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DIRECT FEDERAL REGULATION OF STATIONARY SOURCES UNDER THE CLEAN AIR ACT

DAVID P. CURRIE†

TABLE OF CONTENTS

I. NEW-SOURCE PERFORMANCE STANDARDS	1391
A. "New" Sources	1391
1. The Relevant Date	1392
2. The Commencement of Construction	1393
a. Planning	1393
b. Contracting	1394
c. Site Preparation and Ancillary Equipment	1395
3. Modification	1396
4. The "Bubble" Concept	1397
B. Other Threshold Requirements	1401
1. Significant Contribution	1401
2. Mandatory Standards and Major Sources	1404
3. Grain Elevators and Federal Sources	1406
C. The Criteria for Promulgation	1406
1. "A Standard for Emissions"	1407
2. Technology and Cost	1407
a. "Adequately Demonstrated"	1409
(i) The Development of Flue-Gas Desulfuri-	
zation	1409
(ii) Evaluation	1412
b. "The Degree of Emission Limitation Achiev-	
able"	1417
c. The "Best System" Considering "Cost"	1420
(i) The Definition of "Cost"	1421
(ii) The Weight to be Given Cost	1422
(iii) Interindustry Comparisons	1425
d. "Technological" Systems	1425
e. "Continuous" Controls	1431
D. Procedure for Adoption	1432
1. The Portland Cement Reforms	1432
2. The 1977 Amendments	1437
E. Enforcement and Waiver	1441
F. Revision	1444
G. Existing Sources	1446
II. "HAZARDOUS" AIR POLLUTANTS	1448
A. "Emission Standards"	1453
B. "To Protect the Public Health"	1460
III. THE STRATOSPHERE	1463
IV. EMERGENCY POWERS	1466
V. CONCLUSION	1468

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INTRODUCTION

The history of federal concern for air pollution has been like that of a new volcano: brief but dramatic. As recently as 1960 all regulation was conducted at state and local levels; today, by far the dominant presence is federal.

Congress made its first tentative foray into the field with the Air Pollution Control Act of 1955,¹ which cast the federal government in a purely informational role. The 1963 Clean Air Act² added federal grants to support state and local control agencies, authorized the negotiation of interstate compacts, and stuck a small toe in the door of federal enforcement by establishing a cumbersome "conference" procedure that theoretically might result in a federal suit to abate pollution. Authority was given in 1965 to establish national emission standards for new vehicles,³ and in 1967 to review and ultimately to enforce state-submitted standards of ambient air quality.⁴ Additional sweeping powers were granted to the federal Environmental Protection Agency (EPA) in 1970⁵ and 1977.⁶

The product of these legislative avulsions is an enormously intricate statute that begins to rival in complexity the Internal Revenue Code: it consumes 164 pages, without case annotations, of the *United States Code Annotated*. The statute itself has been subject to massive administrative and judicial accretions. Moreover, this law is of great practical importance, is all quite new, and is very little known. It also raises innumerable interesting problems both of interpretation and of policy.

This Article is one of a series exploring the various provisions of this law as it has developed and as it stands today.⁷ One of my

¹ Act of July 14, 1955, Pub. L. No. 84-159, 69 Stat. 322 (1955).

² Clean Air Act of 1963, Pub. L. No. 88-206, 77 Stat. 392 (1963).

³ Motor Vehicle Air Pollution Control Act, Pub. L. No. 89-272, 79 Stat. 992 (1965).

⁴ Air Quality Act of 1967, Pub. L. No. 90-148, 81 Stat. 485 (1967).

⁵ Clean Air Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (1970) (codified in scattered sections of 42, 49, 50 U.S.C.).

⁶ Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685 (codified in scattered sections of 15, 42 U.S.C.).

⁷ Currie, *Motor Vehicle Air Pollution: Federal Pre-emption*, 68 MICH. L. REV. 1083 (1970); Currie, *Federal Air-Quality Standards and Their Implementation*, 1976 AM. B.F. RES. J. 365 [hereinafter cited as *Federal Air-Quality Standards*]; Currie, *Judicial Review Under Federal Pollution Laws*, 62 IOWA L. REV. 1221 (1977); Currie, *The Mobile-Source Provisions of the Clean Air Act*, 46 U. CHI. L. REV. 811 (1979) [hereinafter cited as *Mobile-Source Provisions*]; Currie, *Non-degradation and Visibility Under the Clean Air Act*, 68 CALIF. L. REV. 48 (1980) [hereinafter cited as *Nondegradation*]; Currie, *Relaxation of Implementation Plans*

aims is to provide a roadmap for those who must traverse this mysterious terrain. Another is to supply critical commentary, after the ineradicable fashion of law professors, in the hope that the next generation of legislative, administrative, and judicial decisions may benefit from the experience of the past.

My present subject is the sections of the Clean Air Act that provide for direct federal control of air pollution from stationary sources. Even today section 101(a)(3) piously, if disingenuously, declares that "the prevention and control of air pollution at its source is the primary responsibility of States and local governments."⁸ The central mechanism for control of stationary sources remains the plan for implementing air-quality standards under section 110, which is developed by the states subject to exacting federal review.⁹ As early as 1970, however, Congress enacted two provisions for direct regulation of emissions from stationary sources. Section 111 authorizes federal "standards of performance" for "new" stationary sources and, subject to certain limitations, for existing sources of a type for which federal new-source standards have been adopted;¹⁰ section 112 authorizes "emission standards" for "hazardous" air pollutants.¹¹ The 1977 amendments added authority to adopt regulations to prevent potentially harmful effects on the stratosphere.¹² Finally, since 1977 the statute has authorized emergency federal action to protect against "imminent and substantial endangerment to the health of persons."¹³

The aggregate of these provisions is a very broad range of direct federal regulatory authority, subject to a number of restrictions that give rise to the predictable abundance of interpretive difficulties. I shall examine each provision in some detail.

I. NEW-SOURCE PERFORMANCE STANDARDS

A. "New" Sources

The main focus of section 111 is on "new pollution problems,"¹⁴ and the basic grant of authority in section 111(b) is to

Under the 1977 Clean Air Act Amendments, 78 MICH. L. REV. 201 (1980 [hereinafter cited as *Relaxation of Implementation Plans*]).

⁸ 42 U.S.C. § 7401(a)(3) (Supp. II 1978).

⁹ *Id.* § 7410.

¹⁰ *Id.* § 7411.

¹¹ *Id.* § 7412.

¹² *Id.* §§ 7450-7459.

¹³ *Id.* § 7603(a).

¹⁴ S. REP. NO. 1196, 91st Cong., 2d Sess. 16 (1970). *Accord*, H.R. REP. NO. 1146, 91st Cong., 2d Sess. 10 (1970).

adopt performance standards for "new sources."¹⁵ A new source is defined in section 111(a)(2) as "any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance under this section which will be applicable to such source."¹⁶ Despite this effort at definition, the distinction between a new source and an old one has proved surprisingly elusive.

1. The Relevant Date

The statute's choice of the date when standards are adopted is an obvious point at which to draw the line. Although any source beginning operation after the enactment of the statutory provision causes the "new pollution problem" section 111 was meant to prevent, sources built before the standards are announced might require extensive modification if they were to comply. One of the justifications for imposing separate standards on new sources, as the House Report explained in 1977, is that it is generally more expensive to install control equipment in an existing plant than in a new one: "testimony . . . indicates that it costs about 25 percent less to purchase and install flue gas desulfurization technology on a new plant than it would cost to retrofit that plant subsequently."¹⁷ The statutory decision not to apply regulations retroactively seems to be a sensible concession to this fact of life.

In pushing the date back to when the standards are proposed the statute apparently is meant to preclude the proposal from precipitating a rush to begin construction in order to avoid the standards. Unfairness is reduced by the fact that the proposal gives warning that a regulation is on the way, and some hint of its possible content. Yet if the final standard departs from the proposal, anyone who began construction in the interim may have to backfit, and this prospect may induce some to postpone construction until the regulation is adopted. Congress seems to have made a reasonable choice between two imperfect solutions.¹⁸

¹⁵ 42 U.S.C. § 7411(b)(1)(B) (Supp. II 1978).

¹⁶ *Id.* § 7411(a)(2).

¹⁷ H.R. REP. NO. 294, 95th Cong., 1st Sess. 185, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS 1264.

¹⁸ The comparable provision of the water-pollution statute, 33 U.S.C. § 1316 (a)(2) (1976), specifies that the proposal date is determinative only "if such standard is thereafter promulgated." This is implicit in the air-pollution provision as well.

2. The Commencement of Construction

The decisive event in determining whether a source is "new" is the "commence[ment]" of "construction or modification."¹⁹ In the absence of guidance from either the statute or the committee reports, the EPA adopted a regulation defining "construction" as "fabrication, erection, or installation of an affected facility,"²⁰ and providing that construction or modification has "commenced" when the owner "has undertaken a continuous program of construction or modification or . . . has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification."²¹

a. Planning

This definition rejected the notion that "construction" is "commenced" the minute planning for construction begins. In *United States v. City of Painesville*,²² for example, the city had hired a consultant in 1966 to explore the possibility of constructing a new electrical generating unit. Construction was authorized in 1967, ancillary equipment was purchased as early as 1967, and a proposed design of the generating unit itself was submitted in 1969. Nevertheless the court, upon the proposal of federal standards in 1971, held the plant a "new" source: "Construction" had not "commenced" before "a contract for the purchase of a new boiler was signed" in 1972.²³ The court's explanation of the basis for the EPA's regulation was entirely consonant with the apparent statutory purpose:

Construction of Unit 5 had not progressed to the point that a change in its design would have required the facility already erected to be modified in order to insure that it could comply Painesville could have modified its plans for Unit 5 at a time well after the proposed regulations for new stationary sources became final, without loss of the money previously spent on capital purchases.²⁴

"This interpretation," the court added, "is given credence by Congress' use of the word 'construction' . . . rather than the words 'planning' or 'designing.'"²⁵

¹⁹ U.S.C. § 7411(a)(2) (Supp. II 1978).

²⁰ 40 C.F.R. § 60.2(g) (1979).

²¹ *Id.* § 60.2(i).

²² 431 F. Supp. 496 (N.D. Ohio 1977).

²³ *Id.* 500.

²⁴ *Id.* 501 (footnote omitted).

²⁵ *Id.* 501 n.8.

