Turning Two Blind Eyes: The EPA's Failure to Consider Costs and Health Disbenefits in Revising the Ozone Standard

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Normally, one would want to consider all relevant available information when making a decision. This would seem especially true when making a decision of tremendous importance to the public health and welfare. The United States Supreme Court has recognized this common sense principle, deeming an agency rule "arbitrary and capricious" if the agency has "entirely failed to consider an important aspect of the problem."[1] Unfortunately, the Environmental Protection Agency (EPA or the Agency) has deliberately refused to consider critical information in its recent decision to revise the national primary ambient air quality standard for ozone.[2] The consequences of the EPA's refusal to consider relevant information are a revised ozone standard that does not

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1. Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

2. *See* National Ambient Air Quality for Ozone, 62 Fed. Reg. 38,856 (1997) (to be codified at 40 C.F.R. pt. 50) [hereinafter Final Rule].

best serve the public interest, and a decision-making process inconsistent with accountable governance.

Specifically, the EPA refused to consider the economic and social impacts of its decision to revise the ozone standard,[3] based on a crimped construction of the relevant statutory authority and the fiction that the standard can be set based on science alone. Even more troubling, the EPA refused to consider all public health impacts that would result from its decision.[4] It considered the health benefits, but not the health disbenefits, of its decision to lower the ozone standard.[5] While the Agency blamed its constrained decision-making approach on legal restrictions,[6] the EPA has, in fact, made a deliberate policy choice to limit the criteria it considered in promulgating an ozone standard more stringent than otherwise warranted.

This Article critiques the EPA's refusal to consider economic impacts and health disbenefits in revising the ozone standard on both policy and legal grounds. For each of these two factors, it is first argued that consideration of the factor is necessary for rational decision-making. Second, the EPA's argument that the Clean Air Act[7] (CAA) precludes the Agency from considering each factor is shown to be untrue, and indeed is inconsistent with the statutory language and objectives. Part I briefly summarizes the EPA's decision to revise the ozone standard. Part II examines the policy and legal flaws in the EPA's decision not to consider costs, while Part III addresses parallel flaws in the EPA's refusal to consider the health disbenefits of the revised ozone standard.

I. THE EPA'S REVISION OF THE OZONE STANDARD

Section 109(a) of the CAA requires the EPA to promulgate national primary ambient air quality standards (NAAQS) for each air pollutant for which air quality criteria have been issued.[8] NAAQS must be set at a level, "[t]he attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health."[9] The EPA must review the criteria document and standard for each pollutant every five years.[10] The EPA last modified the ozone standard in 1979, *raising* the standard

3. *See id.* at 38,878-83.
4. *See id.*
5. *See id.*
6. *See id.*
7. CAA §§ 101-618, 42 U.S.C. §§ 7401-7671q (1994).
8. *See* CAA § 109(a), 42 U.S.C. § 7409(a).
9. *Id.* § 109(b)(1), § 7409(b)(1).
10. *See id.* § 109(d)(1), § 7409(d)(1).

from a one-hour average of 0.08 parts per million (ppm) to 0.12 ppm.[11] The EPA reviewed the ozone standard in 1993 and concluded that modification of the ozone standard was not warranted, but agreed to begin the next review almost immediately.[12]

In December 1996, after several years of review and development, the EPA proposed to modify the ozone standard.[13] The key new information on which the EPA based its decision to modify the standard was data indicating that exposure to ozone below the current standard of 0.12 ppm for extended periods could result in adverse health effects.[14] Accordingly, the EPA proposed to change the ozone standard from a standard based on a one-hour averaging period to a standard based on an eight-hour averaging period.[15] The EPA estimated that an eight-hour standard set at 0.09 ppm would provide roughly equivalent protection as the existing one-hour, 0.12 ppm standard.[16] However, the EPA requested comments on whether the new eight-hour standard should be set at a level of 0.07, 0.08, or 0.09 ppm.[17] The EPA also evaluated a number of different alternatives with respect to the method by which compliance with the standard could be measured, including alternatives under which compliance would be based on a three-year average of the third, fourth, or fifth highest measured concentration in a year at a given monitoring site.[18]

In July 1997, the EPA issued a final rule that set the primary ozone standard at an eight-hour average of 0.08 ppm, measured as the three-year average of the fourth highest concentration for each year.[19] The EPA purported to base this modified standard solely on scientific evidence of adverse health effects from exposure to ozone.[20] The evidence included temporary discomfort, pain, inflammation, and reduced exercise performance observed in individuals engaged in heavy or moderate exertion for prolonged periods at ozone concentrations as low as 0.08 ppm, as well as some evidence of increased hospital admissions and emergency room visits by individuals with preexisting respiratory

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11. *See* National Primary and Secondary Ambient Air Quality Standards, 44 Fed. Reg. 8202 (1979).
12. *See* National Ambient Air Quality Standards for Ozone—Final Decision, 58 Fed. Reg. 13,008, 13,013, 13,016 (1993).
13. *See* National Ambient Air Quality Standards for Ozone: Proposed Decisions, 61 Fed. Reg. 65,716 (1996) [hereinafter Proposed Rule].
14. *See id.* at 65,719.
15. *See id.*
16. *See id.* at 65,729.
17. *See id.* at 65,733.
18. *See id.* at 65,730-33.
19. *See* Final Rule, *supra* note 2, at 38,856.
20. *See id.* at 38,859.

