The Clean Air Act and Mobile-Source Pollution Control

Arne E. Gubrud*

The Clean Air Act\(^1\) unquestionably has provided a powerful impetus for long overdue efforts to clean up the nation’s air. Air quality has steadily improved in those urban areas with severe air pollution problems only a few short years ago, and further improvements can be expected shortly. Current energy shortages may dictate some reduction in the rate of progress anticipated by the Act, particularly with regard to control of emissions from stationary sources by the wider use of low-sulfur oil or natural gas. On the other hand, reduced gasoline sales already have contributed to reductions in emissions from mobile sources and may continue doing so. Reductions in urban vehicle miles traveled, through carpooling and wider use of available public transportation, have also reduced emissions. The full impact of these factors has yet to be evaluated but could be substantial.

Although the scope of this discussion will be limited to those provisions of the Clean Air Act relating to mobile sources,\(^2\) these provisions must be viewed in the broader context of the evolution of the whole Act. Therefore, some discussion of issues dealt with in other portions of the Act is unavoidable.

I

EVOLUTION OF FEDERAL AUTO EMISSION CONTROLS

A. Early Emission Control Standards

The national automotive air pollution control effort originated with the 1965 amendments to the Clean Air Act.\(^3\) These amendments authorized, for the first time, the establishment of nationwide standards to control emissions from new motor vehicles.

In March 1966, the Secretary of Health, Education, and Welfare promulgated the first federal exhaust emission standards, effective

* Director, Division of Environmental Affairs, American Petroleum Institute.


beginning with the 1968 model year. These standards, essentially adaptations of earlier California standards, applied only to hydrocarbons (HC) and carbon monoxide (CO) and were expressed as concentration limits (parts per million for HC and percent for CO). A requirement of 100 percent control of crankcase emissions, which alone account for about 25 percent of the total HC emitted from an uncontrolled vehicle, was also promulgated under the 1965 amendments, although such controls (positive crankcase ventilator valves) already had become standard equipment following their successful demonstration in California during the early 1960's.

In June 1968, HEW promulgated standards for the 1970 model year, this time on a mass rather than a concentration basis. The new standards specified emissions in terms of grams per vehicle-mile, as determined from a test intended to simulate typical vehicle driving patterns. The new basis was chosen in order to limit all light-duty vehicles to the same level of emissions per unit distance traveled, regardless of engine size, fuel consumption rate, or type of service.

This policy decision had the indirect, but no doubt intended, effect of favoring compact and subcompact cars over standard sedans, luxury-class cars, and station wagons. Whereas the standards promulgated for stationary sources under Title I of the Act are based on facility type and size (raw-material throughput or fuel input), motor vehicle emission standards are not. The emissions per mile of a station wagon capable of serving a large family as a weekend recreation vehicle must not exceed those of a two-passenger subcompact. This difference in the manner of regulating stationary and mobile sources is a result of agency policy rather than any requirement, express or implied, in the Clean Air Act.

The emission standards for 1970 model cars were quite stringent. They required reductions in tailpipe emissions of controlled cars of nearly 80 percent for HC and about 70 percent for CO as compared with corresponding emissions of uncontrolled cars. Subsequently, for 1971 and later models, virtually 100 percent control of evaporative HC emissions from the carburetor and fuel tank was required.

In February 1970, the Secretary of HEW published for comment an "advance notice of proposed rule making" setting forth a tentative schedule of more restrictive emission standards, including for the first time standards for emissions of nitrogen oxides (NOₓ) for 1973 and

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1975 model cars.8 These standards were based largely on projections which had been made in 1967 by the Panel on Electrically Powered Vehicles of the Department of Commerce.9 The Panel had based its recommendations on both environmental need (protection of public health) and commercial feasibility. The tentative standards for 1975 models were never promulgated, however, because Congress in December 1970, enacted the Clean Air Amendments,10 incorporating much more stringent emission standards into the statute itself.

