IN THE

Supreme Court of the United States

AMERICAN TRUCKING ASSN'S, INC. *et al.*,
Cross-Petitioners,
v.

BROWNER, EPA ADMIN.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the District of Columbia Circuit

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BRIEF OF *AMICUS CURIAE* MERCATUS CENTER IN SUPPORT OF CROSS-PETITIONER

INTEREST OF *AMICUS CURIAE*

The Mercatus Center at George Mason University is a nonprofit research and educational institution, as defined by the Code of the Internal Revenue Service, 26 U.S.C. § 501(c)(3).[1] Its Regulatory Studies Program ("*RSP*") is

[1] The statements in this brief do not represent an official position of George Mason University. The parties' written consents to the filing of this brief have been filed with the Clerk of Court. Pursuant to Rule 37.6, *amicus curiae* states that no counsel for a party authored this brief in whole or in part, and no persons other than the *amicus curiae*, its members, or its counsel, have made a monetary contribution to its preparation or submission. Counsel acknowledge the contribution of Susan E. Dudley, Senior Research Fellow at the Mercatus Center, to the writing of this brief.

dedicated to advancing knowledge of administrative regulations and their effects on society. Through its Public Interest Comment project, RSP submits independent analyses of proposed rules in agency rulemaking proceedings. It filed two such analyses with EPA on the proposed national ambient air quality standards for ozone and particulate matter during the comment period. Those comments focused on the inadequacy of the scientific and economic foundation of the proposed standards, the failure of EPA to consider offsetting health risks and the disproportionate costs that would be incurred in implementing the standards. Each is central to the issue of the petition herein.

ARGUMENT

I. INTRODUCTION AND BACKGROUND

The issue in this case is whether the EPA and the lower court correctly construed the Clean Air Act ("CAA") when they relied upon *Lead Industries Ass'n, Inc. v. EPA,* 647 F.2d 1130 (D.C. Cir.), cert. denied, 449 U.S. 1042 (1980), to exclude indirect health effects, implementation costs, and related risk considerations in setting National Ambient Air Quality Standards ("*NAAQS*"). Section 109(b) of the CAA directs EPA to set NAAQS at levels "requisite to protect the public health" with an "adequate margin of safety." 42 U.S.C. § 7409(b)(1). In *Lead Industries*, the D.C. Circuit held that § 109 prohibited EPA from considering "economic or technological feasibility in setting ambient air quality standards." 647 F.2d at 1148. It specifically rejected arguments that cost considerations were relevant in establishing "margins of safety" under § 109 or that EPA had to show "clear" health effects before approving standards for protecting "public health." *Id.* at 1154-1155; see *id.* at 1148. Later decisions by the D.C. Circuit confirmed that EPA was precluded from considering all factors of " 'economic and technological feasibility,' " *American Petroleum Inst. v.*

Costle, 665 F.2d 1176, 1185 (D.C. Cir. 1981), cert. denied sub nom. *American Petroleum Inst. v. Gorsuch*, 455 U.S. 1034 (1982), including indirect health effects such as "costs associated with alleged health risks from unemployment." *NRDC v. EPA*, 902 F.2d 962, 973 (D.C. Cir. 1990), vacated in part, 921 F.2d 326 (D.C. Cir.), cert. dismissed sub nom. *Alabama Power Co. v. NRDC*, 498 U.S. 1075 (1991).

This unduly narrow reading of § 109 is not supported by the CAA's text, purpose, context, structure or legislative history—or by common sense. It is, moreover, inconsistent with the D.C. Circuit's reading of a significant part of §112(b)(1)(B) of the CAA, 42 U.S.C. § 7412(b)(1)(B), which established the boundaries for hazardous pollutants "at the level which in the [Administrator's] judgment provides an ample margin of safety to protect the public health." In *NRDC v. EPA*, 824 F.2d 1146 (D.C. Cir. 1987) (*en banc*) ("*Vinyl Chloride*"), the D.C. Circuit read § 112 as requiring an EPA finding of "significant risk," *id*. at 1153, and as permitting consideration of non-health as well as compliance costs and related matters in setting the emissions standards. *Id*. at 1158, 1163-66. Thus, had the open-ended measure of standard setting approved in *Vinyl Chloride* been adopted by EPA and the D.C. Circuit in the instant case (rather than the health restricted test of *Lead Industries*), it is unlikely that this case or its companion, Docket No. 99-1257, would be before the Court. That is, under that test, EPA's discretion would not have been largely unconfined, the requirements of the nondelegation doctrine could have been satisfied, and a NAAQS standard that properly took into account all relevant factors, including implementation costs, could have been adopted.[2]

[2] The difference in the language of the two sections – "adequate" in § 109 and "ample" in § 112 – would have seemingly no impact on whether cost and other factors were appropriate considerations in setting pollutant levels. At most, these differences measure the quantum but not

These issues of statutory construction under § 109 are persuasively addressed in Cross-Petitioners' brief and we endorse but do not repeat that analysis here.[3] Our focus instead is on the effect of EPA's misguided reading of the clause in § 109—that NAAQS levels for ozone and particulate matter must "protect the public health" with an "adequate margin of safety." Because EPA's reading excludes consideration of important countervailing health and welfare considerations (e.g., implementation costs as well as direct and indirect health and welfare effects), the revised NAAQS are unlikely to improve public health and welfare. We examine the public health and welfare effects of different decision rules that could be applied if EPA were not constrained by *Lead Industries*, and show that these alternative decision rules would better meet the statutory directive of protecting public health with an adequate margin of safety.