diseases such as asthma.[21] The EPA also concluded that there was some evidence of chronic lung effects that could result in a "reduced quality of life, although such relationships remain highly uncertain."[22] In justifying its decision to lower the standard, the EPA did not claim that reducing the ozone standard would save any lives, although the Agency did claim some reduction in mortality in calculating the benefits of the revised standard in its Regulatory Impact Analysis.[23] According to the EPA's analysis, full implementation of the standard will impose annual costs of $9.6 billion, with monetized health and welfare benefits ranging from $1.5 to $8.5 billion.[24] Other estimates of the costs of the ozone standard were much higher. For example, one study estimated that attainment of the EPA's proposed eight-hour, 0.08 ppm ozone standard would cost $5.5 to $14.1 billion per year for the greater Chicago-Lower Lake Michigan Region alone.[25]

II. THE EPA'S REFUSAL TO CONSIDER ECONOMIC COSTS OR TECHNICAL FEASIBILITY IN REVISING THE OZONE STANDARD

The EPA claimed that it could not and did not consider economic impacts or technical feasibility in revising the ozone standard.[26] The extent and absurdity of the EPA's self-enforced blinders are demonstrated by the EPA's disavowal of any consideration of the draft and final Regulatory Impact Analyses in selecting the ozone standard, even though these several hundred-page documents were prepared by the EPA's own staff during the rulemaking to analyze the economic impacts of the revised standard and major alternatives.[27] As shown below, the EPA's purported refusal to consider economic impacts and other such factors is not only irrational, it is a fiction, as is the Agency's claim that Congress affirmatively intended to preclude any consideration of economic impacts.[28]

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21. *See id.*

22. *Id.* at 38,859-60.

23. *See* INNOVATIVE STRATEGIES AND ECONOMICS GROUP, EPA, REGULATORY IMPACT ANALYSES FOR THE PARTICULATE MATTER AND OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS AND PROPOSED REGIONAL HAZE RULE 2-9 (1997) [hereinafter Final RIA].

24. *See id.* at 13-2.

25. SIERRA RESEARCH, INC., REPORT NO. SR96-06-01, SOCIO-ECONOMIC STUDY OF POSSIBLE EIGHT HOUR OZONE STANDARD (1996) (prepared for the American Petroleum Institute).

26. *See* Final Rule, *supra* note 2, at 38,878-83.

27. *See id.* at 38,887.

28. The EPA maintained that "the legislative history indicated that Congress had considered the issue and had deliberately chosen to mandate NAAQS that would protect health regardless of concerns about feasibility." *Id.* at 38,879.

A. Policy Arguments for Considering Costs and Feasibility

Two months after the EPA finalized its ozone rule, the Office of Management and Budget reported to Congress that "[t]he only way we know to distinguish between the regulations that do good and those that cause harm is through careful assessment and evaluation of their benefits and costs."[29] Reflecting a similar understanding, Ben Franklin described the consideration of both costs and benefits in making decisions as the "moral or prudential algebra" of everyday life.[30] Even when decisions are not based on a strict cost-benefit test, some consideration of both the costs and benefits of the alternatives under consideration is necessary to select the policy that best achieves the intended objective at the lowest cost.[31] Otherwise, the option ultimately selected may do more harm than good, especially at the margin.[32]

In promulgating the NAAQS, the EPA not only refused to consider costs, but failed to articulate any discernible criteria for setting the ozone standard. The EPA purported to set the ozone standard based solely on "public health policy judgments in addition to determinations of a strictly scientific nature," with assessments of risk playing a "'central role in identifying an appropriate level.'"[33] But unlike other risk-based regulations, the EPA provided no defined risk targets in setting NAAQS.[34] The EPA further argued that "no generalized paradigm . . . can substitute for the Administrator's careful and reasoned assessment of all relevant health factors in reaching . . . a judgment."[35] Because the Agency's determination is "largely judgmental in nature," it "may not be amenable

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29. OFFICE OF INFORMATION AND REGULATORY AFFAIRS, OFFICE OF MANAGEMENT AND BUDGET, REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS 10 (1997).

30. *See* EDWARD M. GRAMLICH, BENEFIT-COST ANALYSIS OF GOVERNMENT PROGRAMS 1-2 (1981).

31. *See id.* at 2-3.

32. *See generally* Edward W. Warren & Gary E. Marchant, *More Good than Harm: A First Principle for Environmental Agencies and Reviewing Courts*, 20 ECOLOGY L.Q. 379 (1993).

33. Final Rule, *supra* note 2, at 38,863 (citation omitted).

34. For example, the EPA defined "acceptable risk" for hazardous air pollutants based on a maximum individual risk of no greater than 1 in 10,000. *See* National Emission Standards for Hazardous Air Pollutants; Benzene Emissions from Maleis Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, and Coke By-Product Recovery Plants, 54 Fed. Reg. 38,044, 38,045 (1989). The Agency has likewise defined acceptable risk levels under the Clean Water Act, 33 U.S.C. §§ 1251-1387 (1994), the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 42 U.S.C. §§ 9601-9675, the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6992*k*, the Federal Insecticide, Fungicide & Rodenticide Act, 7 U.S.C. §§ 136-136*y*, and the Safe Drinking Water Act, 42 U.S.C. §§ 300f-300*j*-26.

35. Final Rule, *supra* note 2, at 38,883.

to quantification in terms of what risk is 'acceptable' *or any other metric*."[36]

Not only does the EPA concede that its decision-making approach is devoid of any metric or other defined criteria, but the Agency acknowledges that it makes no attempt to be consistent in the approach it uses. For example, the EPA boldly asserts that "the Administrator is not limited to any single approach to determining an adequate margin of safety and may, in the exercise of her judgment, choose an integrative approach, a two-step approach, or perhaps some other approach, depending on the particular circumstances confronting her in a given NAAQS review."[37] In defining its approach, the only illumination the EPA provides is to state that its task is "to select an approach that best takes into account the health effects and other information assessed . . . for the pollutant in question and to apply *appropriate* and *reasoned* analysis to ensure that the scientific uncertainties are taken into account in an *appropriate* manner."[38] In other words, this unelected Agency apparently has *carte blanche* discretion to set national air quality standards, with enormous consequences for the health and welfare of every American, at any level it believes "appropriate," without defining the criteria it used to reach its decision or even acting in a consistent manner. So much for accountability and the rule of law.