To be sure, some investment in planning may be wasted under the EPA's definition,²⁶ but the long planning period in *Painesville* is evidence that the alternative is a substantial increase in the number of sources exempt from section 111 regulation. It seems reasonable for the EPA to conclude that planning expenses are not sufficiently great, in light of section 111's policy of limiting increased pollution, to justify construing "commence[ment]" of "construction" to include planning. And while in isolation the phrase "program of construction" in the regulation might be taken to embrace the planning process, the additional reference to "contractual obligation" would be superfluous given such an interpretation, and therefore seems to limit the "program" to actual physical construction.

b. Contracting

On the other hand, the EPA's interpretation clearly made a "contractual obligation" to construct sufficient to trigger section 111, although until physical construction begins "a change in . . . design" would not, in the words of the *Painesville* opinion, "have required the facility already erected to be modified."²⁷ Yet by signing a contract the owner may incur an obligation to another party that would subject him to significant detriment if subsequent standards required modification, and looking to the contract date may simplify questions of proof. Thus the line drawn again seemed a reasonable balance of the competing concerns underlying the limitation of section 111 to "new" sources. The statutory terms seemed flexible enough to permit this because, in one sense, even planning can be described as part of the process of "construction."²⁸

Despite this, the EPA had second thoughts about the propriety of an absolute rule based on the existence of a contract, and interpreted an identical regulation defining new sources for purposes of the nondegradation requirement²⁹ to make a contract decisive only when its cancellation would result in substantial cost. Not surpris-

²⁶ As argued in *Montana Power Co. v. EPA*, 429 F. Supp. 683, 701 (D. Mont. 1977).

²⁷ 431 F. Supp. at 501.

²⁸ The EPA's equation of contracting with construction was subsequently adopted by Congress in the comparable new-source provision of the Federal Water Pollution Control Act:

"[c]onstruction" means any placement, assembly, or installation of facilities or equipment (including contractual obligations to purchase such facilities or equipment) at the premises where such equipment will be used. . . ." 33 U.S.C. § 1316(a)(5) (1976).

²⁹ 40 C.F.R. § 52.21(b)(8)(ii) (1979).

ingly, a district court found the Agency had misread its own regulations.³⁰ In 1977 Congress adopted the EPA's rejected definition for purposes of nondegradation:

[T]he term "commenced" as applied to construction of a major emitting facility means that the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (i) begun, or caused to begin, a continuous construction of physical on-site construction of the facility or (ii) entered into binding agreements or contractual obligations, which cannot be cancelled or modified without *substantial loss* to the owner or operator, to undertake a program of construction of the facility to be completed within a reasonable time.³¹

Predictably, the EPA has taken steps to conform its section 111 definition to this new statutory standard.³²

c. Site Preparation and Ancillary Equipment

The EPA defines construction as the fabrication, erection, or installation of an "affected facility," which in turn is defined as "any apparatus to which a standard is applicable."³³ The apparatus subject to the standard in the *Painesville*³⁴ case was a fossil fuel-fired steam generating unit," which was defined to mean a "furnace or boiler."³⁵ Consequently the construction of ancillary equipment—not subject to any standard—was immaterial. Similarly, this definition excludes the purchase of land, the excavation of a

³⁰ *Montana Power Co. v. EPA*, 429 F. Supp. at 700-01. The court of appeals later reversed, 608 F.2d 334 (9th Cir. 1979).

³¹ 42 U.S.C. § 7479(2)(A) (Supp. II 1978) (emphasis added). The House Report specifically noted that this definition was intended to disapprove the district court's *Montana* decision, *see* text accompanying note 30 *supra*. H.R. REP. NO. 294, *supra* note 17, at 319, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1398. For interpretation of the new requirement that all permits be obtained, *see Montana Power Co. v. EPA*, 608 F.2d 334 (9th Cir. 1979), holding a source "new" because of failure to obtain a state air-pollution-control permit.

³² *See* 44 Fed. Reg. 31,596 (1979), proposing a revised 40 C.F.R. § 60.2 and quoting Congressman Rodgers that "[i]t is also expected that the Agency will act as soon as possible to revise its new source performance standards and the definition of 'commenced construction' for the purposes of those revised standards to conform to the definition contained in part C," (which is that quoted in the text).

³³ 40 C.F.R. § 60.2(g), (e) (1979).

³⁴ 431 F. Supp. 496 (N.D. Ohio 1977). *See* text accompanying note 22 *supra*.

³⁵ 40 C.F.R. §§ 60.40(a)(1), 60.41(a) (1979).

building site, and even the completion of a building in which to house the boiler. The Federal Water Pollution Control Act takes the opposite tack, though it does not reach land acquisition: "[C]onstruction' means any placement, assembly, or installation of facilities or equipment . . . at the premises where such equipment will be used, including preparation work at such premises."³⁶ One suspects that sometimes, but by no means always, standards published after such preparatory work will necessitate modification of physical facilities already constructed. Since a case-by-case determination of the degree of hardship would be costly, either definition seems within the bounds of reasonable agency interpretation.

3. Modification

The Clean Air Act expressly defines a "new" source to include one whose "modification" begins after the specified date.³⁷ The water-pollution statute contains no such provision.³⁸ A "modification" within the meaning of section 111 occurs only when an alteration of existing facilities "increases the amount of any air pollutant emitted" or "results in the emission of any air pollutant not previously emitted."³⁹ The inclusion of such modifications follows from the statutory focus on preventing new pollution problems.⁴⁰ It seems to represent, however, compromise of the competing statutory policy of avoiding the extra cost of backfitting, because the modification of a facility in other respects does not guarantee that retrofit control costs will not be excessive. The statutory definition exacerbates this difficulty, for "modification" includes not only "physical change" but also "change in the method of operation,"⁴¹ and a mere change in operation seems to hold little promise of reducing backfit costs. Apparently in response to this concern, but in evident contradiction to the statute, the Agency has provided that increases in either the production rate or hours of operation do not constitute "modifications," if the increase in production "can be accomplished without a capital expenditure."⁴²

³⁶ 33 U.S.C. § 1316(a)(5) (1976).

³⁷ 42 U.S.C. § 7411(a)(2) (Supp. II 1978).

³⁸ 33 U.S.C. 1316(a)(2) (1976).

³⁹ 42 U.S.C. § 7411(a)(4) (Supp. II 1978).

⁴⁰ See note 14 *supra*.

⁴¹ 42 U.S.C. § 7411(a)(4) (Supp. II 1978).

⁴² 40 C.F.R. § 60.14(e)(2), (3) (1979).

4. The "Bubble Concept"

While every "new source" is subject to section 111 standards, as noted above, a "modification" is included within section 111 only if it "increases the amount of any pollutant emitted" or "results in the emission of any air pollutant . . . not previously emitted" by the modified "source." In two common situations, therefore, the applicability of new-source standards depends upon whether the statutory term "source" is construed to refer to an entire plant or to each separate machine within it. First, if a new machine is itself a "source," it must meet the standards in all cases, while if the plant is the "source," the new machine constitutes a "modification," and the standards are inapplicable if its emissions are offset by the retirement of an old machine. Similarly, when a single machine is modified, emission reductions from the retirement of other machines may be offset in determining whether there has been an increase in emissions only if "source" is defined to include more than the single machine.

Industry accordingly put up a vigorous fight for a broad definition that became known as the "bubble concept"; a "source" was an entire plant, and offsets should be allowed both for the installation of new machines and the modification of existing ones. The statute itself is of little help, defining a "stationary source" as "any building, structure, facility, or installation which emits . . . any air pollutant."⁴³ "Building" suggests that some sources may be entire plants, at least if the EPA chooses to set standards on that basis, but "facility" is an ambiguous term that could relate either to an entire plant or to an individual machine. The Senate Committee did list entire plants such as "kraft pulp mills, petroleum refineries, [and] steel mills" as "major new facilities" that should be subjected to new-source standards,⁴⁴ but the context reveals that its concern was to suggest the types of activities that should be regulated, not to resolve the unforeseen question whether a new machine in an old plant was a "new source" or a "modification." There is no evidence that Congress meant to do any more in the statutory definition.

Some of the EPA's standards apply to individual machines, and the regulations define an "affected facility" as "any apparatus to which a standard is applicable."⁴⁵ The EPA yielded in part

⁴³ 42 U.S.C. § 7411(a)(3) (Supp. II 1978).

⁴⁴ S. REP. NO. 1196 *supra* note 14, at 16.

⁴⁵ 40 C.F.R. § 60.2(e) (1979).

to industry insistence, however, and amended its definition of a "stationary source" to mean "any building, structure, facility, or installation . . . which contains any one or *combination* of . . . [a]ffected [or other] facilities."⁴⁶ The full import of this lay in the further provision that "a modification shall not be deemed to occur if an existing facility undergoes a physical or operational change where . . . the total emission rate . . . has not increased from all facilities within the stationary source."⁴⁷

The key to understanding this mouthful is the sharp distinction that the regulations drew between a "source" and a "facility." On the one hand, when a "facility" (machine) was modified, the new-source standards would apply only if emissions from the entire "source" (plant) were increased. On the other hand, when an entirely new "facility" was constructed, the standards applied whether or not total emissions from the "source" were increased, because no existing "facility" had undergone a physical or operational change. Thus the Agency's position was that reductions elsewhere in the plant could be offset if an existing machine were modified, but not if a new one were constructed.⁴⁸

Solomonic solutions, if actually executed, seldom please anybody. The EPA's halfway acceptance of the bubble concept was challenged both by industry and by the Sierra Club, and the District of Columbia Circuit, in *Asarco, Inc. v. EPA*, burst the bubble altogether: "the Act defines a 'source' as an *individual* facility, as distinguished from a combination of facilities such as a plant. . . ." ⁴⁹ The regulation allowing limited offset was held invalid.⁵⁰ The Agency's inept drafting was an invitation to this reversal. The court simply had to compare the statutory and administrative definitions: "The statute defines a *stationary source* as *any . . . facility*. . . . In contrast, the new regulations define stationary source to include any . . . *combination* of . . . facilities. . . . The agency has no authority to rewrite the statute in this fashion."⁵¹

⁴⁶ *Id.* § 60.2(d)(1).

⁴⁷ *Id.* § 60.14(d).

⁴⁸ See *Asarco, Inc. v. EPA*, 578 F.2d 319, 325 (D.C. Cir. 1978).

⁴⁹ *Id.*

⁵⁰ Belatedly, the EPA rescinded the offending provisions, declaring that "the term 'stationary source' will hereafter have the same meaning as in the Act." 45 Fed. Reg. 5,616 (1980).

⁵¹ *Asarco*, 578 F.2d at 326-27. Equally devastating was the fact that EPA's sole reason for not rejecting the bubble concept entirely was "strong opposition from the smelting industry and the Department of Commerce." *Id.* 328 n.30.

Despite the majority's argument that a broad definition of "source" that would allow offsets was inconsistent with the statute's purpose to "enhance the quality of the Nation's air resources,"⁵² it would have been hasty to conclude that *Asarco* meant to forbid offset under a more carefully drafted regulation. The court in another passage made quite clear that it did not mean to require the Agency to define a "facility" or "source" as a single piece of equipment in every case; accepting the EPA definition of a "facility,"⁵³ which it said was "designed to designate as 'facilities' those units of equipment—be they individual machines, combinations of machines, or even entire plants—that the agency finds to be appropriate units for separate emission standards," the opinion declared that "this court would not remove this appropriate exercise of the agency's discretion."⁵⁴

A later decision by the same court, setting aside Agency offset regulations adopted under the provisions for prevention of significant deterioration,⁵⁵ confirms this narrow interpretation of *Asarco*. In *Alabama Power Co. v. Costle*,⁵⁶ the court, condemning a provision identical to that condemned in *Asarco*, went on to disapprove a provision disallowing offset for "emission reduction achieved elsewhere at the source," on the basis that section 111 defines a modification as a change increasing emissions from the "source" as a whole. Once again the problem was seen as one of drafting: the EPA had discretion to determine the offset issue by deciding whether or not to define an entire plant as a "facility."⁵⁷

The court has declined to resolve, then, the crucial question whether each machine is a separate "facility" or "source." Moreover, the suggestion of the *Asarco* majority that any offset may conflict with statutory policy⁵⁸ seems unconvincing. The materials cited in the opinion do not establish that enhancement of existing air quality was a purpose of section 111 itself; according to the Senate Report, the purpose was "the elimination of new pollution problems."⁵⁹

⁵² 42 U.S.C. § 7401(b)(1) (Supp. II 1978).