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the kind of analytical support required for these EPA rules. See *Merriam-Webster's Collegiate Dictionary* 61 (Deluxe ed. 1998) ("ample" is something "more than adequate").

[3] Amicus also is filing a brief in the companion "nondelegation" case (Docket No. 99-1257) on the proper application of that doctrine in interpreting § 109 of the CAA. Nonetheless, we believe that the issue there is interconnected with the "substantive *Lead Industries*" case here (Docket No. 99-1426) because a proper reading of § 109, requiring EPA to consider cost, indirect health and related effects, will moot the nondelegation issues in Docket No. 99-1257. On the other hand, affirmance of the court of appeals in the nondelegation case (Docket No. 99-1257) will not resolve the substantive *Lead Industries* issues herein because rejection of EPA's interpretation of § 109 does not itself answer the question of Congressional intent on the meaning of that section. That question should be answered either by the Court (under *Chevron* step 1) or by a reasonable interpretation by the agency (under *Chevron* step 2), depending on whether Congress directly addressed the precise issues of cost consideration. See pp. 23-4 *infra*.

The revised NAAQS rules at issue here represent a major departure by EPA. Its prior standard for PM regulated all particles larger than 10 microns; the revised standard expands that regulatory scope by including fine particles of soot down to 2.5 microns, which "are so small that several thousand of them could fit on the type-written period of the end of a sentence." Statement of EPA Administrator Carol M. Browner before Senate Subcommittee on Clean Air, Wetlands, Private Property & Nuclear Safety of the Comm. on Environment & Public Works, 105th Cong., 1st Sess. 280 (Feb. 12, 1997). The new rule generally retains the 1987 standards for particulate matter larger than 10 microns (PM_{10}) but creates a new standard for fine particles larger than 2.5 microns ($PM_{2.5}$). The $PM_{2.5}$ standard specifies a maximum annual average concentration of 15 and a daily maximum of 65 micrograms per cubic meter, summarized as 15/65 $\mu g/m^3$. The previous ozone standard applied to concentrations of .12 parts per million (ppm) averaged over one hour; the new rule sets it at .08 ppm averaged over eight hours which constitutes roughly a 10 percent reduction.[4] While implementation cost estimates are necessarily imprecise, responsible reviewers put total annual compliance costs for the two standards between $46.3 billion (EPA's estimate) and $210 billion (Reason Public Policy Institute upper bound estimate); the Mercatus Center estimated implementation costs to be at least $100 billion annually. See discussion pp. 19 n.14, 20 & 22 n.16 *infra*.

EPA acknowledged that its selection of ozone and PM levels—at .08 ppm for ozone and 15/65 $\mu g/m^3$ for $PM_{2.5}$—was not based on scientific evidence establishing a safe threshold for ozone or PM health effects. Indeed, the announced standards start from the assumption that there is

[4] The rule notes that an eight-hour standard of .09 ppm "generally represents the continuation of the present level of protection." NAAQS Ozone Rule, 62 Fed. Reg. 38,856, 38,858 (July 18, 1997)("*Ozone Rule*").

no safe threshold below which ozone and PM would not pose adverse health effects.[5] EPA therefore relied upon a "linear, nonthreshold dose-response model" to evaluate the benefits of each further reduction in ozone and PM.[6] However, under this model, each further reduction in ozone and PM will be found to improve public health (i.e., provide life-saving benefits) no matter how "clean" the air already may be. Thus, there is no standard above zero that could be said to be "safe" or said not to cause adverse health effects.

Nonetheless, EPA did not set either standard at zero. It understood, at least implicitly, that zero concentration levels were technically infeasible, and that even if achievable, such standards would impose severe economic and other costs that dwarfed all possible benefits. *American Trucking Ass'ns, Inc. v. EPA*, 175 F.3d 1027, 1038 & n.4 (D.C. Cir. 1999). Fettered by *Lead Industries*, however, EPA could not assert that the costs of setting the standards at zero would outweigh their benefits.[7] EPA did not explain how or why it selected

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[5] For PM, EPA suggests that a threshold may exist, but "the level or even existence of population thresholds below which no effects occur cannot be reliably determined by an examination of the results from the available studies." NAAQS PM Rule, 62 Fed. Reg. 38,652, 38,670 (July 18, 1997)("*PM Rule*").

[6] The linear, nonthreshold dose-response model that EPA used to support its analysis relates the predicted change in health effects to a change in the concentration of PM or ozone. Unlike other chemicals regulated by EPA under this section of the CAA, EPA has no scientific evidence of a threshold concentration below which PM or ozone will not have health effects. This is the *nonthreshold* aspect of the model. The *linear* aspect of the model assumes that regardless of the overall concentration of ozone or PM to which an individual is exposed, a one unit change in that concentration will have the same marginal effect on public health.