The recent revision to the ozone standard demonstrates once and for all that the EPA's "approach" for setting NAAQS is both poor policy and bad government. In revising the ozone standard, the EPA was required to choose from an almost unlimited set of possible alternative standards that meet the statutory objective of protecting the public health with an adequate margin of safety, but which differ with respect to the level of the standard, the number of allowable exceedences, the averaging period, and other factors.[39] There is no basis for selecting among the range of possible alternative standards based solely on science. The EPA's own Clean Air Act Scientific Advisory Committee (CASAC) concluded that "there is no bright line which distinguishes any of the proposed standards (either the level or the number of allowable exceedences) as being significantly more protective of health" and "[c]onsequently, the selection of a specific level and number of allowable exceedences is a policy judgment."[40]

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36. *Id.* (emphasis added).
37. *Id.*
38. *Id.* (emphasis added).
39. *See generally id.* at 38,856-96.
40. Letter from George T. Wolff, Chair, Clean Air Scientific Advisory Committee, to Carol M. Browner, Administrator, EPA 2-3 (Nov. 30, 1995) (EPA-SAB-CASAC-LTR-96-002).

The problem is that the health data for ozone demonstrates a continuum of health effects—there is no clear demarcation of a discrete threshold that uniquely protects the public health with an adequate margin of safety.[41] The EPA concedes that there is no threshold level for ozone below which no health effects would be expected to occur:

> The Administrator's decision to propose the level of an 8-hour primary O_3 standard at 0.08 ppm . . . necessarily reflected a recognition . . . that it is likely that 'O_3 may elicit a continuum of biological responses down to background concentrations.' Thus, in the *absence of any discernable threshold*, it is not possible to select a level below which absolutely no effects are likely to occur. *Nor does it seem possible, in the Administrator's judgment, to identify a level at which it can be concluded with confidence that no "adverse" effects are likely to occur*.[42]

Given this continuum of health effects, if the EPA can consider *only* health effects in setting a standard that protects public health with an adequate margin of safety, then the logical outcome would seem to be to set the standard at zero—the only level at which there can be assurance of no adverse health effects. If only health can be considered, then a lower standard will always be better, right down to a level of zero. As one commentator succinctly stated, "[i]f all costs [are] truly ignored, then no risk would be acceptable."[43]

But Congress never intended such a result. It specifically stated that the EPA was *not* to set the ambient standards at the zero risk level that would be compelled by an absolute "health risk only" approach, and instead directed the Agency to consider "the economic and social consequences" of its decision to avoid such an unreasonable outcome.[44] The EPA's attempt to justify its choice of a standard based solely on scientific data and "judgment" is therefore an example of what has been described as the "'science charade' where agencies exaggerate the contributions made by science in setting [environmental] standards in order to avoid accountability for the underlying policy decisions."[45]

In fact, the EPA almost certainly did consider costs and feasibility to some extent in setting the ozone standard; it simply pretended that it did

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41. *See* Final Rule, *supra* note 2, at 38,863.

42. *Id.* (citation omitted) (emphasis added).

43. Joseph M. Feller, *Non-Threshold Pollutants and Air Quality Standards*, 24 ENVTL. LAW 821, 833 (1994).

44. *See* H.R. REP. NO. 95-294, at 127 (1977) ("Some have suggested that since the standards are to protect against all known or anticipated effects and since no safe thresholds can be established, the ambient standards should [be] set at zero or background levels. Obviously, this no-risk philosophy *ignores all economic and social consequences* and is impractical.") (emphasis added).

45. Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1617 (1995).

not consider these in publicly describing its decision. The Agency made a policy decision that an 0.08 ppm, eight-hour standard could be implemented without bankrupting the nation, albeit not without imposing substantial burdens. In contrast, a standard set at 0.07 ppm or lower would clearly have wreaked unacceptable economic havoc, and therefore was not chosen, even though it would have provided additional health benefits.[46] Despite the EPA's attempt to portray its decision as a science-based health determination, glimmers of the true nature of the EPA's decision shine through. For example, the EPA explained that it did not set a 0.07 ppm standard in part because such a level "would be closer to peak background levels that infrequently occur in some areas due to nonanthropogenic sources of O_3 precursors."[47] While such concerns are certainly valid and appropriate to consider, they relate more to feasibility than to public health.

The EPA's failure to "come clean" about the true nature of its decision-making deprives the public of its right to meaningful participation in the development of the standard. The EPA's own analysis showed that notwithstanding many uncertainties, the costs of its ozone standard outweighed the benefits, with the costs of full attainment estimated at $9.6 billion per year and benefits ranging from $1.5 to $8.5 billion.[48] While there is room for legitimate debate about whether the health benefits attributed to the more stringent ozone standard are worth the costs imposed on society, such debate was foreclosed by the EPA's pretense that costs and feasibility could not be considered.[49]

There is reason to believe that a more honest discussion may have led to a less burdensome standard without sacrificing any significant health benefits. For example, the EPA's extensive Regulatory Impact Analysis, which the EPA claims it did not consider in selecting the standard, estimates that a 0.08 ppm, eight-hour standard based on the fifth rather than fourth highest concentration per year would provide essentially equivalent health benefits but at approximately 20 percent less cost.[50] Both democracy and the economy were unnecessarily harmed by

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46. Although the EPA did not calculate the costs of a 0.07 ppm standard, such a standard would approach the background level of ozone from natural sources, which can be as high as 0.07 ppm on peak days. *See* EPA, RESPONSES TO SIGNIFICANT COMMENTS ON THE 1996 PROPOSED RULE ON THE NAAQS FOR OZONE 94-95 (1996). A standard set at 0.07 ppm would therefore leave very little margin for emissions from industrial, transportation, and other human activities, resulting in severe restrictions on such activities.

