wages.

²⁸⁰ In principle, a competent cost-benefit analysis would include the costs of new technological developments, and indeed this issue is discussed in the particulates and ozone regulatory impact analysis. See RIA, *supra*, chapter 11. The problem is that government is likely to have very little information about the cost of technological innovation, and industry is likely to overstate those costs by a significant amount. See W. Kip Viscusi, *Fatal Tradeoffs* (1993) (discussing substantial overstatement of compliance costs).

²⁸¹ See the valuable recent article by James Krier, *On The Topology of National Standards in a Federal System—And Why It Matters*, 54 *Md. L. Rev.* 1226 (1995), a staunch and long-time defender of cost-benefit analysis for the Clean Air Act, who acknowledges the pragmatic possibility.

involves little more than evidence of nontrivial adverse effects at those current levels—evidence that may well argue for a reduction from current levels, but does not by itself call for any particular regulatory standard.

In this Article I have argued that EPA (and other agencies involved in similar tasks) should offer a detailed “benefits analysis.” The central goal of this approach would be to create a kind of federal common law of environmental protection, generated in the first instance by administrative agencies, and designed to promote consistency and rationality in the protection of health and safety. I have also defended a form of democracy-promoting minimalism for administrative law—the particular form of minimalism that is embodied in the remand, often (and increasingly) unaccompanied by invalidation. The Clean Air Act should not be held unconstitutional, and EPA should not be required, on pain of constitutional invalidation, to come up with a “generic unit of harm” to encompass population affected, severity, and probability. The new nondelegation doctrine is a large mistake. On the other hand, ordinary judicial review should require any national ambient air quality standard to be accompanied by an adequate explanation of why that level, rather than one more or less stringent, has been selected. By itself, this requirement calls (to the extent feasible) for a high degree of quantification from EPA; it also bears on the performance of other regulatory agencies entrusted with the task of promoting health, safety and the environment. It also calls for invalidation, and not merely remand, where the agency is unable to offer an explanation of its choice of one level of regulation rather than another. A requirement of this kind would mark a key moment in the shift from the rigidity and simplicity of 1970s environmentalism toward a new and more promising approach—one that places a high premium on assessing the magnitude of problems, ensuring consistency across regulations, limiting interest-group power, acquiring better information, and authorizing democratic control of regulatory choices.

My principal claim here is that both courts and the EPA should construe the Act so as to prevent regulation of small risks and so as to require regulation of substantial risks—and the EPA should explain, as quantitatively as possible, what must be shown in order

for a risk to qualify, or not to qualify, as substantial. It is excessive, a form of rhetoric, to say that on the EPA's view, it is entitled to choose any level between zero risk and a level slightly below London's "killer fog." But it is not a form of rhetoric to think that if the EPA has not limited its own discretion by speaking in less conclusory terms, the Clean Air Act raises problems for both regulatory policy and democratic self-government. The ultimate goal of the forms of the democracy-promoting minimalism that I have endorsed here would be to ensure better policy analysis and greater transparency of decision, in a way that should simultaneously promote democratic, economic, and air quality goals.

Appendix

1. Particulate Matter

PM 2.5

a. July 17, 1997 (62 FR 38652): EPA sets a public health standard for fine particle pollution.

PM 10:

a. April 30, 1971 (36 FR 8186): EPA promulgates the primary and secondary standards for particulate matter. 76 micrograms per cubic meter—annual geometric mean (primary); 260 $\mu\text{g}/\text{m}^3$, 24 hour average not to be exceeded more than once per year (primary); 150 $\mu\text{g}/\text{m}^3$ maximum 24-hour concentration not to be exceeded more than once per year (secondary); 60 $\mu\text{g}/\text{m}^3$ annual geometric mean (secondary).

b. July 1, 1987 (52 FR 24854): EPA changes the indicator for PM from total suspended particles to PM 10. 24-hour PM_{10} of 150 $\mu\text{g}/\text{m}^3$ with no more than one expected exceedance per year; annual PM_{10} standard of 50 $\mu\text{g}/\text{m}^3$ expected annual arithmetic mean; secondary standards identical to primary standards.

c. July 18, 1997 (62 FR 38652): EPA promulgates regulation which is later struck down by DC Circuit. Two new $\text{PM}_{2.5}$ standards added, set at 15 $\mu\text{g}/\text{m}^3$ and 65 $\mu\text{g}/\text{m}^3$.