[7] We use the terms "costs" and "benefits" here in their broadest senses and include among them "risk" and "cost-benefit" analyses as well as "wealth-health" and "health-health" effects (discussed pp. 12-23 *infra*).

the .08 ppm (ozone) or 15/65 μg/m^3 ($PM_{2.5}$) levels as compared with any other levels, and thus it did not identify a principled basis for determining what concentrations of ozone and PM in the atmosphere are adequate to protect public health. This narrowly constrained decision structure, which did not consider trade-offs between different health effects, the cost of implementing a standard, or the health effects of large compliance costs, conflicts with CAA § 101(b). That section expressly identifies "promot[ing] the public health and welfare and the productive capacity of its population" as one of the primary purposes of the Clean Air Act. 42 U.S.C. § 7401(b)(1).

Confined by *Lead Industries*, EPA was forced to produce an alternative, non-cost basis for the new ozone and PM levels. As that alternative, it chose unbridled and essentially unreviewable administrative discretion, asserting that selecting the "adequate margin of safety" was "a policy choice left specifically to the Administrator's judgment." *Ozone Rule*, 62 Fed Reg. at 38,857; see also *PM Rule*, 62 Fed. Reg. at 38,653. Thus, according to EPA, it is free under CAA § 109 to select any point along a dose-response continuum and claim that this point provides an adequate margin of safety without regard to whether that margin could be satisfied at a less stringent level or whether a more stringent level was necessary.

II. THE OZONE AND PARTICULATE MATTER RULES ARE BASED ON UNCERTAIN EVIDENCE THAT DOES NOT JUSTIFY THE SELECTED NAAQS LEVELS

EPA's own science advisors questioned whether its ozone and PM standards would achieve EPA's claimed public health benefits. This uncertainty, when coupled with large implementation costs, caused both outside experts and other agencies within the government to question whether the air

quality concentration levels established by the standards were justified. See, e.g., Letter from Frank E. Kruesi, Assistant Secretary for Transportation Policy, to Sally Katzen, Office of Information and Regulatory Affairs, Office of Management and Budget (Nov. 20, 1996)("It appears incomprehensible that the Administration would commit to a new set of standards and new efforts to meet such standards without much greater understanding of the problem and its solutions.").

A. EPA Failed to Develop Comparative Justifications for the New NAAQS Levels

The indeterminate nature of EPA's supporting evidence for its new standards was fostered by the narrowness of *Lead Industries'* direct health test. That is, forced to consider only direct health measures (e.g., lung function) and prohibited from considering indirect health effects (e.g., protection against ultraviolet radiation) or compliance costs (e.g., cost-benefit comparisons), the EPA failed to develop any justification for the specific levels selected in its NAAQS standards. In particular, EPA was unable to explain why the levels it selected, for example, of $PM_{2.5}$ at 15/65 $\mu g/m^3$, were appropriate as compared with any alternative such as a $PM_{2.5}$ level of 20/75 $\mu g/m^3$.

1. Ozone

The human clinical, epidemiological, and animal evidence relied upon by EPA to support its more stringent ozone standard does not explain why the level was set at .08 ppm and not .07 or .09, or indeed at any point between the current level and zero. The clinical studies of individuals running on a treadmill detected changes in the force of exhalation of persons exposed to ozone only at levels down to .08 ppm. *Ozone Rule*, 62 Fed. Reg. at 38,859 & 38,863. Not only were these measured responses "typically small or mild in nature,"

id. at 38,864, but also the effects were temporary and reversible. More importantly, these studies did not examine effects at levels lower than the proposed new standard of .08 ppm, and EPA did not distinguish between lung function effects at .08 ppm and higher levels. *Id*. at 38,863-64.

Nor were these gaps filled by epidemiological studies. In evaluating the effects of ozone, EPA reviewed studies correlating high ozone concentrations and above normal hospital admissions. *Id*. at 38,864. But as EPA admits, these ozone hospital admissions only "represent a small fraction of the total respiratory-related hospital admissions for asthmatics" and provide no support for the particular ozone standards of .08 because the studies report "no discernable threshold at or below this level." *Id*. Long-term laboratory animal studies referenced by EPA did not fill this gap. While subsequent dissection revealed changes in the biochemistry and structure of the lungs, the animal studies showed no change in behavior or function of the lungs at exposures significantly higher than .08 ppm (.5 ppm to 1.0 ppm). 61 Fed. Reg. 65,715, 65,721 (Dec. 13, 1996). Indeed, at the lowest exposure level examined of .12 ppm, animal studies showed no effects at all. *Id.*

The issue here is not whether there is scientific evidence to support restrictions on ozone, but rather the absence of any evidence showing why the .08 ppm standard is a correct or reasonable level, or why a lower or higher level is not better. Because of *Lead Industries*, EPA was not forced to provide comparative evidence or consider other health or cost effects that reduced the identified benefits from the new standard or that offered a basis for a selected stopping point. This unfocused state of the supporting evidence is even more significant because EPA's highly regarded Clean Air

Scientific Advisory Committee ("CASAC")[8] did not endorse the .08 ppm ozone standard. In giving advice to the EPA Administrator, the CASAC explained that "there is no 'bright line' which distinguishes any of the proposed standards (either the level or the number of allowable exceedances) as being significantly more protective of public health" than the existing standard. CASAC Letter to Carol Browner *re: Ozone* (November 30, 1995) in Ozone JA 238.[9]