47. Final Rule, *supra* note 2, at 38,868.

48. *See* Final RIA, *supra* note 23, at 13-2.

49. *See* Final Rule, *supra* note 2, at 38,878.

50. EPA estimates that an 0.08 ppm standard based on the fifth highest maximum rather than the fourth highest maximum concentration may actually increase the annual health benefits of the standard under one set of assumptions used by the EPA, while slightly decreasing benefits

the EPA's failure to publicly recognize that selecting an ambient standard for ozone necessarily required some consideration of cost and feasibility.

B. Legal Arguments for Considering Costs and Feasibility

The EPA never attempts to justify on the merits its refusal to consider costs and feasibility. Rather, the Agency blames Congress and the courts for the prohibition on the consideration of economic and other factors.[51] Yet, consideration of costs has not been so completely foreclosed by either Congress or the courts as the EPA would have us believe.

Beginning with the CAA, there is no express statutory preclusion on consideration of costs.[52] Section 109(b)(1) requires the EPA to set the standard at a level "requisite to protect public health," confirming that primary consideration is to be given to health.[53] But the statute also directs the EPA Administrator to use her "judgment" in providing "an adequate margin of safety," a task that is certainly amenable to considering costs and feasibility.[54] Indeed, the courts have interpreted a comparable provision to allow the EPA to consider costs and feasibility in determining an "ample margin of safety" in regulating hazardous air pollutants under Section 112 of the CAA.[55]

There is affirmative evidence in the statutory text of Section 109 that Congress did expect the EPA to give some consideration to costs.[56] Section 109(d)(2)(C) requires the CASAC to "advise the Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance of such national ambient air quality standards."[57] Why would Congress require, in the statutory section governing adoption of NAAQS, that the Administrator be advised on the "economic" and "social" effects of such standards if the Administrator was precluded from considering such factors?

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under another set of assumptions. *See* Final RIA, *supra* note 23, at 12-46. In contrast, the EPA estimates that moving from a standard based on the fifth rather than fourth highest concentration would lower annual partial attainment control costs from $1.10 billion per year to $0.89 billion per year, a 19 percent reduction in costs that may be associated with no loss (or perhaps even a gain) in health benefits. *See id.* at 13-4.

51. *See* Final Rule, *supra* note 2, at 38,878-83.
52. *See* CAA § 109, 42 U.S.C. § 7409 (1994).
53. CAA § 109(b)(1), 42 U.S.C. § 7409(b)(1).
54. *Id.*
55. *See* NRDC v. EPA, 824 F.2d 1146, 1163 (D.C. Cir. 1987) (en banc).
56. *See* CAA § 109(d)(2)(C), 42 U.S.C. § 7409(d)(2)(C).
57. *Id.*

The legislative history of the CAA, like the statutory language itself, is also bereft of any express prohibition on considering costs. A passage from the 1970 Senate Committee Report frequently cited by the EPA notes that "the health of people is more important than the question of whether the early achievement of ambient air quality standards protective of health is technically feasible."[58] But this statement only indicates that public health should be given primary weight, not that other factors cannot be considered at all. Indeed, the 1977 House Report expressly rejects the notion that "since no safe thresholds can be established, the ambient standards should [b]e set at zero or background levels" because "this no-risk philosophy *ignores all economic and social consequences* and is impractical."[59] Other passages in the legislative history likewise endorse the balancing of public health and economic factors.[60]

The EPA also claims that it is precluded from considering costs by the D.C. Circuit's decision in *Lead Industries Association v. EPA*[61] and its progeny.[62] *Lead Industries* established that the Administrator of the EPA was not required to consider economic or technological feasibility in setting air quality standards.[63] *Lead Industries* was decided before the Supreme Court's *Chevron U.S.A. Inc. v. NRDC*[64] decision, which established a two-step process for interpreting statutes.[65] In the first step, courts look to whether "Congress has directly spoken to the precise question at issue," in which case "that is the end of the matter" for the agency and court "must give effect to the unambiguously expressed intent of Congress."[66] If, however, "the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute."[67]

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58. S. REP. NO. 91-1196, at 2 (1970).

59. H.R. REP. NO. 95-294, at 127 (1977) (emphasis added).

60. *See, e.g.*, *id.* at 34 (stating that the purpose of the Act is to "insure the protection of the public health and the environment . . . while at the same time considering the energy and economic needs of this Nation"); *id.* at 61 ("a healthful environment, energy conservation, and a sound economy are interrelated factors bearing on the quality of life of the Nation").

61. 647 F.2d 1130 (D.C. Cir. 1980) (holding that the EPA could not consider cost in setting the lead standard).

62. *See* Final Rule, *supra* note 2, at 38,878-80. The *Lead Industries* holding has been applied to other NAAQS determinations, including *American Petroleum Inst. v. Costle*, 665 F.2d 1176, 1185 (D.C. Cir. 1981) (holding that costs could not be considered in setting the ozone standard) and *NRDC v. EPA*, 902 F.2d 962, 973 (D.C. Cir. 1990) (holding that costs could not be considered in setting the particulate matter standard).

63. *Lead Industries*, 647 F.2d at 1150.

64. 467 U.S. 837 (1984).

65. *Id.* at 842-43.

66. *Id.*

67. *Id.* at 843.