⁵³ See text accompanying note 45 *supra*.

⁵⁴ 578 F.2d at 324 n.17.

⁵⁵ 42 U.S.C. §§ 7470-7479 (Supp. II 1978).

⁵⁶ 606 F.2d 1068 (D.C. Cir. 1979).

⁵⁷ 606 F.2d at 1077, 1081-82.

⁵⁸ See text accompanying note 52 *supra*.

⁵⁹ S. REP. NO. 1196, *supra* note 14, at 16. Moreover, even if improvement were an additional goal, that does not tell us that there must be improvement every time new emissions are offset by reductions in the same plant. The dissenting judge in *Asarco*, 578 F.2d at 333-34, relied on the statutory definition of

The EPA argued that its attempt to allow offset when a machine is modified, but not when it is built, was justified by the added costs of backfitting existing facilities.⁶⁰ While every new machine can reasonably be made to comply at the outset, the argument would run, only when a modification threatens to worsen existing pollution is there adequate justification for imposing the extraordinary costs of backfitting; arguably that is why Congress made the new-source standards applicably only to those modifications which increase emissions. The insuperable obstacle to this reasoning is the court's observation that the EPA's position inconsistently defines the statutory term "source" "one way (as an entire plant) when determining whether a 'source' has been 'modified' and another way (as an individual facility) when determining whether a 'source' has been newly constructed."⁶¹

The EPA's argument can be taken a step further. The declared statutory purpose of section 111 was to avoid "new pollution problems."⁶² This, rather than the costs of backfitting, may explain the decision to exempt from section 111's definition of "new source" "modifications" which do not increase emissions.⁶³ It would be consistent with this statutory policy to apply the new-source standards, as industry vainly argued to the EPA, only when the net effect of changes within a plant is to increase its total emissions. This argument leads to the consistent interpretation of "source" to embrace an entire plant.

The trouble with this latter argument was pointed out in a footnote to the *Asarco* opinion: "If an entire plant were *consistently* defined as a single stationary source, the *whole plant* would become subject to NSPSs whenever any alterations in the plant, *e.g.*, addition of a new facility, caused a net increase in the emission of any pollutant from the plant."⁶⁴ The adoption of this interpretation might well discourage plant expansion by requiring extensive backfitting of equipment that is not itself otherwise modified.⁶⁵ It seems unlikely that Congress intended such a result, and

a "facility," which, as I have said, seems entirely ambiguous. See text accompanying notes 43-44 *supra*.

⁶⁰ See 578 F.2d at 328.

⁶¹ *Id.*

⁶² See note 14 *supra*.

⁶³ Every new source, absent offset, increases emissions; many modifications do not.

⁶⁴ 578 F.2d at 329 n.39.

⁶⁵ An operator could avoid backfitting the whole plant with best available technology if, by using offsets, he could avoid a net increase in emissions, but this might not always be practicable.

the EPA regulations had sought to avoid it: "The addition of an affected facility to a stationary source . . . shall not by itself bring within the applicability of this part any other facility within that source."⁶⁸

The net result of the foregoing analysis is that the adverse backfitting consequences of a broad definition of "source" seem destined to preclude the EPA from allowing any offsets. This state of affairs illustrates the unfortunate risks attendant upon utilizing a single term, "source," to govern a number of disparate questions. Whether an offset policy for either modification or new construction is justified, or whether the Agency ought to be authorized to reach that conclusion, is a question Congress might consider when it next comes to amend the statute. More generally, the offset controversy is humbling proof of the difficulties of working out the details of an ostensibly simple policy decision, such as the distinction between "new" and "existing" sources, and of the desirability of giving the Agency discretion to do so.

B. Other Threshold Requirements

Section 111(b) requires the Administrator to adopt "[f]ederal standards of performance" for every "category" of "new" "stationary sources" which "in his judgment . . . causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare."⁶⁹ The last clause, dating from 1977, is almost identical to the clause inserted in section 211(c), regulating the content of fuels,⁶⁸ which approved the risk-assessment approach to determining "danger" adopted in *Ethyl Corp. v. EPA*.⁶⁹ As I have indicated elsewhere, this phrasing allows the Administrator to take precautionary action without waiting for harmful effects to occur.⁷⁰

1. Significant Contribution

The only important difference between section 111(b) and section 211(c) in this respect is that section 111 adds the word "significantly" to the requirement that the category of sources to be regulated contribute to dangerous air pollution. The evident intention, though the committee reports do not mention it, was

⁶⁸ 40 C.F.R. § 60.14(c) (1979).

⁶⁷ 42 U.S.C. § 7411(b)(1)(A), (B) (Supp. II 1978).

⁶⁸ 42 U.S.C. § 7545(c)(1) (Supp. II 1978).

⁶⁹ 541 F.2d 1 (D.C. Cir.), cert. denied, 426 U.S. 941 (1976).

⁷⁰ See *Mobile-Source Provisions*, *supra* note 7, at 885-90.

to avoid federal regulation of trivial sources. Thus the EPA, while concluding that "all sources" of particulate matter "contributed to the endangerment of public health or welfare," considered a number of factors in determining that asphalt plants contributed "significantly": "the rate of emissions . . . from uncontrolled plants, the stringency of existing state and local regulations . . . , the number of existing plants, and the expected rate of growth in the number of plants."⁷¹ Noting a study ranking the asphalt industry as "one of the top twenty contributors to particulate matter pollution," the District of Columbia Circuit upheld the EPA's determination in *National Asphalt Pavement Ass'n v. Train*.⁷²

In this case, the industry had argued that improvements in control of emissions from asphalt plants since 1967 made that industry no longer a "significant" contributor. The court, however, rejected the premise on which the argument was based:

We . . . find a fundamental flaw in the contention that once an industry complies with regulations designed to *reduce* air pollution to the level established by national . . . air quality standards, it is no longer a "significant contributor" subject to new source regulation. . . . [W]e take [the Administrator's] decision to be that construction of new plants subject only to current emission limitations would "significantly contribute" to future air pollution problems.⁷³

In terms of the policy of section 111 the industry contention was correctly rejected. Since the aim was to prevent "new pollution problems,"⁷⁴ the question should be whether future plants pose a risk of significant contribution. As the statute stood when the *Asphalt* case was decided, it encouraged such an interpretation, as it embraced sources that "may contribute significantly" to an air-pollution danger.⁷⁵ Unfortunately, the 1977 amendment, which was laudably intended to emphasize the precautionary nature of section 111, actually makes it more difficult to effectuate that policy in a case like *Asphalt*. The amendment substitutes the present indicative "causes or contributes" for the earlier "may contribute," suggesting that the category to be regulated must be a significant

⁷¹ *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 784 (D.C. Cir. 1976).

⁷² *Id.* 784-85 & n.7.

⁷³ *Id.* 785.

⁷⁴ See S. REP. NO. 1196, *supra* note 14, at 16.

⁷⁵ 42 U.S.C. § 1857c-6(b)(1)(A) (1970).

contributor at the time the regulation is conceived. The predictive word "may" appears now only in connection with the further requirement that the pollution caused "endanger" health or welfare. Similarly, the "causes or contributes" terminology casts a cloud upon the ability of the Administrator to regulate sources of a type never before constructed, because until they are operating they do not cause or contribute to air pollution. To hold that the amendment has impaired the predictive authority of section 111 would pervert its purpose; one hopes and expects that the courts will find some way to hold the word "may" applicable to significant contribution as well as to endangerment, despite the careless drafting.

In the *Asphalt* case both the EPA and the court relied heavily on the perceived inadequacy of existing state and local regulation to justify the decision that future asphalt plants would "contribute significantly" to pollution. One might draw the inference that federal regulation is permitted only if state regulation is inadequate. This would be a startling conclusion to draw from a provision that is based upon the policy of avoiding potential harm and that makes no mention of state law. There is no requirement here, as there is in section 110,⁷⁶ that state standards be adopted unless found wanting; the statute seems to say that the regulation of major new sources is a federal responsibility. Unfortunately, the statutory language again gets in the way. Arguably it cannot be said that a category of sources will contribute significantly to air pollution—even in the future—if it is already subject to stringent state limitations. So far as I can see, this problem was not considered when the language was drafted. In accordance with the cautionary statutory purpose, I would strive to construe the language to refer to a category of sources whose potential contribution to pollution is significant; that is, to one that would contribute significantly if uncontrolled.

The phrasing of the endangerment provision as a threshold requirement posed a procedural as well as a substantive difficulty in the *Asphalt* case. The Administrator's first duty is to publish a "list" of source categories that make the requisite contribution to air-pollution danger; then he is to propose and to adopt standards to control their emissions. This two-step process gave rise in *Asphalt* to two opposing arguments, neither of which was compatible with sound administrative procedure. The Government contended that the preliminary determination of significant con-

⁷⁶ 42 U.S.C. § 7410(a)(2) (Supp. II 1978).

tribution was not subject to the notice-and-comment requirements made applicable by section 111(b) and by the Administrative Procedure Act⁷⁷ to the adoption of the standards themselves; industry argued that a separate notice-and-comment proceeding had to be conducted on the threshold issue alone. The court sensibly held that the propriety of the contribution finding was an issue open for debate in the notice-and-comment proceeding relating to the proposed standard—but the statute should never have invited alternative interpretations. A simple authorization to adopt standards for new sources with potential for significant contribution to a pollution danger would have avoided all these difficulties.

2. Mandatory Standards and Major Sources

I have spoken of “authorization,” yet Congress spoke in apparently mandatory terms, evidently hoping to avoid administrative slippage: the Administrator “shall” publish a list, which “shall” include categories meeting specified criteria; he “shall” publish proposed regulations; and he “shall” promulgate them. Indeed, he was required to do all this within a brief and specified period.⁷⁸

The only argument for discretion lies in the fact that the categories the Administrator must list are those which “in his judgment” meet the specified criteria. Clearly this phrase means that courts are to defer substantially to the Agency’s judgment as to the existence of the requisites for regulation; it was enacted to prevent the kind of second-guessing represented by the panel decision in the *Ethyl* case.⁷⁹ Neither this purpose nor the statutory language suggests that the Administrator may decline to regulate sources that in his judgment do contribute significantly to a pollution danger. The argument that he can avoid regulation by refusing to make a judgment one way or another is hard to reconcile with the clear command that he publish a list, which seems to contemplate that he will decide which pollutants satisfy the criteria. The Second Circuit decision in *Natural Resources Defense Council, Inc. v. Train*,⁸⁰ holding that section 108(a)’s⁸¹ reference to pol-

⁷⁷ 5 U.S.C. § 553(b), (c) (1976).