2. PM

The support for the $PM_{2.5}$ standard similarly fails to identify why the new standard of 15/65 $\mu g/m^3$ rather than 20/75 (or 12.5/20) was selected. Here there was a broad consensus among CASAC members that available studies supported the establishment of a standard for $PM_{2.5}$; but there was "no consensus on the level, averaging time or form of a $PM_{2.5}$ NAAQS." CASAC Letter to Carol Browner *re: Particulate Matter* (June 13, 1996) ("*CASAC Letter*") in PM JA 3164. In other words, EPA's science advisors agreed that fine particles warrant concern but the threat they present at this time is too poorly understood to justify selection of any particular level, or at least not a level of 15/65 $\mu g/m^3$. Thus, in his testimony before the Subcommittee on Clean Air, Wetlands, Private Property & Nuclear Safety of the Senate Committee on Environment & Public Works, 105th Cong., 1st Sess. 18 (Feb. 5, 1997), the chairman of CASAC, Dr. George T. Wolff, emphasized the "many unanswered

[8] CASAC is a legislatively established body of independent experts that provides advice to EPA on scientific and engineering issues. See 42 U.S.C. § 7409(d)(2)(A).

[9] CASAC concurred (unanimously) that a measure of ozone that focused on concentrations over an 8-hour period would be more appropriate than the prior standard which measured concentrations over a 1-hour period. EPA states that the prior standard of .12 ppm measured over 1 hour is equivalent to a standard of .09 ppm measured over 8 hours.

questions and uncertainties" left open by EPA's supporting evidence—e.g., which fine particles are hazardous, how to interpret observed correlations between health effects and PM—and concluded that it was impossible to rely upon health effects as the sole basis for selecting any standard.

EPA was unable to identify the sources of particulates which would need to be controlled if its regulations are to have any beneficial effects on public health. The prepared statement of CASAC Chair Dr. Wolff explained the problem:

> PM_{10} and $PM_{2.5}$ . . . are composed of four or five major constituents and hundreds of trace constituents . . . . The causative agent [of adverse public health effects] could be some constituent of the PM rather than the total PM or total $PM_{2.5}$ which would require a control strategy targeted at the causative constituent rather than at PM_{10} or $PM_{2.5}$ in general. . . . There is no biologically plausible mechanism that could explain the apparent relationship between acute mortality and PM at concentrations that are a fraction of the present PM_{10} NAAQS. (*Id.* at 92-93.)

In brief, EPA's official science advisors concluded with near unanimity that the agency had not obtained critical missing support for the level of its $PM_{2.5}$ rule. See *CASAC Letter*, PM JA at 3165 ("[t]he Panel is unanimous . . . in its desire to avoid being in a similar situation [of too little data with too little time to evaluate and integrate it] when the next PM NAAQS review cycle is under way by a future CASAC Panel").

B. The Consideration of Other Factors Such as Comparative Costs and Benefits is Necessary for Developing Reliable and Specific Standards

Forced to rely only upon direct evidence of adverse public health effects in setting specific standards, EPA was left in a

quandary as to how to develop and support particular levels without being forced to select a zero standard. EPA clearly considered tradeoffs when it chose to set a non-zero standard, but it was not allowed to consider those trade-offs openly or to use all the tools required for rational decision making. If a reduction in ozone has harmful side effects (e.g., reducing the protection from ultraviolet rays, see pp.15-17 *infra*), that information is critical in deciding whether and where to set the standard. If the cost of reducing ozone and small particles includes an increase in the number of asthma cases and more deaths than lives saved, particularly among vulnerable groups such as the urban poor, see pp. 17-19 *infra*, that information should encourage setting the standard at a level that can be achieved at more reasonable cost. How EPA's decision is made—and, in particular, what information can be considered and relied upon—is critical to whether the CAA's objective of both improving public health and increasing productive capacity will be achieved. 42 U.S.C. § 7401(b)(1).

III. BECAUSE OF *LEAD INDUSTRIES*, EPA DECISION-MAKING IGNORED HEALTH AND WEALTH TRADE-OFFS AND FAILED TO EXAMINE COST CONSEQUENCES

In directing EPA to develop ambient air standards under CAA § 109, Congress intended that when setting NAAQS levels the agency should take account of all factors that could impinge on public health. *See* Cross-Pet. Br. Part II (examining language, structure, context, purpose and legislative history of § 109). The ruling in *Lead Industries,* that cost-benefit analysis was not permissible and that only direct health effects of the pollutant being regulated could be considered, has thwarted the Congressional purpose. The D.C. Circuit's undue narrowing of EPA's decision process has meant that cost, feasibility, indirect health and wealth effects—all of which are integral parts of public health policy

analysis—were not included. See generally Susan E. Dudley & Wendy L. Gramm, *EPA's Proposed Ozone Standard May Harm Public Health and Welfare*, 17 Int'l J. Risk Analysis 403 (1997); Edward W. Warren & Gary E. Marchant, *"More Good Than Harm": A First Principle for Environmental Agencies and Reviewing Courts*, 20 Ecol. L. Q. 379 (1993); cf. Presidential/Congressional Commission on Risk Assessment and Risk Management, *Framework for Environmental Health Risk Management*, vol. I at 38 (1997).