Because *Lead Industries* was decided prior to *Chevron*, it did not apply the *Chevron* framework and therefore did not distinguish between a *Chevron* step one mandatory reading of the statute and a *Chevron* step two permissive construction. Nevertheless, it is reasonable to assume that the issue would need to be decided today under *Chevron* step two, given that Congress did not "directly speak" to the "precise issue" of whether the EPA may consider costs in establishing NAAQS.[68] The courts have held that a pre-*Chevron* decision that is determined to be based on a permissive, but not mandatory reading of the statute, does not bind an agency and limit its discretion in the post-*Chevron* period.[69]

Thus, *Lead Industries* and its progeny stand only for the proposition that the EPA's construction of the CAA to not require consideration of costs is a permissible interpretation of Section 109 in the absence of any other authority requiring such consideration. The previous decisions therefore do not preclude the EPA's consideration of costs, and the EPA's misinterpretation of those decisions to preclude any discretion to consider costs is itself legal error.[70] Moreover, with the recent enactment of the Small Business Regulatory Enforcement Fairness Act of 1996,[71] which requires the EPA to consider and minimize the impacts of its rules on small businesses, the EPA's previous discretion to consider costs has become a mandatory obligation.[72]

III. THE EPA'S REFUSAL TO CONSIDER THE PROTECTIVE AS WELL AS HARMFUL HEALTH EFFECTS OF GROUND-LEVEL OZONE

The EPA is on even shakier ground when it refuses to consider all the health effects of ground-level ozone, including the protective effects for human health. Even if one accepts the EPA's position that the Clean

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68. *See id.*

69. *See* Chemical Waste Management, Inc. v. EPA, 873 F.2d 1477, 1482 (D.C. Cir. 1989) (refusing to adhere to pre-*Chevron* decision requiring hearing because it "truncates the *Chevron* inquiry at the first step by treating a facially ambiguous statutory reference to a 'hearing' as though it were an unambiguous constraint upon the agency"); Clinchfield Coal Co. v. Federal Mine Safety and Health Comm'n, 895 F.2d 773, 777-78 (D.C. Cir. 1990) (holding that the Agency was not bound by pre-*Chevron* decision that statute "compelled" a particular result because that decision "relied on a narrower concept of judicial deference than what *Chevron* now plainly requires"); National Fuel Gas Supply Corp. v. FERC, 899 F.2d 1244, 1248 (D.C. Cir. 1990) ("[E]ven if the case *had* directly addressed that question, . . . a pre-*Chevron* decision would not foreclose the Commission from reinterpreting an ambiguity in its organic statute.").

70. *See* International Bhd. of Elec. Workers, Local Union No. 474 v. NLRB, 814 F.2d 697, 708 (D.C. Cir. 1987); Phillips Petroleum Co. v. FERC, 792 F.2d 1165, 1172 (D.C. Cir. 1986).

71. Pub. L. No. 104-121, 110 Stat. 857-874 (1996) (codified as amended in scattered sections of 5 U.S.C., 15 U.S.C. and 28 U.S.C.).

72. *See generally* Keith N. Cole, *SBREFA and the Reg Flex Act: Could a Single Word Doom the NAAQS Rules?*, 11 TUL. ENV. L.J. 281 (1998).

Air Act only permits the Agency to consider public health evidence in setting NAAQS,[73] there is no valid argument for excluding evidence of a positive health impact. If the objective is to protect public health, then all relevant, direct impacts of ozone on public health should be considered in setting the ozone standard. Yet, the EPA has deliberately skewed this public health impact analysis by refusing to consider the protective effect of ground-level ozone that screens harmful ultraviolet-B (UV-B) rays from the sun.[74] As shown below, these health benefits of ground-level ozone approach, and perhaps even eclipse, the health benefits claimed by the EPA from reducing the ozone standard.

A. Policy Arguments for Considering Health Disbenefits

Ground-level ozone or smog has known detrimental impacts on lung function.[75] Nevertheless, along with these harmful effects of ozone on public health, ozone has at least one beneficial effect on public health by absorbing harmful UV-B radiation.[76] UV-B is a major known cause of malignant melanoma and non-melanoma skin cancer, as well as other adverse health effects such as cataracts and immunosuppression.[77] The EPA estimates that a one percent increase in UV-B radiation would increase non-melanoma skin cancer cases by 1 to 3 percent and melanoma cases by 0.5 to 1 percent.[78]

Because of the concerns about adverse health effects from increased UV-B, the EPA has promulgated very expensive regulations costing over $1 billion per year to phase out chemicals that deplete the stratospheric ozone layer.[79] The EPA described the problem as follows:

> Changes in the *total abundance of column ozone* would alter the flux of ultraviolet radiation reaching the surface of the earth, and consequently affect public health and welfare. Scientific evidence indicates that increases in ultraviolet-B radiation (UV-B) would alter skin cancer

73. *See* Final Rule, *supra* note 2, at 38,870.

74. EPA, RESPONSES TO SIGNIFICANT COMMENTS ON THE 1996 PROPOSED RULE ON THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR OZONE, 128 (1997) [hereinafter RESPONSE TO COMMENTS] ("EPA strongly disagrees . . . that such disbenefits . . . can and should be considered in reviewing and revising [the] NAAQS.").

75. *See id.*

76. *See id.*

77. *See id.* at 144A.

78. OFFICE OF AIR AND RADIATION, EPA, ASSESSING THE RISKS OF TRACE GASES THAT CAN MODIFY THE STRATOSPHERE. VOLUME I: EXECUTIVE SUMMARY, at ES-9, ES-11 (1987) [hereinafter EXECUTIVE SUMMARY].

79. Protection of Stratospheric Ozone, 53 Fed. Reg. 30,566, 30,594 (1988) (estimating social and transfer costs of implementation).