B. The Role of Air Quality Criteria

In the 1967 amendments to the Act,11 Congress directed the Secretary of HEW to develop and issue to the states “such criteria of air quality as in his judgment may be requisite for the protection of the public health and welfare ... . Such criteria shall . . . reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on health and welfare which may be expected from the presence of an air pollution agent . . . .”12 The Secretary also was directed to publish information on techniques available for control of sources of air pollution agents.13 In addition, he was to designate air quality control regions, whether intra- or interstate, which have air pollution problems and ought, for meteorological, social, and political reasons, to be treated as a unit for the purpose of setting ambient air quality standards.14

The states in turn were required, after public hearings, to develop air quality standards and plans for their implementation for all pollutants for which criteria had been issued. The standards were subject to federal review and approval and had to be “consistent with” HEW’s air quality criteria.15 The 1967 amendments did not specify a certain time for implementation of air quality standards. Thus, many states (as well as some HEW personnel) viewed the standards as benchmarks against which progress in air quality improvement could be measured, rather than as legally enforceable limits.

Moreover, the setting of standards by the states was not in most cases a technical decision based on evaluation of scientific evidence; it was instead a policy decision strongly influenced by public senti-

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12. Id. § 107(b), 81 Stat. 491 (emphasis supplied).
13. Id. § 107(c), 81 Stat. 491.
14. Id. § 107(a), 81 Stat. 491.
15. Id. § 108(e), 81 Stat. 492.
ment as expressed at hearings. In short, the air quality standard-setting process might be described as legislative rather than regulatory in character. It is perhaps for this reason, and because ambient air quality standards, in contrast to emission standards, generally are not enforced directly against the polluter, that protest against the lack of scientific basis for many of the standards went largely unheeded.

With passage of the Clean Air Amendments of 1970, however, the HEW air quality criteria took on new significance. While not tied to the criteria by specific language, the motor vehicle emission reductions mandated by the 1970 amendments were unquestionably based on those criteria.

C. The Origin of Section 202(b)

In June 1970, Dr. Delbert S. Barth of HEW’s National Air Pollution Control Administration presented to a meeting of the Air Pollution Control Association a paper calculating the percentage reduction in vehicle emissions (and the corresponding mass emission standards) needed to achieve health-related air quality goals throughout the United States. At the time there were no national air quality standards, but HEW had published its air quality criteria for all regulated automotive pollutants except NO. The Barth paper is extremely important to an understanding of the technical basis of the 90 percent reductions in vehicle emissions (compared to controlled 1970-71 models) required by section 202(b)(1) of the Clean Air Act, as subsequently enacted in December.

There can be little question that the Senate Public Works Committee relied heavily on information of the kind contained in the Barth paper in arriving at the now highly controversial 90 percent figure, which understandably might appear quite arbitrary to an uninformed observer. Congress did not, however, follow the rationale of the Barth paper in every detail, as will presently become evident.

The Barth paper selected 1980 as the target year for first applying emission standards designed to achieve health-protective air quality. 1990 was set as the target year for achieving that air quality,


assuming that it would take at least ten years for effective turnover of
the vehicle population, that is, for virtually all vehicles not meeting the
more stringent standards to have been replaced. The more stringent
emission standards proposed for 1980 were derived from a number of
assumptions, including the following:

1. In order to achieve desired air quality throughout the United
States by 1990, the emission standards would have to be those needed
to achieve such air quality in the cities with the worst air pollution
problems (Los Angeles for HC and NO\textsubscript{x}, Chicago for CO) on the
most polluted day of 1990.\textsuperscript{19}

2. In Los Angeles, mobile sources account for all of the HC and
NO\textsubscript{x}; in Chicago, they account for all of the CO.\textsuperscript{20}

3. Emission standards would have to be stringent enough to
compensate for the maximum projected growth in the vehicle popu-
lation. Thus, independent of controls and using 1967 as a base year, an
emissions growth factor of 2.18 would have to be assumed for the
year 1990.\textsuperscript{21}

4. The deterioration of control systems on vehicles in actual
public use would increase emissions by an average 13 percent for CO
and 25 percent for HC, requiring that emission standards be all the
more stringent in order to compensate for this deterioration.\textsuperscript{22}

5. Health-protective air quality is that quality which prevents,
with an adequate safety margin, the occurrence of the smallest pollut-
ant exposure HEW found to be associated with a health effect.