2. Ozone:

a. April 30, 1971 (36 FR 8186): EPA promulgates first NAAQS for photochemical oxidants. 160 $\mu\text{g}/\text{m}^3$; 0.08ppm maximum 1-hour concentration not to be exceeded more than once per year.

b. 1977 (42 FR 20493): EPA reviews and updates criteria document. Primary standard revised and secondary standard set identical to primary.

- c. February 8, 1979 (44 FR 8202): EPA revises primary standard to .12ppm.
- d. March 9, 1993 (58 FR 13008): EPA reviews air quality standards and decides not to revise standards.
- e. February 3, 1994 (50 FR 5164): EPA announces it will review standards.
- f. July 18, 1997 (62 FR 38856): EPA promulgates new standards which are later struck down by the DC Circuit Court. 8-hour standard at a level of 0.08 ppm (primary standard); identical 0.08ppm secondary standard.

(A more complete history of ozone is presented in section II.B. of the Office of Air Quality Planning and Standards Staff Paper, Review of National Ambient Air Quality Standards for O₃; Assessment of Scientific and Technical Information (U.S. APA 1996b))

3. Sulfur Oxides (Sulfur Dioxides):

- a. April 30, 1971: EPA promulgates primary and secondary NAAQS for sulfur oxides. 80 $\mu\text{g}/\text{m}^3$, 0.03ppm annual arithmetic mean (primary); 365 $\mu\text{g}/\text{m}^3$; .14 ppm maximum 24-hour concentration not to be exceeded more than once per year (primary); 1300 $\mu\text{g}/\text{m}^3$; 0.5ppm maximum 3-hour concentration not to be exceeded more than once per year (secondary); 60 $\mu\text{g}/\text{m}^3$; 0.02 ppm annual arithmetic mean; 260 $\mu\text{g}/\text{m}^3$; 0.1 ppm maximum 24-hour concentration not to be exceeded more than once per year.
- b. April 26, 1988 (53 FR 14926): EPA decides not to revise the existing primary and secondary standards.
- c. April 21, 1993 (58 FR 21351): EPA decides not to revise the existing secondary standards.

d. November 15, 1994 (59 FR 58958): EPA publishes a second proposal regarding revision of primary standards for sulfur oxides. A final decision that revision of the secondary standard was not appropriate was published April 21, 1993 (58 FR 21351).

e. May 22, 1996 (61 FR 25566): EPA reviews and revises the air quality criteria upon which the existing national ambient air quality standards (NAAQS) for sulfur oxides are based. Based on that review, EPA decides that revisions of the NAAQS for sulfur oxides are not appropriate at this time, aside from several minor technical changes.

4. Nitrogen Oxides:

a. April 20, 1971 (36 FR 8186): EPA issues identical primary and secondary standards for NO₂ set at 0.053 ppm (100 µg/m³) annual arithmetic average

b. December 12, 1978 (43 FR 581117): EPA announces the first review and update.

c. July 19, 1985 (50 FR 25532): EPA decides to retain the same standard.

d. April 26, 1988 (53 FR 58598): EPA publishes a second proposal regarding revision of primary standards

e. April 21, 1993 (58 FR 21351): EPA decides that revisions to the secondary standard are not appropriate.

f. October 11, 1995 (60 FR 52875): EPA proposes to retain national standards for nitrogen dioxide.

g. October 8, 1996 (61 FR 52852): EPA issues its final decision retaining standard for nitrogen dioxide.

5. Carbon Monoxide:

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a. April 30, 1971 (36 FR 8186): EPA promulgates the initial standard for carbon monoxide at the level of $10 \mu\text{g}/\text{m}^3$, 9 ppm maximum 8-hour concentration not to be exceeded more than once per year; $40 \mu\text{g}/\text{m}^3$, 35 ppm maximum 1-hour concentration not to be exceeded more than once per year.

b. September 13, 1985 (50 FR 37501): EPA retains the primary standard and revokes the secondary standard.

c. August 1, 1994 (59 FR 38,906, 38909-11): EPA announces its decision to retain the current primary standard for carbon monoxide. There is no secondary standard for carbon monoxide.