⁷⁸ He was given 90 days to publish a list of sources, 120 days thereafter to propose regulations for them, and another 90 days to adopt regulations, for a total of ten months. 42 U.S.C. § 7411(b)(1)(A), (B) (Supp. II 1978).

⁷⁹ See text accompanying note 69 *supra*. Prior to 1977 the requirement was that he include a pollutant “if he determines” it may have the requisite impact. I see no significant difference between the two formulations.

⁸⁰ 545 F.2d 320 (2d Cir. 1976).

⁸¹ 42 U.S.C. § 7408 (Supp. II 1978).

lutants "for which the Administrator . . . plans to issue air quality criteria" does not detract from the duty imposed by a listing requirement otherwise parallel to that of section 111(b),⁸² reinforces with a vengeance the conclusion that section 111 is mandatory.

Another 1977 amendment, however, not only substantially moots the question whether section 111(b) is mandatory but also seems largely to sidestep the interpretive problems of that paragraph's reference to significant contribution and danger. Complaining that "under present law, the Administrator has some discretionary authority in listing categories of stationary sources," and that he had promulgated standards "for only 22 categories,"⁸³ the House Committee proposed,⁸⁴ and Congress in section 111(f) adopted, a requirement that the Administrator within one year list and within four years promulgate standards for "the categories of major stationary sources" (defined in section 302(j) as those having "the potential to emit . . . one hundred tons per year or more of any air pollutant")⁸⁵ "which are not on August 7, 1977, included on the list required under subsection (b)(1)(A)."⁸⁶

The mandatory nature of this provision is unmistakable. At the very least it requires that standards be adopted for all "major" sources that meet the requirements of section 111(b), that is, for those which contribute significantly to a pollution danger. The EPA seems to have embraced this interpretation: its proposed list of sources to be regulated under the 1977 amendment includes only those with a potential to emit the prescribed amounts of one or more of nine specified pollutants that clearly pose significant threats to health and welfare.⁸⁷

On its face, however, section 111 (f) does far more: it seems to require regulation of every "major" stationary source *whether or not* it contributes significantly to a pollution danger. Given the definition of "air pollutant" as "any physical, chemical, biological, radioactive . . . substance or matter which . . . enters the ambient

⁸² Natural Resources Defense Council, Inc. v. Train, 545 F.2d at 325.

⁸³ H.R. REP. NO. 294, *supra* note 17, at 194, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1273.

⁸⁴ *Id.* 194, 358-59.

⁸⁵ 42 U.S.C. § 7602(j) (Supp. II 1978). For interpretation of the term "potential" as used in this context with respect to the significant-deterioration provision of § 169(1), 42 U.S.C. § 7479(1) (Supp. II 1978), see *Alabama Power Co. v. Costle*, 606 F.2d 1068, 1076 (D.C. Cir. 1979). For criticism see *Nondegradation*, *supra* note 7, at 55-56.

⁸⁶ *Id.* § 7411(f)(1).

⁸⁷ 43 Fed. Reg. 38,872 (1978).

air,"⁸⁸ it seems to require standards for any sources with the potential to emit 100 tons per year of carbon dioxide or water. Elimination of the confusing requirements of section 111(b)(1)(A) is a step forward, but the administrative burden of regulating sources that do not pose a significant danger seems excessive. In any event, the problem of determining significant contribution remains as to categories of sources that are not "major." The 1977 amendments recognize this by requiring listing not only of "major" sources but also of those that are not "major," upon application by the governor of any state showing that the sources nevertheless meet the criteria of section 111(b)(1)(A).⁸⁹

3. Grain Elevators and Federal Sources

The 1977 amendments, in section 111(i), added one naked special-interest provision: "[a]ny regulations promulgated by the Administrator under this section applicable to grain elevators shall not apply to country elevators (as defined by the Administrator) which have a storage capacity of less than two million five hundred thousand bushels."⁹⁰ There may be legitimate reasons for believing that small rural grain elevators are entitled to separate treatment, but it is hard to imagine any justification for exempting them from potential regulation altogether.

The federal government does not escape regulation under the Clean Air Act. Section 111(b) (4) expressly provides that "the provisions of this section shall apply to any new source owned or operated by the United States."⁹¹

C. *The Criteria for Promulgation*

While sections 111(b), (f), and (i)⁹² identify the sources for which standards are to be adopted, section 111(a), in defining a "standard of performance," lays down the criteria that are to guide the Administrator in determining the content of the standard. Under the original 1970 statute a "standard of performance" was "a standard for emissions of air pollutants which reflects the de-

⁸⁸ 42 U.S.C. § 7602(g) (Supp. II 1978).

⁸⁹ *Id.* § 7411(g)(1), (2). This provision seems to add little to the pre-existing § 304, which authorizes citizen suits to compel performance of nondiscretionary duties and which has been used often to compel issuance of required regulations. 42 U.S.C. § 7604 (Supp. II 1978). See, e.g., *Natural Resources Defense Council, Inc. v. Train*, 545 F.2d 320 (2d Cir. 1976).

⁹⁰ 42 U.S.C. § 7411(i) (Supp. II 1978).

⁹¹ *Id.* § 7411(b)(4).

⁹² *Id.* § 7411(b)(f)(2).

gree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction) the Administrator determines has been adequately demonstrated.”⁹³

This definition has been complicated by 1977 amendments, which shall be discussed in their turn. The central elements of the original provision remain in the amendments, however, and the considerable experience gained in their application remains of value in interpreting and criticizing the present provisions. One immediately apparent defect in this scheme is that it does not allow a standard to be set forbidding the construction of a source whose emissions would create an unreasonable health risk despite use of the best available technology.

1. “A Standard for Emissions”

The superficial contrast between “standards of performance” in section 111 and “emission standards” for hazardous pollutants under section 112⁹⁴ is unnecessary and misleading: the original section 111(a) defined a “standard of performance” as “a standard for emissions.” The 1977 amendments, while departing from the simple equation of performance and emission standards, still define the former in part as “a standard . . . establishing allowable emission limitations.”⁹⁵ As described below, similar language in section 112 was narrowly construed by the Supreme Court to exclude regulations requiring the wetting of buildings before demolition in order to reduce asbestos emissions.⁹⁶ To avoid such results, the 1977 amendments, in section 111(h), authorize the Administrator to promulgate “a design, equipment, work practice, or operational standard, or combination thereof,” when “it is not feasible to prescribe a standard of performance.”⁹⁷ So long as a standard has the effect of limiting emissions, its form is no longer likely to be the overriding consideration.

2. Technology and Cost

The basic statutory program for controlling existing sources of air pollution, contained in section 110, is based upon the degree of control necessary to provide ambient levels that will not harm

⁹³ 42 U.S.C. § 1857c-6(a)(1) (1970).

⁹⁴ 42 U.S.C. § 7412 (Supp. II 1978).

⁹⁵ *Id.* § 7411(a)(1)(A).

⁹⁶ See text accompanying notes 417-52 *supra*.

⁹⁷ 42 U.S.C. § 7411(h)(1) (Supp. II 1978).

health or welfare.⁹⁸ New-source performance standards, however, are based on the contrasting philosophy of requiring as much control as can be provided within certain bounds of cost.

As I have said elsewhere,⁹⁹ uniform technological requirements will result in diverse ambient pollution levels because of geographical variations in such factors as meteorological conditions, topography, and the number and size of emission sources. Thus, technology-based standards are likely to be more stringent in some places and less stringent in others than is necessary to achieve compliance with ambient standards. The House Report in 1977 nonetheless provided an extensive list of arguments for imposing technological standards. Uniform national standards help "to avoid situations in which industries could be lured to one state by relaxing emissions standards or deadlines and away from other states with stricter standards."¹⁰⁰ Since ambient standards made the air "a finite resource," a requirement of best technology would ration that resource so that "more new sources could locate in any given area."¹⁰¹ Third, "[b]uilding control technology into new plants at time of construction will plainly be less costly than [*sic*] requiring retrofit when pollution ceilings are reached."¹⁰² Technological standards were also "intended to create incentives for improved technology, which could achieve greater or equivalent emission reduction at equivalent or lower cost."¹⁰³ Elsewhere the Report indicated doubt as to whether ambient standards had been or could be set at levels that really prevented all injury.¹⁰⁴ Like the provisions preventing significant deterioration of clean areas,¹⁰⁵

⁹⁸ 42 U.S.C. §§ 7408-7410 (Supp. II 1978).

⁹⁹ See Currie, *Rulemaking Under the Illinois Pollution Law*, 42 U. CHI. L. REV. 457, 491-92 (1975).

¹⁰⁰ H.R. REP. NO. 294, *supra* note 17, at 184, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1077, 1263.

¹⁰¹ *Id.* 185, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1263. This rationale is in tune with the general tenor of the 1977 amendments, which had as a central purpose the accommodation of industrial growth and clean air standards. See, e.g., Comment, *Emission-Offset Banking: Accommodating Industrial Growth With Clean-Air Standards*, 128 U. PA. L. REV. 937 (1980) and authorities cited therein.

¹⁰² H.R. REP. NO. 294, *supra* note 17, at 185, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1264.

¹⁰³ *Id.* 186, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1265. I have omitted for the moment the arguments that address the question whether the standards should permit compliance by the use of clean fuels alone. See text accompanying notes 209-30 *supra*.

¹⁰⁴ H.R. REP. NO. 294, *supra* note 17, at 127, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1206.

¹⁰⁵ 42 U.S.C. §§ 7470-7479 (Supp. II 1978). See *Nondegradation*, *supra* note 7, at 48.

standards requiring best efforts to control emissions reflect "a policy of maximum practicable protection of health."¹⁰⁶

a. *"Adequately Demonstrated"*

The first requirement of a performance standard under section 111 is that the technology needed to achieve it "has been adequately demonstrated."¹⁰⁷ Some of the practical, legal, and policy difficulties of administering this provision can be illustrated by a detailed examination of the problem of sulfur dioxide emissions from power plants.

(i) The Development of Flue-Gas Desulfurization

"[T]he combustion of sulfur-bearing fuels," particularly of coal, the EPA's predecessor reported in 1969, was the principal source of sulfur-oxide pollution in the United States;¹⁰⁸ a large percentage of that combustion was for the purpose of generating electricity. The sulfur content of fuels is highly variable, resulting in uncontrolled power-plant sulfur dioxide (SO₂) emissions ranging "from 1 to 7 pounds per million Btu."¹⁰⁹ Consequently "[o]ne of the best existing methods for reducing sulfur oxide emissions from fuel combustion sources is the use of low-sulfur fuels."¹¹⁰ This indeed was the option chosen by many plant operators, such as Chicago's Commonwealth Edison, despite a variety of difficulties, including transportation costs that in some cases actually doubled the fuel bill.¹¹¹ Unfortunately the EPA found in 1974 that "low-sulfur fuel supplies are now and will continue to be inadequate to provide the sole means of complying with SO_x [sulfur oxide] emission limitations."¹¹² This meant that "flue gas desulfuriza-

¹⁰⁶ H.R. REP. NO. 294, *supra* note 17, at 127, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1206.