It should be noted that the term “associated with” does not sig-
nify causation. HEW’s criteria document summaries merely observe correlations between pollutant levels and effects on the health of ex-
posed populations. They fail to establish the statistical significance of
such correlations. The documents plainly indicate that the reliability
of individual studies cited is in most instances highly questionable.
Moreover, many relevant studies, conducted under controlled labora-
tory conditions, apparently were deemed not to be “useful” because
they did not support the criteria and were therefore omitted.

From these tenuous assumptions, the Barth paper derived hypo-
thesical emission standards for vehicles to be marketed in 1980 and
later years. These standards bear a striking resemblance to those man-
dated by the Clean Air Amendments of 1970 for 1975 and 1976 mod-
els. While strongly implying that their choice of 1980 as the first year
for application of the standards was based on considerations of com-

\textsuperscript{19} Barth, supra note 16, at 521.
\textsuperscript{20} Id. at 520.
\textsuperscript{21} Id.
\textsuperscript{22} Id. at 522.
mercial feasibility, Barth and his co-authors dubbed it “arbitrary,” stating that they wished “to avoid becoming embroiled in high-level policy questions which still remain to be resolved.” They further stated that “[i]n the event the decision is made to select an earlier year for implementation it will be an easy matter to adjust the calculations accordingly.”

Setting the effective date five years earlier for HC and CO emissions and four years earlier for NOx emissions, however, placed awesome responsibilities on the automobile and petroleum industries. Instantaneous achievement of a goal that by the most optimistic estimate would likely take ten years is not easy. Yet that is what Congress appears to have expected when it set mid-1975 as the date for attainment of primary air quality standards and 1975 and 1976 automotive model years as the first years in which the more stringent tailpipe emission standards would apply.

D. Implementation of Primary Standards

Clearly, Congress was not relying on motor vehicle emission standards alone to achieve primary standards. On the contrary, Congress expected that in developing their implementation plans to achieve air quality standards the states would employ a combination of strategies, including such supplementary mobile-source controls as retrofitting in-use vehicles with advanced control devices and transportation control strategies. Moreover, Congress empowered the Administrator of the Environmental Protection Agency (hereinafter referred to as the Administrator) to impose such controls, after providing an opportunity for a public hearing, if a state failed to submit a satisfactory plan of its own.

The mid-1975 deadline for attainment of primary standards is not absolute. Congress recognized that it might not be possible to achieve primary standards by mid-1975, even with the application of a combination of control strategies. It therefore empowered the Administrator, under section 110(e), to grant extensions of not more than two years upon application by a state governor at the time of submission of that state's implementation plan. Congress permitted, in certain circumstances, a further postponement of not more than one year under section 110(f) of any requirement of an approved implementation plan which applies to a stationary source or class of moving sources. Thus, in certain cases a delay of up to three years in imple-

23. Id.
mentation of a primary ambient air quality standard would appear to
be possible under the Act, making mid-1978 the absolute deadline for
nationwide compliance. It is becoming increasingly apparent, how-
ever, that even if officials took maximum advantage of this flexibility
in deadlines, nationwide attainment of primary ambient air quality
standards by 1978 might not be possible without the risk of such vio-

tent disruptions of the national economy and of life styles as would cre-
ate far more serious public health and welfare problems than those the
Act seeks to remedy.

Indeed, in some areas it may not be possible to attain primary
standards at all. Even in the absence of any human contributions, nat-
urally occurring atmospheric concentrations of some air pollutants ex-
ceed applicable national ambient air quality standards at some places
and at some times. At sulfur springs, many of which have long been
valued as health spas, the national primary standards for sulfur diox-
ide are frequently exceeded. Conifer forests and swamps produce
non-methane hydrocarbons in excess of the national primary standards.
Salt aerosols along seacoasts and airborne dust in arid regions produce
consistent “violations” of national primary standards for suspended
particulate matter. And there is evidence that oxidants, or measure-
ments of oxidants by the present standard EPA technique, may often
exceed the national primary standard in some areas, despite the absence
of the ingredients of a Los Angeles-type photochemical smog reaction.
If pollutant concentrations exceeding primary standards are harmful to
health, then the background concentrations of pollutants produced by
natural phenomena are unwholesome in some geographical areas. It
would follow that attempts to design control strategies to achieve safe
levels with an adequate margin of safety (as now defined) are doomed
to failure, unless society is prepared to evacuate certain areas as un-
inhabitable.