As the lower court demonstrated, EPA could have relied upon a determinate decision rule that would eradicate "any hint of direct health risk" by setting NAAQS levels at zero for ozone and PM.[10] Cert. Pet. App. (Docket No. 99-1257) at 15a. But such a rule requiring "deindustrialization" was rejected out of hand by EPA. As a consequence, EPA was left with no guiding decision standard other than the Administrator's subjective "policy judgment." 62 Fed. Reg. at 38,869 (ozone rule); *id.* at 38,691 (PM rule); see also Testimony of George T. Wolff, *supra* at 17. This, the lower court said, would violate the constitutional requirement that the NAAQS standards set by EPA be based on some determinate decision rule. Cert. Pet. App. (Docket No. 99-1257) at 6a. The court further noted that "[e]veryday life compels us all to make decisions balancing remote but severe harms against a probability distribution of benefits," *id.* at 16a, and suggested that EPA could develop a "generic unit of harm" and determine how many such units are permissible under the CAA in setting NAAQS standards. *Id.*

By definition, the balancing decisions made in everyday life involve weighing the positive consequences of an action against the negative consequences. Applied here, such a

[10] An application of the "direct health effects" test in *Lead Industries* would not have had the same consequences because lead was believed to have a non-zero threshold—i.e., there were concentrations below which no adverse health effects were found.

balancing would require that all factors be considered, not just the negative health effects of pollutants in the air. To guide that judgment the CAA should be read as permitting cost-benefit analysis. Cost-benefit is merely a "regulatory method that calls for regulators to identify, and make relevant for purposes of decision, the good effects and the bad effects of regulation, and to quantify those as much as possible in terms of both dollar equivalents and life-years saved, hospital admissions prevented, workdays gained, and so forth." Cass R. Sunstein, *Cognition and Cost-Benefit Analysis* p. 9, Univ. Chi. Law & Economics Working Paper No. 85 (2d. Series) (October 1999) (forthcoming J. Legal Studies) <http://www.law.uchicago.edu/Publications/Working/index/html>.[11] Indeed, former EPA officials acknowledge that the use of benefit-cost analysis at the beginning of the regulatory process has led to significantly increased benefits and reduced costs in the affected regulations. See Richard D. Morgenstern, *Economic Analyses at EPA: Assessing Regulatory Impact* 2-3, 473-74 (Resources for the Future 1997) (former Associate Assistant Administrator, EPA Office of Policy Analysis).

Only by balancing the positive benefits of reducing ozone and PM against offsetting negative consequences of achieving those reductions can EPA find an "intelligible principle" on which to base its standards. This section offers several balancing criteria applicable in that process. It begins with health criteria and goes on to examine increasingly broad decision rules to conclude that the statutory goals

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[11] See also C. Boyden Gray, *The Clean Air Act Under Regulatory Reform*, 11 Tul. Env. L. J. 235, 260 (1998): "Making open and accountable use of economic incentives and the law of diminishing returns, as well as demanding that there be benefits to the public from a rule net of any offsetting side-effects or dis-benefits, would . . . produce more expansive air quality benefits, because costs saved in implementation can be redirected to providing benefits."

protecting public health and welfare are best promoted with an open balancing of benefits and costs.

A. Health-Health Effects

EPA constrained its public health policy judgments to preclude not only costs but many other factors that affect public health, including other health effects. This single-focus analysis violated basic risk management principles. "Considering a risk in isolation cannot provide decision-makers or the public with any sense of how important the risk is, compared with other risks, or of the impact that reducing or eliminating it might have on overall human and ecosystem health." Presidential/Congressional Commission on Risk Assessment and Risk Management, *supra* at 38.

Had EPA engaged in a more complete analysis, it seems clear that it would have been obliged to set the ozone standard at a different level.[12] In estimating the effects and deciding the appropriate levels of permissible ozone concentrations, EPA explicitly disregarded its own evidence as well as evidence presented by other agencies that reducing ground-level ozone to the EPA levels could reduce ozone's screening effect on harmful ultraviolet-B ("UV-B") radiation and lead to thousands of additional skin cancer and cataract cases per year. See EPA, *Calculations of the Impact of Tropospheric Ozone Changes on UV-B Flux and Potential Skin Cancers* (Draft)(September 1994)(Cupitt, Larry T.) in Ozone JA 3089-3104; Randall Lutter & Christopher Wolz,

[12] The lower court unanimously reversed EPA's explicit disregard of potential beneficial health effects of tropospheric (ground-level) ozone, finding it a "bizarre" reading of the CAA to force EPA to "look[] at only one half of a substance's health effects in determining the maximum level for that substance." Cert. Pet. App. (Docket No. 99-1257) at 47a. EPA did not seek certiorari on this issue and, as a consequence, must go through notice-and-comment rulemaking to address the evidence that lowering the ozone NAAQS may have a negative net health effect.

UV-B Screening by Tropospheric Ozone: Implications for the National Ambient Air Quality Standard, Environmental Science & Technology, Vol. 31, No. 3 (1997). For example, evidence in the record submitted by the Department of Energy projected that a .01 ppm reduction in ozone concentrations, as required by EPA's ozone rule, would result in 25 to 50 additional melanoma-caused fatalities, 130-260 additional incidences of cutaneous melanoma, 2,000-11,000 additional cases of non-melanoma skin cancer, and 13,000-28,000 additional incidences of cataracts each year. Statement of Marvin Frazier, DOE Office of Health & Environmental Research, Before CASAC (March 21, 1995) in Ozone JA 258-59. Critically, these negative results from lowered ozone concentrations dwarfed EPA's projected positive health effects. Since none of the evidence reviewed by EPA's science advisors suggested that implementation of EPA's stricter ozone rule would reduce human fatalities, the loss of protective health benefits from current ozone levels under the new rules would outweigh any health benefits that could be gained from reduced ozone levels. See Susan E. Dudley & Wendy L. Gramm, *supra* at 404:

> [The Department of Energy's analysis] suggests the rule will induce 25-50 more fatalities each year (since EPA's best estimate of the health benefits of the new standard do not include any reduced fatalities). To compare the morbidity effects, we used EPA approaches to convert health effects to dollars. We estimate that the negative health impacts from this rule will exceed EPA's best estimate of the positive health effects by over $300 million per year.