¹⁰⁷ 42 U.S.C. § 7411 (a)(1) (Supp. II 1978).

¹⁰⁸ PUBLIC HEALTH SERVICE, U.S. DEP'T OF HEALTH, EDUCATION AND WELFARE, CONTROL TECHNIQUES FOR SULFUR OXIDE POLLUTANTS xvii (Pub. No. AP-52) (1969) [hereinafter cited as CONTROL TECHNIQUES].

¹⁰⁹ U.S. EPA, BACKGROUND INFORMATION FOR PROPOSED NEW-SOURCE PERFORMANCE STANDARDS 6 (1971) [hereinafter cited as BACKGROUND INFORMATION].

¹¹⁰ CONTROL TECHNIQUES, *supra* note 108, at xviii.

¹¹¹ See *Commonwealth Edison Co. v. EPA*, slip op. (Ill. P.C.B. Jan. 3, 1975); *Commonwealth Edison Co. v. EPA*, 5 Ill. P.C.B. 101, 102 (1972); *In re Emission Standards*, 4 Ill. P.C.B. 298, 330-31 (1972); D. CURRIE, POLLUTION CASES & MATERIALS 251 (1975).

¹¹² U.S. EPA, REPORT OF THE HEARING PANEL: NATIONAL PUBLIC HEARINGS ON POWER PLANT COMPLIANCE WITH SULFUR OXIDE AIR POLLUTION REGULATIONS 3 (1974) [hereinafter cited as REPORT OF THE NATIONAL PANEL].

tion (FGD) technology must be installed on a large number of power plants if sulfur oxide . . . emission requirements adopted pursuant to the Clean Air Act are to be met in the 1970's." ¹¹³

Flue-gas desulfurization involves the removal of sulfur oxides from exhaust gases after the fuel is burned. The chemical reactions by which this end might be accomplished were well understood in 1969: for example, "limestone injected into the furnace reacts with the sulfur oxides to form calcium sulfate, a solid, which is removed by standard dust-collecting equipment." ¹¹⁴ The critical question was whether the technology was well enough developed—"adequately demonstrated," in section 111's terms—to justify the adoption of emission standards that would effectively require its employment.

The federal government conceded in 1969 that "[n]o flue gas desulfurization processes are presently in widespread use." ¹¹⁵ However, two "pilot-scale" studies in England had resulted in "the full-scale, cyclic lime process that was installed in the late 1930's on the Fulham power plant, where it operated successfully until it was closed during World War II." ¹¹⁶ The English experience had "spotlighted specific process problems such as high maintenance and operating costs, low-temperature corrosion, solid wastes disposal, and loss of plume buoyancy resulting in high localized ground-level concentration of SO₂ and other emissions." ¹¹⁷ More recently a somewhat different technology had been tested on "about 1.0 percent of the total boiler flue gas" from a "full-scale 170-megawatt boiler." ¹¹⁸ The test had been followed by "the purchase of the limestone-injection wet-scrubbing process for use on three full-scale power plant boilers," with "a guaranteed removal efficiency of 80 percent of SO₂," and "one of these systems [was] currently in preliminary operation at the Union Electric Company's Meramec Plant in St. Louis." ¹¹⁹

Two years later, in 1971, the EPA published its proposed standard of 1.2 pounds per million Btu for large new coal-burning power plants under section 111.¹²⁰ Two of the full-scale units

¹¹³ *Id.* 2.

¹¹⁴ CONTROL TECHNIQUES, *supra* note 108, at xviii.

¹¹⁵ *Id.*

¹¹⁶ *Id.* 52-53.

¹¹⁷ *Id.* 53.

¹¹⁸ *Id.*

¹¹⁹ *Id.* 53-54.

¹²⁰ 36 Fed. Reg. 15,704, 15,706 (1971).

purchased in 1969 had "approached" the proposed level over a six-month period,¹²¹ and it was largely on this basis that the standard was promulgated.¹²² A "supplemental statement" issued after judicial review was sought emphasized the success of three additional installations, one of them quite small (seven mw) and all three burning oil. The Agency contended that, although the scrubbing systems employed at these installations had never been operated on coal-fired units, "[s]ince precipitators have been shown to remove particulates down to the same level as oil-fired units, application of the sulfite system to coal-fired boilers should be feasible."¹²³ The District of Columbia Circuit, in *Essex Chemical Corp. v. Ruckelshaus*,¹²⁴ found—with very little discussion—the evidence sufficient under section 111: "The evidence, including tests of prototype and full-scale control systems, consideration of available fuel supplies, literature sources, and documentation of manufacturer guarantees and expectations, convinces us that the systems proposed are adequately demonstrated" ¹²⁵

In 1974 the EPA revealed that, "after four years of intermittent operation filled with numerous technical difficulties," the model-T scrubber whose first two installations had been the central basis of the federal regulation had been withdrawn from the market.¹²⁶ At the same time, however, the EPA reported further progress, emphasizing three recent installations, one of which had "operated with near 100 percent reliability controlling a 156-megawatt coal-fired boiler near Omutu, Japan, since its startup in March 1972."¹²⁷ This was not enough for the Third Circuit Court of Appeals, which, in *Duquesne Light Co. v. EPA*,¹²⁸ found enough remaining uncertainties to hold arbitrary the requirement of the widespread use of scrubbers in an implementation plan under section 110.¹²⁹ It interpreted this section to require "technological feasibility"—not far from section 111's requirement that the technology be "adequately demonstrated."¹³⁰ The Omutu operation, for example, utilized

¹²¹ BACKGROUND INFORMATION, *supra* note 109, at 10-11.

¹²² 36 Fed. Reg. 24,876, 24,879 (1971).

¹²³ 37 Fed. Reg. 5,767, 5,769 (1972).

¹²⁴ 486 F.2d 427, 440-41 (D.C. Cir. 1973), *cert. denied*, 416 U.S. 969 (1974).

¹²⁵ *Id.* 440.

¹²⁶ REPORT OF THE NATIONAL PANEL, *supra* note 112, at 72, 75.

¹²⁷ *Id.* 5.

¹²⁸ 522 F.2d 1186 (3d Cir. 1975), *vacated and remanded for reconsideration*, 427 U.S. 902 (1976).

¹²⁹ *Id.* 1201.

¹³⁰ *Id.* 1199 n.36.

scrubbing agents unavailable to the petitioners, discharged raw waste into the sea, which would be unacceptable here, and experienced far less load variation than in a conventional power plant. Furthermore, its owners did not plan to use the same process in future installations, and its supplier had "so far been unsuccessful" in efforts to transfer its success to one of the petitioners' plants.¹³¹

Late in 1974 the EPA reported that there were nineteen FGD systems operating in the United States, including two over-100 megawatt coal units that had operated for eight or nine months with eighty-four percent and ninety percent¹³² reliability. By this time industry voices were heard cautiously endorsing FGD technology. Louisville Gas and Electric called its operations "extremely satisfying and gratifying" and ordered additional scrubbers; Arizona Public Service said its unit "appeared to be quite successful" but warned that it was not sure the system would work on larger units or under different conditions.¹³³ In 1977 the House Committee was able to say that it had relied chiefly upon "information supplied by independent agencies (not the EPA) and by the historic opponents of flue gas desulfurization" in concluding that "most of the controversy as to the reliability and effectiveness of these systems has largely been eliminated as experience . . . has increased and as second generation systems have appeared."¹³⁴

(ii) Evaluation

Today, then, there seems to be little doubt that FGD technology is "adequately demonstrated" for purposes of section 111.¹³⁵

¹³¹ *Id.* 1197-98.

¹³² U.S. EPA, *FLUE GAS DESULFURIZATION INSTALLATIONS AND OPERATIONS* 1-2, 8, 15, 17 (1974).

¹³³ See 5 ENVIR. REP. 1103-04 (1974).

¹³⁴ H.R. REP. NO. 294, *supra* note 17, at 89, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1167. See also U.S. EPA, *FLUE GAS DESULFURIZATION IN POWER PLANTS: STATUS REPORT 1* (1977) ("At the time of this report, . . . 30 systems are operational and 86 are under construction or planned. In Japan 333 systems have been installed.")

¹³⁵ See also *Cleveland Elec. Illum. Co. v. EPA*, 572 F.2d 1150, 1164-65 (6th Cir.), *cert. denied*, 439 U.S. 910 (1978) (upholding power-plant SO₂ limitations in the federal implementation plan for Ohio against the argument of technological and economic infeasibility); *United States v. West Penn Power Co.*, 460 F. Supp. 1305 (W.D. Pa. 1978) (ordering construction of a scrubber and reaffirming its availability at reasonable cost); 43 Fed. Reg. 42,154, 42,158-59 (1978) (proposing to require 85% scrubbing of emissions from combustion of most low-sulfur fuels and declaring several scrubbing devices adequately demonstrated); 44 Fed. Reg. 33,580 (1979) (adopting a revised standard that will require 90% scrubbing of high-sulfur coal). The TVA has agreed to install scrubbers on a number of plants by 1982, see 9 ENVIR. REP. 1451 (1978), and West Penn, after the district court decision noted above, agreed to install 95% scrubbing by September 1982 in exchange for freedom from monetary penalties. See *id.* at 1724 (1979).

Just when it became so, I submit, is a difficult question to answer. The first issue to be determined is a legal one: what does section 111(a)(1) mean by "adequately demonstrated"? On its face the term seems to demand both a finding of fact and a policy judgment: what is the state of the technology, and is that state sufficiently advanced that the need for control justifies the risk of failure? The House and Senate Reports erect outer boundaries to channel the agency's policy choice. The former admonished that the technology "may not be . . . purely theoretical or experimental,"¹³⁶ and the latter allowed that it need not be "in actual routine use somewhere."¹³⁷ In between these poles is a vast area of administrative discretion.

If we apply what we know of the legal standard to the sulfur-oxide situation as it stood in 1969, we find the record quite weak. FGD technology had been put to substantial actual use in Britain, but the British data revealed troublesome bugs that deserved further study. Moreover, the British technology was obsolete, while the only reported test of new technology had been run on a tiny fraction of the boiler's exhaust gas. In terms of immediate application the new technology was barely beyond the "experimental" stage that the House Report said was insufficient. The prudent Administrator would probably have concluded that an installation requirement should await the results of the three promising purchases of new technology, and should probably have held that the technology was not yet "adequately demonstrated."

The 1971 record presented a closer question. Two full-scale units were now in more or less successful operation, and the EPA was optimistic that an alternative technology might be successfully transferred from oil to coal. Yet hindsight provides a sobering note: the full-scale prototypes soon proved to be lemons after all.¹³⁸ To prevent such risky investments the National Academy of Sciences has developed a rule of thumb for determining when power-plant technology is "commercially available": it must be in successful operation for one year on a plant of at least 100 megawatts.¹³⁹ If "adequately demonstrated" had been equated with this standard, the EPA could not have required FGD in 1971.

Plainly it was not for the court of appeals in *Essex Chemical* to impose any such inflexible limit on the Agency's judgment, and the

¹³⁶ H.R. REP. NO. 1146, 91st Cong., 2d Sess. 10 reprinted in [1970] U.S. CODE CONG. & AD. NEWS 5365.