The foregoing observations may appear to be a reductio ad ab-
surdum. Nevertheless, they strike at a basic weakness in the Clean Air
Act—that it prescribes a highly inflexible timetable for the achievement
of what now seem certain to be unrealistic goals.

This weakness might be partly overcome if Congress were to
amend the Act to require that the Administrator revise the primary
standards and the air quality criteria on which they are based so as to
take into account risk-benefit considerations. The only air quality
standard that can insure zero risk is a standard of zero. The clinical
significance of observed physiological effects, the probable incidence
of such effects at a given pollutant concentration, the contribution of
other (perhaps more easily controllable) environmental factors to such
effects, the statistical reliability of conclusions regarding cause and
effect (especially in epidemiologic studies), and the availability of technologically and politically acceptable alternative control strategies to reduce emissions—all should be taken into account in the setting of standards and of timetables for compliance.

Congress may not be disposed to make such a radical change in the Act, lest the clean air effort lose momentum. If so, the present timetables certainly need revision, preferably by requiring compliance with primary standards at the earliest practicable time, rather than by setting statutory deadlines. This approach would permit the Administrator to pursue the goals of the Act with full vigor and remove many of the obstacles which now impede rather than further the cause of cleaner air.

II

INADEQUACY OF PRESENT ADMINISTRATIVE DECISIONMAKING PROCESS

A. The Problem of Technical Information

The above history of section 202(b) highlights the need for a mechanism to insure objectivity in those federal administrative agency determinations involving complex scientific questions and assessment of technology. The failure of the Act to provide such a mechanism is perhaps understandable, since Congress had no legislative precedent to follow.

In recent testimony before a committee of the House of Representatives, Dr. Philip Handler, President of the National Academy of Sciences, expressed concern that federal processes for evaluating scientific and technological data and for making decisions have not kept pace with economic, technological, and social change:

Choices concerning the use of technology are ultimately economic and political in nature since they involve decisions between competing and often conflicting interests and values. As a result, the hard decisions that are made in the regulation of technology will normally take place at a high crisis level of confrontation, thus inviting the risks of reduced objectivity in the use of scientific facts. . . .

Dr. Handler further observed:

The occasional assignment of dual statutory responsibilities to one agency, viz., both program promotion and its regulation and evaluation, presents contradictions in agency program missions and clearly diminishes objectivity in decision-making.

28. Id.
The inadequacy of the present system of administrative law to deal with complex scientific and technological issues has been evident in a number of lawsuits brought under the Clean Air Act. The dilemma has nowhere been more clearly stated than by Chief Judge Bazelon in a minority opinion in International Harvester v. Ruckelshaus.\(^\text{29}\)

Socrates said that wisdom is the recognition of how much one does not know. I may be wise if that is wisdom, because I recognize that I do not know enough about dynamometer extrapolations, deterioration factor adjustments, and the like to decide whether or not the government's approach to these matters was statistically valid. . . .

The majority's interpretation of the present statute and the administrative precedents would give us no right to establish these procedural guidelines. Their opinion maintains that the strict deadlines in the Clean Air Act preclude any right to challenge the Administrator until after the decision has been made. It indicates that, since this hearing was "rulemaking" rather than "adjudicatory," cross-examination and confrontation are not required under traditional rules of administrative law.

. . . [T]he interests at stake in this case are too important to be resolved on the basis of traditional administrative labels. We recognized two years ago that environmental litigation represents a "new era" in administrative law. We are dealing here not with an airline's fares or a broadcaster's wattage, but with all humanity's interest in life, health, and a harmonious relationship with the elements of nature.

This "new era" does not mean that courts will dig deeper into the technical intricacies of an agency's decision. It means instead that courts will go further in requiring the agency to establish a decision-making process adequate to protect the interests of all "consumers" of the natural environment. In some situations, traditional rules of "fairness"—designated only to guard the interests of the specific parties to an agency proceeding—will be inadequate to protect these broader interests. This is such a case. Whether or not traditional administrative rules require it, the critical character of this decision requires at the least, a carefully limited right of cross-examination at the hearing and an opportunity to challenge the assumptions and methodology underlying the decision.