6. Lead:

a. October 5, 1978 (43 FR 46246): EPA promulgates standards for lead at the level of $1.5 \mu\text{g}/\text{Pbm}^3$.

b. November 5, 1997 (62 FR 59813): EPA publishes final rule for lead, but withdraws it on Dec. 23, 1997 due to adverse comments (62 FR 67009).

c. January 20, 1999 (64 FR 3021): EPA issues final rule.

Note: The following tables are taken from the EPA's Regulatory Impact Analysis, as noted in the text.

Table 2
 Proposed PM₁₀ Standard (50/150 g/m³) 99th Percentile
 National Annual Health Incidence Reductions²⁸²
 Estimates are incremental to the current ozone and PM NAAQS: (year = 2010)

ENDPOINT ²⁸³	Annual PM _{2.5} (g/m ³)	Daily PM _{2.5} (g/m ³)	Partial Attainment Scenario
	Annual PM _{2.5} (g/m ³)		50
		Daily PM _{2.5} (g/m ³)	150
*1. Mortality ²⁸⁴ : short-term exposure long-term exposure			360
			340
*2. Chronic Bronchitis			6,800
Hospital Admissions:			
*3. all respiratory (all ages)			190
all resp. (ages 65+)			470
pneumonia (ages 65+)			170
COPD (ages 65+)			140
*4. Congestive heart failure			130
*5. Ischemic heart disease			140

²⁸² numbers may not completely agree due to rounding

²⁸³ only endpoints denoted with an * are aggregated into total benefits estimates

²⁸⁴ mortality estimates must be aggregated using either short-term exposure or long-term exposure but not both due to double-counting issues

ENDPOINT ²⁸³		Partial Attainment Scenario
	Annual PM _{2.5} (g/m ³)	50
	Daily PM _{2.5} (g/m ³)	150
*6. Acute Bronchitis		1,100
*7. Lower Respiratory Symptoms		10,400
*8. Upper Respiratory Symptoms		5,300
shortness of breath		18,300
asthma attacks		8,800
*9. Work Loss Days		106,000
*10. Minor Restricted Activity Days (MRADs)		879,000

Table 3
Ozone : National Annual Health Incidence Reduction²⁸⁵
Estimates are incremental to the current ozone NAAQS
(year = 2010)

ENDPOINT ²⁸⁶	Partial Attainment Scenario		
	0.08 5th Max High-end Est.	0.08 4th Max Low- to High-end Est.	0.08 3rd Max High-end Est.
Ozone Health:			
*1. Mortality	80	0 - 80	120
Hospital Admissions			
*2. all respiratory (all ages)	280	300 - 300	420
all respiratory (ages 65+)	2,300	2,330 - 2,330	1,570
pneumonia (ages 65+)	860	870 - 870	600
COPD (ages 65+)	260	260 - 260	200
emer. dept. visits for asthma	120	130 - 130	180
*3. Acute Respiratory Symptoms (any of 19)	28,510	29,840 - 29,840	42,070
asthma attacks	60	60 - 60	90
MRADs	620	650 - 650	920
*4. Mortality from air toxics	1	1 - 1	2

²⁸⁵ numbers may not completely agree due to rounding

²⁸⁶ only endpoints denoted with an * are aggregated into total benefits estimates

ENDPOINT ²⁸⁶	Partial Attainment Scenario		
	0.08 5th Max High-end Est.	0.08 4th Max Low- to High-end Est.	0.08 3rd Max High-end Est.
Ancillary PM Health:			
*1. Mortality ²⁸⁷ : short-term exp. long-term exposure	60 180	0 - 80 0 - 250	110 340
*2. Chronic Bronchitis	400	0 - 530	690
Hospital Admissions:			
*3. all respiratory (all ages)	70	0 - 90	120
all resp. (ages 65+)	50	0 - 60	80
pneumonia (ages 65+)	20	0 - 20	30
COPD (ages 65+)	10	0 - 20	20
*4. congestive heart failure	10	0 - 20	20
*5. ischemic heart disease	10	0 - 20	20
*6. Acute Bronchitis	290	0 - 400	530
*7. Lower Respiratory Symptoms	3,510	0 - 4,670	6,190
*8. Upper Respiratory Symptoms	320	0 - 430	570
shortness of breath	800	0 - 1,220	1,660
asthma attacks	4,210	0 - 5,510	7,200
*9. Work Loss Days	38,700	0 - 50,440	66,160
*10. Minor Restricted Activity Days (MRADs)	322,460	0 - 420,300	551,300