¹³⁷ S. REP. NO. 1196, 91st Cong., 2d Sess. 16 (1970).

¹³⁸ See note 126 *supra* and accompanying text.

¹³⁹ See *In re Emission Standards*, 4 Ill. P.C.B. 298, 332 (1972).

court was probably right in deferring to the EPA's determination because of the limitations on judicial review. On such a record the finding that the technology was "adequately demonstrated" could hardly be said to be "arbitrary" or "capricious."¹⁴⁰ Whether the Agency's finding was correct or not, however, is quite another story.

The contrast between *Duquesne Light* and the earlier *Essex* case is striking. In *Essex* the court deferred to a highly debatable Agency conclusion without even bothering to summarize the evidence; in *Duquesne*, on a much stronger record, the court substituted its judgment for that of an expert administrator. Even on the since-repudiated thesis that section 110 implicitly incorporated something resembling the "adequately demonstrated" requirement of section 111,¹⁴¹ the Third Circuit seems clearly to have intruded too far upon the realm of administrative judgment.

Whether an administrator himself would have been justified in finding FGD technology "adequately demonstrated" on the 1974 record is a much more difficult question. The Omutu experience satisfied even the cautious NAS definition of "commercial availability," but there were evident uncertainties in transferring the Omutu technology to American conditions. Yet businessmen do not typically wait for all the bugs to be ironed out before investing in equipment; if they did, one industry consultant has testified, we would still be waiting for secondary sewage treatment,¹⁴² which has been standard practice in many communities for years. By 1974 FGD technology was beginning to approach the Senate Report's clear case of "actual routine use"—not everywhere, to be sure, but in the Report's terminology, "somewhere"—at the Omutu plant in Japan.

So far we have considered the question of adequate demonstration as the EPA and the courts seem to have dealt with it, as a black-or-white proposition: either the technology is ready for nationwide installation today, or no regulation should be adopted at all. The contemporaneous experience of the Illinois Pollution Control Board in wrestling with the same problem illustrates that, at least on the policy level, there are intermediate shades of gray.

Surely the all-or-nothing approach is unattractive. On the one hand, to have invested millions of dollars in 1971 lemons would

¹⁴⁰ 5 U.S.C. § 706(2)(A) (1970).

¹⁴¹ *Union Electric Corp. v. EPA*, 427 U.S. 246, 265-66 (1976) ("In sum, we have concluded that claims of economic or technological infeasibility may not be considered by the Administrator in evaluating a state requirement Accordingly, a court of appeals reviewing an approved plan . . . cannot set it aside [on the ground that it is economically or technologically infeasible]").

¹⁴² See *In re Emission Standards*, 4 Ill. P.C.B. at 333.

have been a debacle of the first magnitude. On the other, to have done nothing would have postponed indefinitely the hope of relief for people in highly polluted areas where sulfur dioxide was a serious menace to public health. Illinois took a middle course. On much the same evidence that was the basis of the 1971 federal regulation, it adopted a standard requiring significant reductions of sulfur-oxide emissions only in certain metropolitan areas with acute ambient problems, and it set a compliance date distant enough "to permit nearly a year of additional information to be accumulated before commitments must be made."¹⁴³

Could the EPA have taken such a middle course? One of the policy decisions essential to the Illinois position was that the standard should create an incentive for the development of better technology. This was one of the stated objectives of section 111,¹⁴⁴ but the statutory requirement that the technology be "adequately demonstrated" gets in the way. The determination whether technology meets this standard is to be made when the standard is adopted; arguably it means that the control devices may have to be ready for commercial use at that time.

Judicial interpretation has been less exacting. The District of Columbia Circuit, in *Portland Cement Association v. Ruckelshaus*,¹⁴⁵ concluded in dictum that

[s]ection 111 looks toward what may fairly be projected for the regulated future, rather than the state of the art at present, since it is addressed to standards for new plants

. . . .

. . . . The essential question was rather whether the technology would be available for installation in new plants. . . .

. . . . The Administrator may make a projection based on existing technology¹⁴⁶

The court thus read the statute to require only an adequate demonstration that the technology will be available when needed to

¹⁴³ *Id.* 331-35. This regulation was later set aside, for reasons that I, as author of the Board's opinion, not surprisingly found wanting. See *Commonwealth Edison Co. v. PCB*, 25 Ill. App. 3d 271, 323 N.E.2d 84 (1st Dist. 1974), *aff'd on other grounds*, 62 Ill. 2d 494, 343 N.E.2d 459, 465 (1976); Currie, *supra* note 99, at 501-05.

¹⁴⁴ See text accompanying note 103 *supra*.

¹⁴⁵ 486 F.2d 375, 391-92 (D.C. Cir. 1973).

¹⁴⁶ *Id.* 391. This discussion was unnecessary to the decision, since the EPA had based its standard for cement plants upon tests of actual units rather than on projections. *Id.* 395, 401-02.

comply with the standard. This is not the most natural reading: it is the technology itself, not its timely availability, that must be "adequately demonstrated." But perhaps the court was correct in concluding that such a minor point of phrasing should not be taken seriously. The court's interpretation certainly conforms to what the statute ought to say in order to accomplish its purpose.¹⁴⁷

Nevertheless, the court had to concede that even its interpretation could not afford the EPA much latitude for technology-forcing, for section 111(b) flatly commands that standards "become effective upon promulgation."¹⁴⁸ As the court said, "[t]he question of availability is partially dependent on 'lead time' Since the standards here . . . will control new plants immediately, as opposed to one or two years in the future, the latitude of projection is correspondingly narrowed."¹⁴⁹ Thus it appears that the Illinois approach to sulfur-oxide control relied on technology-forcing to an extent incompatible with the rigid requirements of section 111. This is all the more noteworthy in that, as early as 1970, Congress adopted a most ambitious technology-forcing policy with respect to vehicle-emission standards, allowing five or six years to meet statutory standards conceded to be beyond existing capability.¹⁵⁰

Furthermore, the second basic premise of the Illinois decision was that the acceptable degree of risk of technology failure was directly proportional to the severity of the particular pollution problem. Section 111, however, says nothing about balancing risks against need; it is susceptible to the interpretation that nothing may be required anywhere until the technology is sufficiently advanced to justify imposing it on new sources throughout the nation. Indeed, another explicit purpose of the section was to remove

¹⁴⁷ The court relied in part on the Senate Committee's statement, *supra* note 137, that the technology need not be in "routine use." But this quotation does not establish that the Committee contemplated prediction of future development, since technology may be available today without being in routine use. The court also invoked its earlier parallel interpretation of a somewhat similar provision for suspension of motor-vehicle emission standards in *International Harvester Corp. v. Ruckelshaus*, 478 F.2d 615 (D.C. Cir. 1973). The relevant language in that case required a finding that necessary controls "are not available or have not been available for a sufficient period of time to achieve compliance prior to the effective date" of the standards. 42 U.S.C. § 1857f-1(b)(5)(D) (1970). Though the use of the present and present-perfect tenses in this section also makes prediction questionable, the reference to "prior to the effective date" makes prediction somewhat easier to sustain than under § 111.

¹⁴⁸ 42 U.S.C. § 7411(b)(1)(B) (Supp. II 1978).

¹⁴⁹ 486 F.2d at 391-92.

¹⁵⁰ Section 202(b), now 42 U.S.C. § 7521(b) (Supp. II 1978). See *Mobile-Source Provisions*, *supra* note 7, at 816-18.

competitive geographic advantages, which suggests the intent to impose nationally uniform standards.¹⁵¹

Fortunately, the statutory language does not compel this procrustean conclusion. "Adequately" is a judgmental term that seems to imply a balance between risk and need. Moreover, in determining the best technology considering cost the EPA has sometimes employed a balancing approach, making limitations less demanding in noncontinental areas with sludge-disposal problems and for plants using low-sulfur coal.¹⁵² It would not be too long a step, perhaps, to make the adequacy of a technology demonstration dependent upon air quality as well. But the natural thrust of technology-based standards is toward uniformity, and, whether or not compelled to, the EPA in 1971 took the all-or-nothing approach of prescribing uniform nationwide standards. It need not necessarily follow that the EPA must adopt a single criterion for determining the adequacy of technology for every pollutant, since variations of this nature would not create geographical advantages. But if the statute does require geographic uniformity in the determination of demonstrated technology, it may be unduly inflexible.

b. *"The Degree of Emission Limitation Achievable"*

The critical question in *Portland Cement Ass'n. v. Ruckelshaus*¹⁵³ was not, as with flue-gas desulfurization, whether the technology on which the standard was based was sufficiently developed to warrant its installation; rather, it was whether concededly available devices would in fact achieve the emission levels the EPA said they would.¹⁵⁴ The best way to show what emission level a control system will achieve is to test it, and that is what the EPA did in *Portland Cement*. The opinion in that case contains an informative review of the pitfalls involved in obtaining accurate and meaningful test information.

The standard for particulate emissions from new cement kilns was set at 0.30 pounds per ton of feed to the kiln.¹⁵⁵ One dry-process kiln controlled with a baghouse "showed particulate emissions of 0.20 pound per ton of feed, which is below the proposed

¹⁵¹ See text accompanying note 100 *supra*.

¹⁵² See text accompanying notes 222-25 *infra*.

¹⁵³ 486 F.2d 375 (D.C. Cir. 1973).

¹⁵⁴ *Id.* 391.

¹⁵⁵ 40 C.F.R. § 60.62(a)(1) (1979).

standard.”¹⁵⁶ Results of tests on a wet-process baghouse, however, were reported at 0.361, 0.535, and 0.291 pounds per ton.¹⁵⁷

One fundamental question raised by industry was whether the tests had been properly conducted. In the first place, industry pointed to departures from standard testing procedures; the court observed that such deviations “are not necessarily significant as to testing results,” and on remand placed the burden on industry to “establish that such test deviations bear significant consequences.”¹⁵⁸ Second, an industry witness asserted that the EPA had erroneously computed the volume of gas emitted from the stack, resulting in a gross overestimate of the raw materials fed to the kiln, so that actual particulate emissions per ton had been approximately twice what the EPA had reported.¹⁵⁹ The court demanded an explanation from the Agency; obviously the test must be accurately performed and reported.

A second basic issue in *Portland Cement* was whether the successful tests were reasonably representative of what could be accomplished by use of the same technology in the industry as a whole. The first requirement in this respect is that the test be performed under conditions comparable to those under which the standard will have to be met in practice, or that there be a reasonable basis for predicting that the differences will not be significant. One serious objection to the regulation, “persuasive enough to merit a remand,”¹⁶⁰ was that it was based on tests run exclusively during normal operations, while in the real world all plants experience periods of malfunction or startup in which their performance is inferior.¹⁶¹ Because technological feasibility is the statutory criterion, allowance must be made for unavoidable inadequacies.¹⁶² Ultimately, the EPA solved the difficulty by adopting a regulation exempting these periods from the standard.¹⁶³ Similarly, the court

¹⁵⁶ 486 F.2d at 395 (quoting an EPA “Background Document”).