The majority's approach permits the parties to challenge the Administrator's methodology only through the vehicle of judicial review. I do not think this is an adequate substitute for confrontation prior to the decision. I reach this position not only out of concern for fairness to the parties . . ., but also out of awareness of the limits of our own competence for the task. . . . These complex

29. 478 F.2d 615, 4 ERC 2041 (D.C. Cir. 1973).
questions should be resolved in the crucible of debate through the clash of informed but opposing scientific and technological viewpoints.\textsuperscript{30}

B. Judicial Review of Air Quality Criteria

Section 307(b)(1) of the Clean Air Act apparently would authorize timely judicial review of the national primary ambient air quality standards.\textsuperscript{31} In view of the key role played by these standards in determining what emission controls and strategies will be imposed under the Act, it is surprising that no one has sought judicial review, alleging the standards either to be more stringent than necessary or not to be stringent enough to protect public health with an adequate margin of safety.

Section 109 of the Act requires that in establishing any national ambient air quality standard the Administrator base his judgment on published criteria and allow an adequate margin of safety.\textsuperscript{32} The Act includes no express provision for judicial review of the Administrator's publication of air quality criteria. National ambient air quality standards must be based on such criteria, however, and the criteria must reflect an earlier determination by the Administrator as to what scientific knowledge is "useful" in indicating effects on public health or welfare.\textsuperscript{33} The criteria are the very cornerstone of the standard-setting process.

In considering the 1970 Amendments to the Act, Congress appears not to have seen any reason to question the validity of the previously published criteria, since the Amendments required that air quality standards based on those criteria be adopted within just 30 days.\textsuperscript{34} The absence of explicit provision for judicial review of published criteria in either section 108 or section 307 supports this conclusion. The Act has a serious flaw if, as new criteria are developed or old criteria are revised, judicial review is unavailable until after promulgation of air quality standards based on those criteria.

A legal challenge to the Administrator's promulgation of air quality standards is constrained by the arbitrary and capricious standard of review, requiring the showing of an abuse of administrative discretion. The charge would be difficult to substantiate in light of the breadth of discretion granted to the Administrator by the Act and by past federal court rulings in such matters. In reviewing the actions of administra-
tive agencies, the Supreme Court consistently has held that the judiciary is empowered only to determine whether those actions are the result of "reasoned decisionmaking" within the agency's statutory discretion. Justice Marshall, in *Citizens to Preserve Overton Park v. Volpe*, stated that the "ultimate standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency."  

Clearly, the courts regard themselves as unqualified and unauthorized to evaluate complex scientific issues or issues involving technology assessment. They therefore tend to restrict their findings to procedural matters and other matters of law. The result is that even in areas where Congress expressly has consented to judicial review on the merits, the courts—loath to rule on the merits of technological arguments—either uphold the agency or remand the matter to the agency for further consideration.

### C. Procedural Requirements

Equally disturbing is the fact that the Administrator, in publishing air quality criteria or promulgating ambient air quality standards, is not required to make a determination *on the record* after notice and opportunity for public hearing. In issuing air quality criteria under section 117(f), the Administrator must, "to the maximum extent practicable within the time provided, consult with appropriate advisory committees, independent experts, and Federal departments and agencies." In addition, he may establish a standing consulting committee for each pollutant. There is, however, no explicit requirement for the creation of a complete record against which his determinations as to what knowledge is "useful" may later be judged. Nor is there any requirement for publication of criteria for public comment prior to their issuance. Before promulgation of an air quality standard, the Administrator must publish it in proposed form and provide a reasonable time, not to exceed 90 days, for written comments. He is not, however, bound by the record so made, and he need make only "such modifications as he deems appropriate."  