> morbidity and mortality, increase cataracts, and probably suppress the human immune system.[80]

According to an EPA fact sheet, stratospheric ozone depletion will result in a 26 percent increase in skin cancer cases, 1.6 million more cataract cases, and 24,000 deaths from melanoma worldwide by the end of this decade.[81]

While much has been written (and done) about the beneficial effects of the stratospheric ozone layer located in the upper atmosphere for protecting against UV-B radiation, ground-level ozone provides the same type of protective effect.[82] In fact, molecule-for-molecule, tropospheric ozone is *more* effective than stratospheric ozone in absorbing UV-B rays.[83] Because only about ten percent of the ozone in the atmosphere is in the troposphere (or lower atmosphere),[84] the total protective effect of ground-level ozone is less than that of stratospheric ozone. Nevertheless, a growing body of scientific data demonstrates that ground-level ozone does indeed exert a significant protective effect against UV-B radiation.[85]

One recent study compared ground-level ozone and UV-B radiation levels in Germany and New Zealand.[86] These countries are approximately equidistant from the equator, an important factor affecting UV-B radiation levels.[87] After controlling for other factors, the study found that lower levels of anthropogenic ground-level ozone in New Zealand resulted in approximately twenty-five percent higher UV-B than in the more-polluted Germany, where the ground level ozone plays a major role in protecting against UV-B radiation.[88]

Another recent study directly measured the relationship between ground-level ozone levels and the levels of UV-B reaching the Earth's

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80. EXECUTIVE SUMMARY, *supra* note 78, at ES-2 (emphasis added).

81. *See* OFFICE OF AIR QUALITY PLANNING AND STANDARDS, EPA, OZONE—GOOD UP HIGH BAD NEARBY (1996).

82. *See* Paul J. Crutzen, *Ultraviolet on the Increase*, 356 NATURE 104 (1992) ("[O]zone in the troposphere, an industrial pollutant, is (molecule for molecule) a stronger absorber of ultraviolet than ozone in the stratosphere"); *see generally* Ignacio Galindo et al., *Ultraviolet Irradiance over Mexico City*, 45 J. AIR & WASTE MGMT. ASS'N 886 (1995).

83. *See* Crutzen, *supra* note 82, at 104.

84. *See* NATIONAL RESEARCH COUNCIL, RETHINKING THE OZONE PROBLEM IN URBAN AND REGIONAL AIR POLLUTION 110 (1991).

85. *See generally* Crutzen, *supra* note 82; Galindo, *supra* note 82, at 890; G. Seckmeyer & R.L. McKenzie, *Increased Ultraviolet Radiation in New Zealand (45° S) Relative to Germany (48° N)*, 359 NATURE 135 (1992); John E. Frederick et al., *Empirical Studies of Tropospheric Transmission in the Ultraviolet: Broadband Measurements*, 32 J. APPLIED METEOROLOGY 1883 (1993).

86. *See* Seckmeyer & McKenzie, *supra* note 85, at 135.

87. *See id.* at 135.

88. *See id.* at 136.

surface in Chicago.[89] The study found a statistically significant inverse relationship between ground-level ozone levels and UV-B measurements on cloudless days, when UV-B levels are highest.[90] The study found that ambient ozone levels of 0.06 ppm corresponded to a 7.4 percent reduction in total UV levels.[91] Another study found that ground-level ozone levels in highly-polluted Mexico City were inversely correlated to UV-B levels, and that peak ozone levels result in as much as a 50 percent decrease in UV-B levels.[92]

Given the undisputed data that ground-level ozone exhibits a significant protective effect against UV-B radiation, the Department of Energy (DOE) urged the EPA to consider this effect in revising the ozone standard:

> [I]t is known that UV-B penetration in the atmosphere, and its associated health risks, are affected by total column ozone, and that any decrease in atmospheric ozone will result in increased penetration of UV-B to the earth's surface. Therefore, tropospheric ozone pollution helps to attenuate UV-B-related health effects at the same time that this ozone is causing other health effects. When developing new ozone standards, we think that it is important to use all the available scientific information to assure that a balanced position addresses this conundrum.[93]

The DOE estimated that a 0.5 percent decrease in total column ozone, resulting from a more stringent ozone standard, would result in: (1) 2,000-11,000 extra cases of non-melanoma skin cancer per year; (2) 130-260 extra cases of melanoma, including 25-50 deaths per year; and (3) 13,000-28,000 new cataract cases per year, as well as other unquantified adverse effects.[94]

A peer-reviewed scientific paper by two Office of Management and Budget staff members reached a similar conclusion.[95] The study calculated that a 10 parts per billion (ppb) decline in tropospheric ozone levels could result in as many as 3,000 to 10,000 additional non-melanoma skin cancer cases per year, with 37 to 130 additional fatalities from these types of skin cancers.[96] Using the same methods and

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89. *See* Frederick et al., *supra* note 85, at 1883.
90. *See id.* at 1891.
91. *See id.*
92. *See* Galindo, *supra* note 82, at 888, 890.
93. Statement of Dr. Marvin Frazier, Dep't of Energy, Clean Air Scientific Advisory Committee, CASAC Ozone Review Panel, Public Meeting, 203-04 (Mar. 21, 1995) [hereinafter Public Meeting].
94. *See id.* at 205-06.
95. Randall Lutter & Christopher Wolz, *UV-B Screening by Tropospheric Ozone: Implications for the National Ambient Air Quality Standard*, 31 ENVTL. SCI. & TECH. 142A (1997).
96. *See id.* at 144A.

assumptions as the EPA, the authors found that the monetized value of "the UV-B-related adverse health effects of reducing tropospheric O_3 to comply with the current O_3 NAAQS or to attain the EPA's proposed more stringent NAAQS may be similar in magnitude to the respiratory-related beneficial health effects of such an O_3 reduction."[97]