¹⁵⁷ *Id.* 398.

¹⁵⁸ *Id.* 397.

¹⁵⁹ *Id.* 397-98.

¹⁶⁰ *Essex Chem. Corp. v. Ruckleshaus*, 486 F.2d at 433.

¹⁶¹ 486 F.2d at 398-99.

¹⁶² *Accord*, *Essex Chem. Corp.*, 486 F.2d at 433.

¹⁶³ 40 C.F.R. § 60.8(c) (1977) (further clarified by 44 Fed. Reg. 57,125-26 (1977)). Section 60.11(d), however, properly requires efforts to minimize emissions during such periods. The Fourth Circuit has held that exemptions for unavoidable inadequacies must be provided under comparable technology-based water-pollution standards. *FMC Corp. v. Train*, 539 F.2d 973, 986 (4th Cir. 1976). Other courts, distinguishing *FMC* and the air-pollution cases, have found that adequate provision for the variability of actual performance has been made in water-pollution cases in setting the standards and averaging periods themselves.

required the EPA to explain why thirty-minute tests sufficed to demonstrate that the standard could be met on the basis of a two-hour average,¹⁶⁴ and whether the tests had been conducted "at or above the maximum production rate," as required for compliance with the standard.¹⁶⁵

On the same principle, industry argued that "a single test offered a weak basis for inferring that all new cement plants would be able to meet the proposed standards."¹⁶⁶ Without holding that a single test would never suffice, the court, quoting *International Harvester Co. v. Ruckelshaus*, held that "'it would . . . seem incumbent on the Administrator to estimate the possible degree of error [inherent] in his prediction.'" ¹⁶⁷ A few months later the same court found tests of a single dual-absorption sulfuric-acid plant sufficient on the record to show the applicable sulfur-oxide standard achievable.¹⁶⁸ This result seems to follow from the Senate Committee's insistence that the technology need not be in "routine use."¹⁶⁹

More serious, perhaps, in light of the largely unfavorable results suggested by the figures reported for wet-process kilns, was the question whether successful tests on a dry-process kiln could be taken as representing what could be done with the wet process as well. The court found a simple answer. The wet-process tests had been conducted on a basis different from that prescribed in the

Weyerhaeuser Co. v. Costle, 590 F.2d 1011, 1056-58 (D.C. Cir. 1978); *American Petroleum Inst. v. EPA*, 540 F.2d 1023, 1036 (10th Cir. 1976), *cert. denied*, 430 U.S. 922 (1977). See also *CPC Int'l, Inc. v. Train*, 540 F.2d 1329, 1337-38 (8th Cir. 1976), *cert. denied*, 430 U.S. 966 (1977) (finding adequate consideration of variability). *Weyerhaeuser*, 590 F.2d at 1058 n.83, distinguishing *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427 (D.C. Cir. 1973), *cert. denied*, 416 U.S. 969 (1974), observed: "if, unlike here, EPA ignores [the] possibility of upsets in setting clean air standards, it must take them into account separately." Thus the basic point of these cases is that the EPA has discretion as to how variability is to be taken into account, not that variability may be ignored. Yet the Eighth, Tenth, and District of Columbia Circuits acknowledged that the standards before them did not exempt 100% of unavoidable failures, and two of them suggested that this gap was appropriately dealt with by the exercise of prosecutorial discretion. *Weyerhaeuser*, 590 F.2d at 1058; *CPC, Inc.*, 540 F.2d at 1338. This seems contrary to the statutory direction to require only what the technology can accomplish. The Eighth Circuit's subsequent decision in *Corn Refiners Ass'n v. Costle*, 12 E.R.C. 2035 (1979) went even further in its rationale, relying solely on prosecutorial discretion without embracing the EPA's argument that variability had been considered in setting the standards.

¹⁶⁴ 486 F.2d at 397.

¹⁶⁵ *Id.* See also *Essex Chem. Corp.*, 486 F.2d at 436.

¹⁶⁶ 486 F.2d at 396.

¹⁶⁷ *Id.* (quoting *International Harvester Co. v. Ruckelshaus*, 478 F.2d at 647).

¹⁶⁸ *Essex Chem. Corp.*, 486 F.2d at 437. See also *id.* at 438 (scrubber for SO₂ at a single "recycle" sulfuric-acid plant).

¹⁶⁹ See text accompanying note 137 *supra*.

standard; when adjusted for the testing modification, the wet-process results demonstrated substantial compliance.¹⁷⁰ Thus the court did not have to reach the question whether the EPA could appropriately have outlawed the wet process. On that question a persuasive analogy is drawn from the same court's decision in *International Harvester* that vehicle-emission technology could be considered "available" even if it did not enable every model to meet the standards—it was enough that the technology permitted the basic demand for conforming vehicles to be met.¹⁷¹ I would argue that whether the EPA should adopt a single standard effectively precluding use of a familiar process depends upon consideration of the "cost" of doing so under a further provision, discussed below.¹⁷²

As explained and revised on remand, the *Portland Cement* regulation was later upheld.¹⁷³ The general lesson to be drawn from all this is that the standard should reflect what the technology can achieve in continuous practice.¹⁷⁴ Tests should be run under actual operating conditions and should be the same for setting the standard as for determining compliance.¹⁷⁵

c. The "Best System" Considering "Cost"

A control technique that has been "adequately demonstrated" in the purely technical sense may nevertheless be prohibitively expensive, as the Illinois Pollution Control Board found with respect to the distillation of most industrial wastewaters.¹⁷⁶ Sensibly, section 111 (a)(1) is not blind to the question of expense; as noted above, a standard of performance under the 1970 Act was one reflecting application of the "best system of emission reduction which

¹⁷⁰ 486 F.2d at 396 n.79, 398 n.90. See also *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d at 440 n.43 ("Complaints from the industry that it cannot meet the acid mist standard appear to be based on experience with other test methods than EPA's.") (quoting EPA statement, 37 Fed. Reg. 5,770 (1972)).

¹⁷¹ *International Harvester Co. v. Ruckelshaus*, 478 F.2d at 640. See *Mobile-Source Provisions*, *supra* note 7, at 831-32.

¹⁷² See text accompanying notes 175-208 *infra*.

¹⁷³ *Portland Cement Ass'n v. Train*, 513 F.2d 506 (D.C. Cir.), *cert. denied*, 423 U.S. 1025 (1975).

¹⁷⁴ The EPA has reaffirmed its recognition of this principle by proposing to revise its aluminum-plant standards to conform with actual tests of the state-of-the-art technology whose use it had prescribed. See 43 Fed. Reg. 42,186 (1978).

¹⁷⁵ Similar issues were considered briefly in *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 786-87 (D.C. Cir. 1976), where the EPA's judgments were accorded substantial deference. See also Currie, *supra* note 99, at 495-98.

¹⁷⁶ *In re Effluent Criteria*, 3 Ill. P.C.B. 401, 413 (1972). See Currie, *supra* note 99, at 493-94.

(taking into account the cost of achieving such reduction) . . . has been adequately demonstrated.”¹⁷⁷

(i) The Definition of “Cost”

The 1970 statute spoke of “cost” without defining it. Comparison with the parallel provision of the Clean Water Act, which expressly requires consideration of “the cost of achieving such effluent reduction *and* any non-water quality environmental impact and energy requirements,”¹⁷⁸ might suggest, by negative implication, that “cost” in the Clean Air Act was limited to out-of-pocket expenses of the discharger. The District of Columbia Circuit, however, had no difficulty in giving the term “cost” in section 111(a)(1) a properly all-inclusive meaning: the statute required consideration of “counter-productive environmental effects of a proposed standard, as well as economic costs to the industry.”¹⁷⁹ Nothing in the committee reports pointed to a narrower construction, and a rational decision depends on evaluation of all competing costs and benefits. The court buttressed its natural interpretation of “cost” with an arguably more contrived reference to the statutory requirement of “best” technology: “we cannot imagine that Congress intended that ‘best’ could apply to a system which did more damage to water than it prevented to air.”¹⁸⁰ Indeed, it was for failure to give adequate consideration to the environmental costs of disposing of sludge from sulfur-oxide scrubbers that the District of Columbia Circuit in *Essex Chemical* remanded sulfur dioxide standards for power plants and recycle acid plants for further consideration.¹⁸¹

The 1977 amendments make the broad meaning of cost explicit: What the Administrator must take into consideration is “the cost of achieving such emission reduction, any nonair quality health and environmental impact, and energy requirements.”¹⁸² Since the intention was to make certain that costs were not limited

¹⁷⁷ 42 U.S.C. § 1857c-6(1)(a) (1970).

¹⁷⁸ 33 U.S.C. § 1316(b)(1)(B) (1976) (emphasis added).

¹⁷⁹ *Portland Cement Ass’n*, 486 F.2d at 385.

¹⁸⁰ *Id.* 386 n.42.

¹⁸¹ *Essex Chem. Corp.*, 386 F.2d at 438-41. On remand the EPA reaffirmed its finding that the problem of sludge disposal was not serious enough to warrant revision of the regulation. 42 Fed. Reg. 61,541 (1977). For a sequel see the advertisement by UI International in the *New Yorker*, May 14, 1979, at 116: “This road was built with 2000 tons of scrubber sludge from Duquesne Light.”

¹⁸² 42 U.S.C. § 7411(a)(1) (Supp. II 1978).

to the price of the equipment,¹⁸³ the broad approach taken in past decisions¹⁸⁴ interpreting "cost" should govern consideration of such unmentioned side effects as the loss of jobs or of tax revenues.

(ii) The Weight to be Given to Cost

Just what weight the Administrator is to give to cost the statute does not say. The 1970 Senate Report, commenting on a bill that did not mention cost,¹⁸⁵ found its consideration implicit and stated what appears to be the natural meaning of the provision as adopted: the "technology must be available at a cost . . . which the Secretary determines to be reasonable."¹⁸⁶ Industry argued in *Portland Cement* that the statute required "a quantified cost-benefit analysis, showing the benefit to ambient air conditions as measured against the cost of the pollution devices."¹⁸⁷ The court held that no such analysis was required, citing "the specific time constraints imposed on the administrator" and "[t]he difficulty, if not impossibility, of quantifying the benefit to ambient air conditions."¹⁸⁸

Precisely what the rejection of industry's position means is not clear. At the very least it means that the benefits of compliance need not be quantified, and that is just as well, given the incompleteness of present knowledge. But the Administrator had made no real effort toward even a subjective comparison of costs and benefits. He had concluded simply that, under the standard, "the total investment for all installed air pollution control equipment will represent approximately 12 percent of the investment for the total facility," with operating costs of five to seven per cent of those of the entire plant.¹⁸⁹ Similarly, with respect to electric

¹⁸³ See H.R. REP. NO. 294, *supra* note 17, at 190, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1269, stating that "[t]his amendment merely makes explicit what was implicit in the previous language," and approving the judicial interpretation.

¹⁸⁴ See, e.g., *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 385 (D.C. Cir. 1973), *cert. denied*, 417 U.S. 921 (1974).

¹⁸⁵ S. 4358, 91st Cong., 2d Sess. § 113(b)(2) (1970).