Particulate matter also serves a beneficial screening function against harmful UV-B radiation, although these benefits, by themselves, do not outweigh the positive health effects resulting from reductions in PM. Nonetheless, it is unsound public policy and contrary to the CAA's requirements to ignore the positive health effects of PM in

setting a standard designed to protect public health with an adequate margin of safety. But that appears to be how EPA proceeded here because of *Lead Industries.*

In its Advance Notice of Proposed Rulemaking for the Ozone and PM standards 61 Fed. Reg. 65,764, 65,768 (Dec. 13, 1996), EPA described another unwelcome side effect of reducing PM. It cautioned that "a reduction of a fine particle precursor possibly can increase ozone or increase a different fine particle component (e.g., SO_x reductions leading to increased ammonium nitrate or NO_x reductions increasing sulfate formation)." In other words, EPA recognized that the reduction of fine particles as required by its $PM_{2.5}$ NAAQS standard could increase emissions of other pollutants that may have harmful health effects.

While consideration of health-health tradeoffs increases the likelihood that public health will, on balance, be protected, this methodology does not identify any specific standard (or "intelligible principle"). For example, if the dose-response function for both the beneficial UV-B effects and the detrimental ozone or PM health effects are linear, and do not exhibit a threshold, then a health-health decision rule will drive the standard to zero in order to minimize levels of the pollutant if the detrimental effects dominate (as may be the case for PM) or lead EPA not to regulate the pollutant at all if the beneficial effects dominate (as may be the case for ozone). Nonetheless, considering offsetting direct health costs associated with a rule is essential if EPA is to optimize public health.

B. Wealth-Health Effects

Just as both harmful and beneficial health affects should be considered in determining whether a NAAQS standard satisfies the public health standard in § 109, similar consideration should be given to the costs of implementing

EPA rules and of their effect on disposable family income. A body of research indicates that serious health problems arise when family living standards decline. See Stephen J. Breyer, *Breaking the Vicious Circle: Toward Effective Risk Regulation* 23 (1993) ("deprivation of real income itself has adverse health effects, in the form of poorer diet, more heart attacks, more suicides").[13]

The "wealth-health" decision rule translates such costs into statistical deaths and counsels against imposing regulations that are projected to cause a greater number of deaths (through lower income) than they prevent. See Randall Lutter & John F. Morrall, *Health-Health Analysis: A New Way to Evaluate Health and Safety Regulation*, 8 J. Risk & Uncertainty 43-66 (1994); Ralph L. Keeney, *Estimating Fatalities Induced by the Economic Costs of Regulations*, 14 J. Risk & Uncertainty 5 (1997). Recent studies linking income and mortality find that every $15 million decline in net income induces one statistical death. See Randall Lutter, John F. Morrall, III, & W. Kip Viscusi, *The Cost-Per-Life-Saved Cutoff for Safety-Enhancing Regulations*, 37 Economic Inquiry 599-608 (October 1999). The total number of additional deaths attributable to the adverse wealth effects of the ozone and PM rules ranges from 665 to 4,050 for the ozone rule and 2,447 to 10,000 for the PM rule. Against these numbers, EPA estimates that the ozone rule will prevent 350 fatalities and the PM rule another 3,300 to 16,000. In other words, 315 to 3,700 additional deaths will occur under

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[13] Recent studies also suggest that poverty may be a more important risk factor for asthma (which is the main health focus of the ozone and PM rules) than air quality, so the extraordinary cost of these rules may increase poverty—and thereby increase the very disease they are targeted to diminish. See American Thoracic Society, *Asthma on the Rise in Urban Areas*, 1996 International Conference Articles (1996) <http://www.thoracic.org/ic/ic96/mon4.html> ("Poverty may be the number one risk factor for asthma.").

the ozone rule, while more lives will be saved than lost under the PM rule.[14]

This analysis emphasizes the problems inherent in narrowly constricting the factors that EPA can rely upon in shaping and approving rules under the CAA. The NAAQS regulations cannot be accurately assayed without including the positive health benefits from ozone and PM as well as the consequences of reducing consumer wealth and therefore of increasing mortality.