²⁸⁷ PM mortality estimates must be aggregated using either short-term exposure or long-term exposure but not both due to double-counting issues

Table 4
Willingness-to-Pay Estimates (Mean Values)

Health Endpoint	Mean WTP Value per Incident (1990 \$)
Mortality	
Life saved	\$4.8 million
Life year extended	\$120,000
Hospital Admissions:	
All Respiratory Illnesses, all ages	\$12,700
Pneumonia, age \geq 65	\$13,400
COPD, age \geq 65	\$15,900
Ischemic Heart Disease, age \geq 65	\$ 20,600
Congestive Heart Failure, age \geq 65	\$ 16,600
Emergency Visits for Asthma	\$9,000
Chronic Bronchitis	\$260,000
Upper Respiratory Symptoms	\$19
Lower Respiratory Symptoms	\$12
Acute Bronchitis	\$45
Acute Respiratory Symptoms (any of 19)	\$18

Health Endpoint	Mean WTP Value per Incident (1990 \$)
Asthma	\$32
Shortness of Breath	\$5.30
Sinusitis and Hay Fever	not monetized
Work Loss Days	\$83
Restricted Activity Days (RAD) Minor RAD Respiratory RAD	\$38 not monetized
Worker Productivity	\$1 per worker per 10% change in ozone
Visibility: residential Recreational	\$14 per unit decrease in deciview per household Range of \$7.30 to \$11 per unit decrease in deciview per household (see U.S. EPA, 1997a)
Household Soiling Damage	\$2.50 per household per g/m ³

*See the Benefits TSD for citations (U.S. EPA, 1997a).

Table 5
Proposed PM₁₀ Standard (50/150 g/m³) 99th Percentile
National Annual Monetized Health Benefits Incidence Reductions²⁸⁸
Estimates are incremental to the current ozone (0.12 ppm, 1-hr.)
(billions of 1990 \$;year = 2010)

ENDPOINT ²⁸⁹	Partial Attainment Scenario High-end Est.
Annual PM _{2.5} (g/m ³)	50
Daily PM _{2.5} (g/m ³)	150
*1. Mortality ²⁹⁰ : short-term exposure	\$1.7
long-term exposure	\$1.6
*2. Chronic Bronchitis	\$1.8
Hospital Admissions:	
*3. all respiratory (all ages)	\$0.002
all resp. (ages 65+)	\$0.006
pneumonia (ages 65+)	\$0.003
COPD (ages 65+)	\$0.002
*4. Congestive heart failure	\$0.002
*5. Ischemic heart disease	\$0.003
*6. Acute Bronchitis	\$0

²⁸⁸ numbers may not completely agree due to rounding

²⁸⁹ only endpoints denoted with an * are aggregated into total benefits estimates

²⁹⁰ mortality estimates must be aggregated using either short-term exposure or long-term exposure but not both due to double-counting issues

ENDPOINT ²⁸⁹		Partial Attainment Scenario High-end Est.
	Annual PM _{2.5} (g/m ³)	50
	Daily PM _{2.5} (g/m ³)	150
*7. Lower Respiratory Symptoms		\$0
*8. Upper Respiratory Symptoms		\$0
shortness of breath		\$0
asthma attacks		\$0
*9. Work Loss Days		\$0.009
*10. Minor Restricted Activity Days (MRADs)		\$0.034
TOTAL MONETIZED BENEFITS		
using long term mortality		\$3.4
using short term mortality		\$3.5