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35. 401 U.S. 402, 2 ERC 1250 (1971).
36. *Id.* at 416, 3 ERC at 1256.
39. *Id.* § 109(a)(1)(B), 42 U.S.C. § 1857c-4(a)(1)(B). The Freedom of Information Act, 42 U.S.C. §§ 551-559 (1968) may offer a possible remedy for plaintiffs seeking relief from administrative rulings they deem to be arbitrary and capricious and not the result of "reasoned decisionmaking." It remains to be seen, however, whether the courts will interpret the Freedom of Information Act in such ways as to permit careful scrutiny of internal agency deliberations.
III
SIGNIFICANT DETERIORATION

Because of its potential impact on complex sources which generate vehicular traffic and on transportation controls designed to limit vehicle use, the issue of whether the Clean Air Act prohibits "significant deterioration" of air quality in pristine, unpolluted areas is relevant to any discussion of mobile-source controls.

In *Sierra Club v. Ruckelshaus*, the federal district court held that an implementation plan under the Act must contain safeguards to prevent significant deterioration of air quality in areas where existing air quality is better than that prescribed by national secondary ambient air quality standards. The court held that the Act requires "the non-degradation of areas in which clean air exists." After an affirmance by the District of Columbia Circuit, the Supreme Court split four to four, thus affirming the lower court's decision. Accordingly, the Administrator published for public comment four alternate methods for determining what constitutes "significant deterioration," since neither the statute nor the court order provides guidance in this regard. At present, promulgation of some regulation appears imminent, but further litigation also seems inevitable.

The issue in *Sierra Club v. Ruckelshaus* has its basis in the language of section 101(b)(1) of the Act, which states that one of the purposes of Title I is to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." Nowhere in the Act is there any language regarding degradation or deterioration of air quality. The argument that the words "protect and enhance" exclude any deterioration whatsoever is the single semantic thread by which the possibility of a substantive issue hangs.

Thus, the problem complained of in *Sierra Club v. Ruckelshaus* appears to be a phantom. In section 109(b)(2), the statute directs that national secondary ambient air quality standards specify a level of air quality "requisite to protect the public welfare from any known or anticipated adverse effects." Moreover, section 302(h) states that...
when used anywhere in the Act, "language referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being." If secondary standards are set in accordance with these criteria, any variation in air quality at levels below those described by the standards is surely insignificant and cannot properly be characterized either as deterioration or as enhancement. Both types of variations, in fact, would appear to be entirely outside the purview of the Clean Air Act.

It is interesting to note that plaintiffs in Sierra Club v. Ruckelshaus would indeed have a solid cause of action if they could show that the secondary standards do not meet the statutory guidelines. Then, however, they would face the same difficulties faced by all plaintiffs seeking to overturn administrative judgments of federal agencies long after the deadline for judicial review has passed.

CONCLUSION

In its treatment of mobile sources, the Clean Air Act suffers from two basic weaknesses. First, there is a logical inconsistency between the deadlines for attainment of primary air quality standards and the timetable for automotive emission standards designed to implement the primary air quality standards. Supplementary transportation controls and land use controls will not suffice to overcome this inconsistency. Second, to the extent that the scientific validity of the data upon which national primary and secondary air quality standards were based may be in doubt, the process by which they were derived should be subject to public scrutiny. Unfortunately, judicial review at this late date appears improbable, particularly in light of the recent report of the National Academies of Sciences and Engineering to the Senate Public Works Committee. This report has been widely, and incorrectly, cited as an endorsement of the statutory automotive emission standards. However, a careful reading of the report makes it obvious that great uncertainty remains as to what emission standards are needed to achieve national ambient air quality standards, as well as what air quality is needed to protect the public health.

Congress could rectify many of the problems in the present Act by amending it to provide more flexibility to the Administrator with

47. Id. § 302, 42 U.S.C. § 1857h(h) (emphasis supplied).
48. COORDINATING COMMITTEE ON AIR QUALITY STUDIES, NATIONAL ACADEMY OF SCIENCES AND NATIONAL ACADEMY OF ENGINEERING, AIR QUALITY AND AUTOMOBILE EMISSION CONTROL, prepared for the SENATE COMM. ON PUBLIC WORKS (1974).
respect to deadlines and by ordering a review of the national primary and secondary air quality standards under a system of adversary proceedings upon written record, rather than by the traditional notice-and-comment rulemaking procedure.