C. Cost-Benefit Analysis

Proper application of health-health and wealth-health effects are important in the design of rational NAAQS rules. They nonetheless are limited tools. A full analysis of the public health consequences of a major environmental rule seeking to improve air quality must assess all the costs as

[14] Estimates of the annual cost of EPA's new ozone and PM rules range widely. EPA estimated that the total will be $46.3 billion per year ($9.6 billion for ozone and $36.7 billion for PM). See EPA, *Regulatory Impact Analyses for the Particulate Matter and Ozone National Ambient Air Quality Standards and Proposed Regional Hazard Rule* 9-7 (July 16, 1997) <http://www.epa.gov/ttn/oarpg/naaqsfin/ria.html> ("*RIA*"). The 1997 Mercatus Center analysis estimated that the full costs could exceed $100 billion per year. Mercatus Center, *Comments on NAAQS for PM*, RSP 1997-1 at 17 (March 12, 1997); Mercatus Center, *Comments on NAAQS for Ozone*, RSP 1997-2 at C-3 (March 12, 1997). And a Reason Public Policy Institute study estimated these costs as ranging from $20 billion to $60 billion per year for the ozone rule, and $70 to $150 billion per year for the PM rule. Anne E. Smith, et al., *Costs, Economic Impacts, and Benefits of EPA's Ozone and Particulate Standards*, Reason Public Policy Institute 15 (June 1997) ("*RPPI* "). Using the $15 million income-health relationship, EPA's cost estimate would imply an increase in mortality of 3,087 deaths each year. The RPPI's estimates translate into additional annual fatalities of 1,333 to 4,000 for the ozone rule and 4,667 to 10,000 for PM. To these numbers one also must add the 25-50 melanoma deaths noted earlier (p. 16 *supra*) that are attributable to increased UV-B exposure because of reductions in ozone levels.

well as benefits of the intended regulation. The principle is widely recognized and imbedded in agency rulemaking subject to Presidential oversight. See, e.g., Executive Order 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993) (even though "some costs and benefits are difficult to quantify, [agencies shall] propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs"). A cost-benefit analysis is simply a comprehensive way of ensuring that a regulation does more good than harm. See, e.g., Kenneth J. Arrow, et al., *Is There a Role for Benefit-Cost Analysis in Environmental, Health and Safety Regulation?*, 272 Science 221 (1996); see also Edward W. Warren & Gary E. Marchant, *supra*. To deny an agency the authority to examine all benefits and costs—whether focused on economic trade-offs, comparing risks, evaluating technical requirements, analyzing feasibility, or assessing other opportunity costs—is to consign its regulations to weak and unsatisfactory justifications.

EPA did conduct a Regulatory Impact Analysis that estimated the benefits and costs of the standards (in one year, 2010), although it argued that this information was "not relevant to establishing the standards themselves." *RIA* at ES-3. EPA concluded that the cost of fully attaining the ozone standard would be $9.6 billion and the benefits could range from $1.5 billion to $8.5 billion in 2010. Thus, under EPA's estimate the ozone rule would impose costs in excess of benefits of between $1.1 billion and $8.1 billion per year. Meeting the PM standard in 2010, according to EPA's estimates, would cost $36.7 billion, and offer benefits ranging from $19.8 billion to $109.7 billion. *RIA* at 13-2. EPA thus estimated that the net effect of achieving the PM standard in 2010 could range from net costs of $18 billion to net benefits of $67 billion.

By EPA's own analysis, the ozone rule clearly fails a cost-benefit test, while the PM rule fails under certain

assumptions. Furthermore, EPA's estimates have been criticized as overstating benefits and understating costs. The benefits figures are dominated by statistical deaths avoided which, according to EPA's approach, are valued at $4.8 million each; but this figure "significantly overstates the value most people would attach to the average number of life years saved (per person) by the [Clean Air Act]." Advisory Council on Clean Air Compliance Analysis Letter to EPA (October 23, 1996), docketed as EPA-SAB-Council-ltr-97-001<http://www.gov/science1/coul9701.pdf>; see National Research Council, *Paying Our Way: Estimating Marginal Social Costs of Freight Transportation*, TRB Special Report #246, at 159 (1996) ("12 years are lost on average by a person who dies prematurely as a result of air pollution"). Furthermore, the relationship between these pollutants and mortality itself is in question. CASAC did not review the studies EPA relied upon for the ozone mortality effects, *RIA* 12-32, and it was concerned about "the many unanswered questions and uncertainties associated with establishing causality of the association between $PM_{2.5}$ and mortality." CASAC Letter, PM JA at 3164.

EPA recognized that its cost estimates were "speculative," *RIA* at 13-7, because it knew of no technologies to bring many areas (at least 20% of the nation) into compliance with the standards by 2010. It overcame this by first assuming the deployment all known controls[15] and then by assuming that additional emissions reductions required to attain the standards would cost $10,000 per ton. This arbitrary figure

[15] To estimate the cost of full attainment, EPA first identified all known technologies that could achieve emission reductions at $10,000 per ton or less. These technologies combined were only predicted to achieve 23 to 38 percent, *RIA* at 7-9, of the emissions required to comply with the ozone standard and 40 percent, *RIA* at 9-9, of the emissions required to comply with the PM standard. EPA then assumed that the remaining emission reductions could be achieved at $10,000 per ton.

unrealistically assumes that the remaining residual tons of emissions can be removed as inexpensively as the earlier tons. But see Stephen G. Breyer, *supra* at 11 ("Removing that last little bit can involve limited technological choice, high costs, devotion of considerable agency resources, large legal fees, and endless argument."). Other estimates place the costs of reducing the residual emissions at between $30,000 and $90,000 per ton. *RPPI* at 15; see also Randall Lutter, *Is EPA's Ozone Standard Feasible?*, AEI-Brookings Joint Center for Regulatory Studies, Regulatory Analysis No. 99-6 (December 1999) <http://www.aei.brookings.org/search/results.asp> ("meeting the standard in 2010 would cost nearly $5 trillion in one city, and $70 billion in seven other cities"). Again, had such calculations been considered as part of an explicit cost-benefit analysis, EPA would have been forced to select different NAAQS levels.[16]