Table 6
Ozone : National Annual Monetized Health Benefits Estimate²⁹¹
Estimates are incremental to the current ozone NAAQS (0.12 ppm, 1-hour)
(billions of 1990 \$; year = 2010)

ENDPOINT ²⁹²	Partial Attainment Scenario		
	0.08 5th Max High-end Est.	0.08 4th Max Low- to High-end Est.	0.08 3rd Max High-end Est.
Ozone Health:			
*1. Mortality	\$0.370	\$0.000 - \$0.380	\$0.570
Hospital Admissions			
*2. all respiratory (all ages)	\$0.004	\$0.004 - \$0.004	\$0.006
all resp. (ages 65+)	\$0.029	\$0.029 - \$0.029	\$0
pneumonia (ages 65+)	\$0.014	\$0.014 - \$0.014	\$0.010
COPD (ages 65+)	\$0.004	\$0.004 - \$0.004	\$0.003
emer. dept. visits for asthma	\$0.001	\$0.001 - \$0.001	\$0.002
*3. Acute Respiratory Symptoms (any of 19)	\$0.001	\$0.001 - \$0.001	\$0.001
asthma attacks	\$0	\$0 - \$0	\$0
MRADs	\$0	\$0 - \$0	\$0
*4. Mortality from air toxics	\$0.003	\$0.006- \$0.006	\$0.011
Ancillary PM Health:			
*1. Mortality ²⁹³ : short-term exp. long-term exposure	\$0.300 \$0.870	\$0 - \$0.400 \$0 - \$1.210	\$0.520 \$1.640

²⁹¹ numbers may not completely agree due to rounding

²⁹² only endpoints denoted with an * are aggregated into total benefits estimates

ENDPOINT ²⁹²	Partial Attainment Scenario		
	0.08 5th Max High-end Est.	0.08 4th Max Low- to High-end Est.	0.08 3rd Max High-end Est.
*2. Chronic Bronchitis	\$0.110	\$0 - \$0.140	\$0.180
Hospital Admissions:			
*3. all respiratory (all ages)	\$0.001	\$0 - \$0.001	\$0.001
all resp. (ages 65+)	\$0.001	\$0 - \$0.001	\$0.001
pneumonia (ages 65+)	\$0	\$0 - \$0	\$0
COPD (ages 65+)	\$0	\$0 - \$0	\$0
*4. congestive heart failure	\$0	\$0 - \$0	\$0
*5. ischemic heart disease	\$0	\$0 - \$0	\$0
*6. Acute Bronchitis	\$0	\$0 - \$0	\$0
*7. Lower Respiratory Symptoms	\$0	\$0 - \$0	\$0
*8. Upper Respiratory Symptoms	\$0	\$0 - \$0	\$0
shortness of breath	\$0	\$0 - \$0	\$0
asthma attacks	\$0	\$0 - \$0	\$0
*9. Work Loss Days	\$0.003	\$0 - \$0.004	\$0.005
*10. Minor Restricted Activity Days (MRADs)	\$0.012	\$0 - \$0.016	\$0.020
TOTAL MONETIZED BENEFITS			
using short-term PM mortality	\$0.790	\$0.056	\$1.300
using long-term PM mortality	\$1.400	\$1.785	\$2.400

²⁹³ PM mortality estimates must be aggregated using either short-term exposure or long-term exposure but not both due to double-counting issues

Table 7
 PM: Summary of National Annual Monetized Health and Welfare Benefits²⁹⁴
 Estimates are incremental to the current ozone and PM NAAQS
 (billions of 1990 \$; year = 2010)

Category ²⁹⁵		Partial Attainment Scenario		
		High-end Est.	Low- to High-end Est.	High-end Est.
	Annual PM _{2.5} (g/m ³)	16	15	15
	Daily PM _{2.5} (g/m ³)	65	65	50
Health Benefits		\$83	\$15 to \$96	\$99
Welfare Benefits		\$7.5	\$4.3 to \$8.1	\$9
TOTAL MONETIZED BENEFITS		\$90	\$19 to \$104	\$107

²⁹⁴ numbers may not completely agree due to rounding

Table 8
 PM: Selected PM₁₀ Standard (50/150 g/m³—99th percentile) Summary of National Annual Monetized
 Health and Welfare Benefits^a
 Estimates are incremental to the current ozone and PM NAAQS
 (billions of 1990 \$; year = 2010)