Despite this evidence, the EPA refused to consider the health benefits of ground-level ozone in its decision to revise the ozone standard.[98] The EPA did not deny that ground-level ozone protects against UV-B radiation, but rather argued that the magnitude of the beneficial effect was much smaller than the DOE and others had estimated.[99] Specifically, the EPA argued, without any support from the record, that the assumption that the ozone standard would reduce ground-level ozone levels by 0.10 ppm over-estimated the actual ozone reductions, and hence reduction of ozone benefits, by a factor of three.[100] Even if the EPA's arguments were valid, they would not be dispositive. Given that the EPA based the reduction of the standard primarily on non-fatal, short-term reversible effects on lung function, even a few additional cancer fatalities and hundreds if not thousands of additional cancer cases resulting from the reduction of the ozone standard remains very significant compared to the claimed benefits of the EPA's standard.[101]

The EPA also argued that the health benefits of ground-level ozone involve large uncertainties, although this did not stop the EPA from taking regulatory action to protect stratospheric ozone despite facing similar uncertainties.[102] The EPA concluded in that context that even though measurements available at the time revealed "no statistically significant change in total column ozone" from chloroflourocarbons (CFCs),[103] it was nevertheless appropriate to take regulatory action to phase-out CFCs because "by the time it is possible to detect decreases in ozone concentrations with a high degree of confidence, it may be too late to institute corrective measures that would reverse this trend."[104] Despite these uncertainties, the EPA found that ozone depletion will "endanger" public health based on "available, reliable evidence" and rejected arguments that the data were too uncertain and unreliable to quantify the health risks associated with reductions in ozone levels.[105] In contrast, the

97. *Id.* at 145A.
98. *See* RESPONSE TO COMMENTS, *supra* note 74, at 128.
99. *See id.* at 133-34.
100. *See id.* at 134.
101. *See id.* at 133-34.
102. *See* 40 C.F.R. § 82.
103. Protection of Stratosphere Ozone, 53 Fed. Reg. 30,566, 30,571 (1988).
104. EXECUTIVE SUMMARY, *supra* note 78, at ES-4.
105. *See* Protection of Stratospheric Ozone, 53 Fed. Reg. at 30,595.

EPA's ozone standard will result in measurable decreases in ozone levels, and thus involves less uncertainty than was involved in the EPA's regulatory actions to protect the stratospheric ozone layer.[106] Moreover, as the DOE testified to the CASAC, the health effects associated with UV-B radiation resulting from ozone depletion are "at least as well established as the relationship between ozone concentrations and lung disease"[107] that the EPA relied on to justify lowering the ozone standard.[108]

The EPA has therefore applied a double-standard in refusing to consider the health benefits of ground-level ozone because those benefits are too uncertain and unreliable. These benefits, however, are at least as certain as the benefits of banning CFCs to protect the stratospheric ozone layer or even the health benefits on which the EPA relies to justify reducing the ozone standard. By only considering the health benefits and not the health disbenefits of its revised standards, the EPA has skewed its risk assessment to produce an unrealistic estimate of the public health consequences of reducing ozone pollution. The result is a standard that not only will unduly burden the economy, but may also do more harm than good to human health, at least at the margin.

B. Legal Arguments for Considering Health Disbenefits

The EPA relies primarily on legal arguments to justify its refusal to consider the health disbenefits of reducing ground-level ozone.[109] The Agency contends that Congress specifically intended the EPA to consider only the health benefits of reducing air pollutants, not the health disbenefits.[110] Incredibly, the statutory language on which the EPA pins its arguments is the requirement that the standard be based on a criteria document that "shall accurately reflect the latest scientific knowledge useful in indicating the kind and extent of *all identifiable effects on public health* or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities."[111] The EPA nevertheless construes "all identifiable effects" to include only adverse effects and not protective effects of ozone in the atmosphere.[112]

106. *See* Public Meeting, *supra* note 93, at 204.
107. *Id.*
108. *See* Final Rule, *supra* note 2, at 38,860-61.
109. *See* RESPONSE TO COMMENTS, *supra* note 74, at 128-33.
110. *See id.* at 128-30.
111. CAA § 108, 42 U.S.C. § 7408(a)(2) (1994) (emphasis added).
112. *See* RESPONSE TO COMMENTS, *supra* note 74, at 129-30.

The EPA rests its interpretation of "all identifiable effects" on congressional intent.[113] Without citing any congressional statement specifically prohibiting consideration of any protective effects of air pollutants, the EPA argues that Congress's focus on protecting public health indicates "that Congress did not want the EPA to weigh the potential 'disbenefits' of pollution control against the adverse health effects from a pollutant's presence in the ambient air."[114] Putting aside the plain language of the statute requiring consideration of "all" health effects, and the lack of any legislative history specifically indicating that the EPA should ignore protective effects of air pollutants, the EPA's view of Congress's intent is implausible. If Congress was truly focused on public health, why would it want to ignore important health effects associated with an air pollutant, whether they be good or bad? Adopting a standard that will, on balance, do more harm than good to public health would not be consistent with the statutory objective of setting a standard that protects the public health with an adequate margin of safety. Even if the increased health risks associated with a proposed standard do not completely outweigh the health benefits, consideration of both types of effects is necessary to set a standard at the optimal level that protects public health.

A preposterous but nonetheless revealing example of the implications of the EPA's position is that it would require the EPA to ban oxygen in the atmosphere, as it is well established that oxygen can contribute to adverse health effects, including lung disease.[115] Under the EPA's approach, the beneficial effects of oxygen could not be considered, including the fact that it is essential for human life. Rather, the EPA would be required to regulate oxygen based solely on consideration of the adverse effects of the "pollutant." Of course, such an example is preposterous, but not under the EPA's view of the world in which it only considers the harmful effects of a pollutant in the ambient air.