From a public health perspective, EPA's deliberate disregard of the costs of its NAAQS standards is a serious deficiency because costs expended on reducing levels of ozone and PM could otherwise be devoted to more beneficial purposes. The net public benefit from a broader decision-making focus can be substantial. One recent study conducted at the Harvard Center for Risk Analysis found that a reallocation of current spending from lower risk to higher risk problems could more than double the number of lives saved. See Tammy O. Tengs & John D. Graham, *The Opportunity*

[16] Setting aside the likely overestimate of the benefits of the rules, and simply correcting for the effect of the arbitrary cost cut-off on total cost estimates suggests that both PM and ozone rules will impose social costs far in excess of their benefits. As noted above, RPPI estimated total ozone costs of between $20 billion and $60 billion per year, which is significantly higher than EPA's expected benefits of $1.5 billion to $8.5 billion. Similarly, RPPI's estimated costs of the PM rule range from $70 billion to $150 billion per year, compared to EPA's projected benefits of $19.8 billion to $109.7 billion.

Cost of Haphazard Social Investments in Life-Saving, ch. 8, in *Risks, Costs, and Lives Saved: Getting Better Results from Regulation* (Robert Hahn, ed. 1996). Such gains are likely even when bureaucratic constraints, such as shifting funds across agencies, remain in place.

The ultimate reason, however, for reversing the *Lead Industries* ruling is that it misreads Congress' obvious intent when it required in § 109 that ambient air standards "protect the public health" with an "adequate margin of safety." There is nothing in these terms or anywhere else in the Clean Air Act requiring that major rules encompassing all aspects of the economy be decided by looking selectively at only some of the facts and some of the effects of the rules. Indeed, it is irrational to suggest that Congress meant for EPA to do more harm than good by its regulations. See E. Warren & G. Marchant, *supra* at 417-28; see also *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1221-22 (5th Cir. 1991). Similarly, Congress could not have meant that EPA was authorized to set a standard at any level based on the Administrator's "policy judgment." Direct health effects that are considered under *Lead Industries* are important. But without identifying how and where the benefits diminish or the costs increase, arbitrary and erroneous decisions are inevitable. It is time, in other words, to correct the long-standing mistake made in *Lead Industries* that imposes an irrational decision-making process on EPA that Congress never intended.

IV. UNDER *CHEVRON*, THIS COURT SHOULD DECIDE WHETHER THE CLEAN AIR ACT EXCLUDES CONSIDERATION OF COSTS AND OTHER EFFECTS AND REMAND TO EPA THE ISSUE OF IDENTIFYING SPECIFIC DETERMINATE CRITERIA

Lead Industries' interpretation of the Clean Air Act to exclude consideration of anything other than direct health benefits is a question for the Court because it is clear that

Congress did not intend to constrain EPA's assessment of the effects of its NAAQS rules. See *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842-43 (1984) (no deference by court where Congressional intent is clear); accord Federal Cert. Opp. Br. (Docket No. 99-1426) at 9 (review of *Lead Industries* as a *Chevron* step one case). Since *Lead Industries* was a pre-*Chevron* case, the lower court was, within the boundaries of *stare decisis*, bound by that determination. See *Maislin Indus., U.S., Inc. v. Primary Steel, Inc*, 497 U.S. 116, 131 (1990) (once the Court has "determined a statute's clear meaning, we adhere to that determination under the doctrine of *stare decisis*, and we judge an agency's later interpretation of the statute against our prior determination of the statute's meaning"); *Lechmere, Inc. v. NLRB*, 502 U.S. 527, 537 (1992); *National Fed'n of Federal Employees v. Dep't of Interior*, 526 U.S. 86 (1999) ("*NFFE*").

However, that does not answer whether this Court or EPA should decide in the first instance what "determinate criterion" should be employed by EPA in "drawing lines" of the levels of permissible pollutants pursuant to CAA § 109. By its terms, § 109 requires consideration of the effect of the selected standards on "public health" with an "adequate margin of safety"; however, beyond that positive requirement, § 109 does not rule out consideration of any health, wealth or cost effects. By its terms, however, § 109 provides no direct guidance on the criteria to be applied by EPA in setting standards for particular pollutant levels or for setting the parameters on how EPA's authority is confined. The circumstances here are similar to *NFFE* where the Court found that even though the agency's initial interpretation of the ambiguous statutory term was reasonable, the issue had to be remanded to the FLRA for reconsideration under the newly defined mandate because it may have been clouded by the erroneous reading of the D.C. Circuit. Thus, under *Chevron*, the matter should be remanded to EPA to reinterpret

§ 109 under the new understanding of the factors that can be considered. See 467 U.S. at 842-43.

V. CONCLUSION

The holding in *Lead Industries* that, in setting and revising NAAQS under § 109 of the Clean Air Act, EPA may not consider the costs, feasibility or other effects of implementing the standards, should be set aside. By denying consideration of cost-benefit as well as of health-health and wealth-health effects, *Lead Industries* does more harm than good. Its mischievous redesign of § 109 should be set aside. Only a broad balancing of all consequences, such as are facilitated by a robust cost-benefit analysis, will truly meet the Clean Air Act's goals.

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