Category		Partial Attainment Scenario High-end Est.
	Annual PM ₁₀ (g/m ³)	50
	Daily PM ₁₀ (g/m ³)	150
Health Benefits		\$3.4 to \$3.5
Welfare Benefits		\$1.6
TOTAL MONETIZED BENEFITS		\$5.1 to \$5.2

Table 9
 Ozone: Summary of National Annual Monetized
 Health and Welfare Benefits^a
 Estimates are incremental to the current ozone and PM NAAQS
 (billions of 1990 \$; year = 2010)

Category	Partial Attainment Scenario		
	0.08 5th max High-end Est.	0.08 4th max Low- to High-end Est.	0.08 3rd max High-end Est.
Health Benefits	\$1.4	\$0.06 to \$1.76	\$2.4
Welfare Benefits	\$0.25	\$0.32 to \$0.32	\$0.5
TOTAL MONETIZED BENEFITS	\$1.6	\$0.4 to \$2.1	\$2.9

Table 10
Proposed PM₁₀ Standard (50/150 g/m³) 99th Percentile
National Annual Health Incidence Reductions²⁹⁶
Estimates are incremental to the current ozone and PM NAAQS: (year = 2010)

ENDPOINT ²⁹⁷	Annual PM _{2.5} (g/m ³)	Daily PM _{2.5} (g/m ³)	Partial Attainment Scenario
	50	150	
	360	340	
*1. Mortality²⁹⁸: short-term exposure			
long-term exposure			
*2. Chronic Bronchitis			6,800
Hospital Admissions:			
*3. all respiratory (all ages)			190
all resp. (ages 65+)			470
pneumonia (ages 65+)			170
COPD (ages 65+)			140
*4. Congestive heart failure			130
*5. Ischemic heart disease			140
*6. Acute Bronchitis			1,100
*7. Lower Respiratory Symptoms			10,400
*8. Upper Respiratory Symptoms			5,300
shortness of breath			18,300
asthma attacks			8,800
*9. Work Loss Days			106,000
*10. Minor Restricted Activity Days (MRADs)			879,000

Table 11
Comparison of Annual Benefits and Costs of PM Alternatives in 2010^{a,b} (1990\$)

PM _{2.5} Alternative (g/m ³)	Annual Benefits of Partial Attainment ^c (billion \$) (A)	Annual Costs of Partial Attainment (billion \$) (B)	Net Benefits of Partial Attainment (billion \$) (A - B)	Number of Residual Nonattainment Counties
16/65 (high end estimate)	90	5.5	85	19
15/65 (low end estimate) (high end estimate)	19 - 104	8.6	10 - 95	30
15/50 (high end estimate)	108	9.4	98	41

a All estimates are measured incremental to partial attainment of the current PM₁₀ standard (PM₁₀ 50/150, 1 expected exceedance per year).

b The results for 16/65 and 15/50 are only for the high end assumptions range. The low end estimates were not calculated for these alternatives.

c Partial attainment benefits based upon post-control air quality as defined in the control cost analysis.

Table 12
Comparison of Annual Benefits and Costs of Ozone Alternatives in 2010^{a,b} (1990\$)

Ozone Alternative (ppm)	Annual Benefits of Partial Attainment (billion \$) (A)	Annual Costs of Partial Attainment (billion \$) (B)	Net Benefits of Partial Attainment (billion \$) (A - B)	Number of Residual Nonattainment Areas
0.08 5th Max (high end estimate)	1.6	0.9	0.7	12
0.08 4th Max (low end estimate) (high end estimate)	0.4 - 2.1	1.1	(0.7) - 1.0	17
0.08 3rd Max (high end estimate)	2.9	1.4	1.5	27

a All estimates are measured incremental to partial attainment of the baseline current ozone standard (0.12ppm , 1 expected exceedance per year).

b The results for .08, 5th and .08, 3rd max. are only for the high end assumptions. The low end estimates were not calculated for these alternatives.

c Partial attainment benefits based upon post-control air quality estimates as defined in the control cost analysis.

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