The EPA also relies on a decision of the D.C. Circuit that rejected the argument that the Agency erred "in refusing to consider the health consequences of unemployment in determining the primary standards for particulate matter."[116] However, that decision is, in fact, consistent with considering the health benefits of ozone in the atmosphere. The court held that it "is only health effects relating to pollutants in the air that EPA

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113. *See id.* at 128-30.

114. *Id.* at 130.

115. *See, e.g.*, CURTIS D. KLAASSEN, CASARETT & DOULL'S TOXICOLOGY: THE BASIC SCIENCE OF POISONS 456 (5th ed. 1996).

116. NRDC v. EPA, 902 F.2d 962, 972-73 (D.C. Cir. 1990).

may consider."[117] The EPA took this same position in that litigation, arguing that Section 108(a)(2) "clearly limits [the Administrator's] consideration to health and welfare effects 'which may be expected from the presence of such pollutant in the ambient air.'"[118] The protective effects of ground-level ozone directly result from "the presence of such pollutant in the ambient air," and thus the EPA is required to consider such effects in proposing to change the ambient standard.[119]

Courts, agencies, and health experts have recently become more sensitive to the risk-risk tradeoffs inherent in many regulatory decisions. Reducing one health risk often results in increases of other risks, either directly as in the case of ground-level ozone, or indirectly as when a substitute for the regulated substance imposes its own risks on society.[120] The relative importance of risk-risk tradeoffs is likely to increase as environmental regulation becomes increasingly stringent and pursues smaller and smaller risks.[121] As a recent book addressing risk-risk tradeoffs noted, "as we try to squeeze out more and more risk, the pressure leading to side effects may grow" and "as we address ever smaller target risks, the importance of countervailing risks *relative* to the target risks is likely to increase."[122] This problem is precisely what is at issue with the EPA's ozone standard, because as it becomes more stringent and regulates smaller health risks, the risk-risk tradeoffs that result are likely to become relatively more significant and diminish, or perhaps even overwhelm, the positive health benefits of the proposed standard.

The courts have also increasingly focused on this problem. For example, in *Corrosion Proof Fittings* v. *EPA*,[123] the Fifth Circuit overturned the EPA's ban on asbestos products in significant part because the Agency failed to consider the risks of substitutes for asbestos.[124] The EPA's failure to consider the risk-risk tradeoffs "deprives its order of a reasonable basis" because the "EPA cannot say with any assurance that its regulation will increase workplace safety when it refuses to evaluate the harm that will result from the increased use of substitute products."[125] Similarly, the D.C. Circuit overturned a regulation governing vehicle fuel economy because the Agency failed to consider the safety trade-offs

117. *Id.* at 973 (emphasis omitted).
118. NRDC v. EPA, Brief of Respondent EPA, at 29 (Sept. 25, 1989) (on file with author).
119. *Id.*
120. *See* JOHN D. GRAHAM & JONATHAN BAERT WIENER, RISK VERSUS RISK: TRADEOFFS IN PROTECTING HEALTH AND THE ENVIRONMENT 12 (1995) (citation omitted).
121. *See id.*
122. *Id.* (citation omitted).
123. 947 F.2d 1201 (5th Cir. 1991).
124. *See id.* at 1230.
125. *Id.* at 1221-22.

associated with the reduction in average vehicle size necessary to comply with the more stringent fuel economy standards.[126] The court found that the Agency had attempted "to paper over the need to make a call" on the risk-risk trade-offs between fuel economy and safety, and thus had deprived its regulation of the "reasoned analysis" needed to withstand judicial review.[127]

These and other judicial decisions[128] recognize that in their zeal to regulate one problem, agencies often turn a blind eye to the overall health impacts of their decisions, and as a result of this myopia may in fact do more harm than good.[129] As previously discussed, there are major risk-risk trade-offs associated with reducing ground-level ozone, and the EPA's failure to consider those trade-offs deprives its decision of a reasoned basis.

IV. CONCLUSION

The argument presented in this Article is that the EPA acted unreasonably and irresponsibly by refusing to consider costs and the health disbenefits of its decision to reduce ozone pollution. While the EPA certainly deserves criticism for its approach, the real responsibility lies with Congress and the courts. For over twenty years, these institutions have stood by silently and failed to impose any criteria or limitations on the EPA's decision-making authority. The result is that an unelected agency is essentially given unrestricted discretion to set any standard it wants with enormous impacts on the nation's economy and the way of life of its citizens. The EPA's recent simultaneous revisions to the ozone and particulate matter standards are the most expensive set of environmental regulations ever enacted, with annual costs estimated by the EPA of $47 billion per year when fully implemented.[130] This is more than the nation spends on compliance with all other CAA programs combined.[131] It surely is not rational or responsible for the EPA to impose such burdensome standards without any discernable decision-making

126. Competitive Enter. Inst. v. National Highway Traffic Safety Admin., 956 F.2d 321, 323 (D.C. Cir. 1992).

127. *Id.* at 323.

128. *See, e.g.*, NRDC v. EPA, 655 F.2d 318, 342 (D.C. Cir. 1981) (stating that it is "perfectly proper" for the EPA to consider risk-risk trade-off between particulate matter and NOx); International Union, UAW v. OSHA, 938 F.2d 1310, 1326 (D.C. Cir. 1991) (Williams, concurring) (discussing health-health trade-offs associated with regulation).

129. *See* Warren & Marchant, *supra* note 32, at 428.

130. *See* Final Rule, *supra* note 2, at 13-2 (adding full attainment costs of particulate matter and ozone standards).

131. *See* OFFICE OF AIR AND RADIATION, EPA, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT: 1970 TO 1990, at ES-2 (1997) (providing a figure that indicates that total annual compliance costs for all CAA programs has never exceeded $30 billion).

criteria, thereby closing its eyes to critical relevant economic and health information.