¹⁸⁶ S. REP. NO. 1196, *supra* note 14, at 16 (1970). See *id.* 91.

¹⁸⁷ 486 F.2d at 387.

¹⁸⁸ *Id.* The court did recognize that some reply was due to industry's contention that the standard would effectively preclude the use of less expensive electronic precipitators or of wet-process kilns: "[o]n remand the Administrator should consider, as a matter of economic costs, contentions and presentations submitting that the standard as adopted . . . is unduly preclusive as to certain qualities, areas, or low-cost supplies" of cement. *Id.* 388.

¹⁸⁹ OFFICE OF AIR PROGRAMS, U.S. EPA, BACKGROUND INFORMATION FOR PROPOSED NEW-SOURCE PERFORMANCE STANDARDS 33 (1971). See *Portland Cement*, 486 F.2d at 387.

plants the Administrator concluded that the cost of particulate control could be halved if the standard permitted twice the emissions, yet he gave no reason for adopting the more stringent level.¹⁹⁰ After remand the cement standard was upheld against cost objections because "[t]he industry has not shown inability to adjust itself in a healthy economic fashion" to the prescribed emission level,¹⁹¹ and another panel of the same court has paraphrased the statute as mandating that the required controls not be "exorbitantly costly."¹⁹² Thus the interpretation of the District of Columbia Circuit is essentially that no cost is excessive under section 111 (a)(1) if it does not substantially impair the industry's ability to do a profitable business.

There is similar language in opinions construing the comparable provision of the federal water-pollution statute,¹⁹³ but I find unanswerable the dissenting position of Judge Adams in one such case that the requirement that costs be "taken into consideration" "may be taken to imply some kind of comparison of costs and benefits."¹⁹⁴ Similarly, the Fourth Circuit has persuasively held that costs and benefits must be compared, even though they could not be quantified, in determining effluent limitations for existing water-pollution sources under section 301(b)(2) of the Federal Water Pollution Control Act,¹⁹⁵ which required application of the "best available technology economically achievable":¹⁹⁶ "If no tangible environmental benefits will accrue by increasing the thermal reduction level from 80% to 90%, the additional expenditure of \$3 billion might be considered unjustified."¹⁹⁷ The natural inference that to take cost "into consideration" implies a decision whether the standard is worth its expense is strengthened both by the Senate Report quoted above¹⁹⁸ and by the existence of a threshold requirement limiting regulation to sources whose

¹⁹⁰ *Id.* 15-16. See 36 Fed. Reg. 24,876, 24,878-89 (1971).

¹⁹¹ *Portland Cement Ass'n*, 513 F.2d at 508.

¹⁹² See also a similar analysis in *National Asphalt Pavement Ass'n*, 539 F.2d at 787, where the cost question was easy because one of the petitioners had conceded that the requisite technology "can be installed and operated at reasonable cost."

¹⁹³ 33 U.S.C. § 1316(b)(1)(B) (1976).

¹⁹⁴ *American Iron & Steel Inst. v. Train*, 526 F.2d 1027, 1075 n.15 (3d Cir.) *cert. denied*, 435 U.S. 914 (1976) (concurring opinion).

¹⁹⁵ 33 U.S.C. § 1251-1376 (1976).

¹⁹⁶ *Id.* §1311(b)(2)(A)(i).

¹⁹⁷ *Appalachian Power Co. v. Train*, 545 F.2d 1351, 1361, 1364 (4th Cir. 1976). *Accord*, *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 502-03 (5th Cir. 1978) (Occupational Safety and Health Act).

¹⁹⁸ See text accompanying note 139 *supra*.

pollution may "endanger public health or welfare."¹⁹⁹ The implication is that both the need for the standard and its cost are relevant to the decision, and that they should be compared as well as is practicable.²⁰⁰

To say that costs and benefits should be compared, however, is not to say how the balance is to be struck. Nor are general formulas, such as the presumably implicit directive to seek the optimal level of control expenditures, likely to be very helpful in resolving concrete problems, given the imponderable factors in quantifying the benefits of various degrees of control. The EPA clearly has wide discretion in this regard. Nothing in the Clean Air Act, for example, tells the EPA whether to prescribe the air pollution equivalent of secondary or of tertiary sewage treatment.²⁰¹ Legislative history of comparable water-pollution provisions suggests the latter: the "best available technology economically achievable" is to be based on the achievements of the technology leader.²⁰² In setting new section 111 power-plant standards, however, the EPA seems to have taken a less extreme position, allowing users of low-sulfur fuel to utilize scrubbing technology of far less efficiency than some plants employ in comparable circumstances.²⁰³ If section 111

¹⁹⁹ 42 U.S.C. § 7411(b)(1) (Supp. II 1978). See text accompanying note 67 *supra*.

²⁰⁰ That the endangerment language appears in a threshold requirement rather than in the criteria for setting the standard might be argued to mean that the benefits of the regulation are to be considered only in determining whether to regulate the source category at all. The irrationality of this result is a strong argument for refusing to believe Congress intended it, and the refusal of the *Asphalt* decision, see text accompanying note 77 *supra*, to give procedural significance to the separate statement of threshold requirements is a persuasive precedent.

The applicable standard for judicial review is whether the Administrator's decision was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," 5 U.S.C. § 706(2)(A) (1976), and this determination requires that the Administrator's decision be "based on a consideration of the relevant factors" and that there has not been "a clear error of judgment." *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 416 (1971); *Portland Cement Ass'n*, 486 F.2d at 402. The statute makes cost and public health and welfare relevant factors: to order an expenditure far outweighing the health or welfare benefits would be a "clear error of judgment" regarding those factors, and thus arbitrary and capricious. The arbitrary-and-capricious standard has since been written explicitly into the Clean Air Act for review of designated regulations, including those under § 111. 42 U.S.C. § 7607(d)(1)(C)(9)(A) (Supp. II 1978).

²⁰¹ Traditional sewage treatment consists of two stages, primary and secondary, which together remove roughly 90% of suspended solids and of five-day biochemical oxygen demand (BOD₅), a measure of the oxygen-consuming capacity of the waste. A variety of third-stage, or tertiary, techniques are available for further reductions by a factor of two to five, at significant additional cost. See *In re Effluent Criteria*, 3 Ill. P.C.B. 755, 765-73 (1972).

²⁰² See S. REP. NO. 414, 92d Cong., 1st Sess. 57-58 (1972).

²⁰³ See text accompanying notes 218-19 *infra*, 44 Fed. Reg. 33,580, 33,581-84 (1979).

is construed to require nationwide the air pollution equivalent of tertiary sewage treatment, the result will once again be that the statute is both too rigid and too demanding. While such treatment is appropriate where necessary to meet ambient standards, requiring its use in every area and circumstance seems likely to impose unreasonable costs.²⁰⁴

(iii) Interindustry Comparisons

A final argument the court in *Portland Cement* treated as being cost-related was that the cement industry was subjected to more exacting standards than power plants or incinerators. The court found an explanation that "seem[ed] to be supported": "The difference . . . is attributable to the superior technology available [for cement plants] (that is, fabric filter technology has not been applied to coal-fired steam generators or incinerators).'"²⁰⁵ It would have sufficed to stop there, but the court ventured a broader proposition: because interindustry comparison would be "unmanageable," "the Administrator is not required to present affirmative justifications for different standards in different industries."²⁰⁶

This holding derives strength from the Supreme Court's position that an administrative agency need not attempt to impose equal sanctions for equivalent offenses,²⁰⁷ but when it is stated so baldly it seems inconsistent both with the "arbitrary" or "capricious" standard of review²⁰⁸ and with constitutional commands of equality. Perhaps the better answer is that if there is no justification for the discrepancy, one of the industry standards does not require the "best" control system adequately demonstrated; the erroneous standard—not necessarily the tighter one—should be set aside for failure to meet the statutory criterion, without reaching the question of equality.

d. "Technological" Systems

The 1970 Senate Report emphasized that flexibility in the means of compliance was intended by the choice of the term "standards of performance": "The Secretary should not make a technical judgment as to how the standard should be implemented. He should determine the achievable limits and let the owner or operator

²⁰⁴ See Currie, *supra* note 99, at 491-95.

²⁰⁵ 486 F.2d at 388-89 (quoting "EPA Background Document").

²⁰⁶ *Id.* 389.

²⁰⁷ *Butz v. Glover Livestock Comm. Co.*, 411 U.S. 182, 185-7 (1973).

²⁰⁸ See note 200 *supra*.

determine the most economic, acceptable technique to apply.”²⁰⁹ In full accord with this congressional emphasis on the result rather than the method, the EPA adopted a single nationwide standard for the emission of sulfur oxides from coal-fired power plants,²¹⁰ anticipating that individual operators would decide whether to comply by stack-gas cleaning or by using low-sulfur fuels.²¹¹

Affected citizens, however, promptly sued the EPA, seeking to have the standard revised so as to require the use of stack-gas scrubbers even when low-sulfur fuel was used.²¹² Before the matter could be administratively resolved, Congress amended the statute to require the requested revision. Section 111(a)(1) now requires that performance standards reflect the best “*technological system*” of emission reduction,²¹³ and a technological system is defined in section 111(a)(7) as

(A) a technological process for production or operation by any source which is inherently low-polluting or nonpolluting, or

(B) a technological system for . . . reduction of the pollution generated by a source before such pollution is emitted into the ambient air, including precombustion cleaning or treatment of fuels.²¹⁴

The House Report explains: “inherently low-polluting” processes include “fluidized bed combustion” and “use of water-based paints instead of solvents.” “Reduction” of pollutants can be by “post-combustion or postpollution generating” devices such as “flue gas desulfurization [*sic*], catalytic combustors, electrostatic precipitators” or by “preprocess activities” such as “solvent refining, oil desulfurization/denitrification at the refinery.” The central purpose of the provision is made clear: “[a] major new stationary source may no longer meet NSPS requirements merely by use of untreated oil or coal.”²¹⁵ This is re-emphasized by the new requirement in section 111(a)(1)(A) that standards for “fossil fuel fired stationary sources” not only establish “emission limitations” in such terms as pounds per million Btu but also require “a percentage reduction in the

²⁰⁹ S. REP. NO. 1196, *supra* note 14, at 17.

²¹⁰ 40 C.F.R. § 60.43(a)(2) (1979).

²¹¹ See Background Information, *supra* note 109, at 10, 12-13.

²¹² *Oljato Chapter of Navajo Tribe v. Train*, 515 F.2d 654 (D.C. Cir. 1975).

²¹³ 42 U.S.C. § 7411(a)(1) (Supp. II 1978) (emphasis added).

²¹⁴ *Id.* § 7411(a)(7)(A), (B).

²¹⁵ H.R. REP. NO. 294, *supra* note 17, at 188, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1266.

emissions . . . which would have resulted from the use of fuels which are not subject to treatment prior to combustion.”²¹⁶

If the standards were supposed to reflect the degree of control required to achieve a given ambient level, the refusal to allow credit for the use of cleaner fuels would make no sense at all—the emission rate should be determinative, not the method by which it was achieved. But to require everyone to use the best available control equipment regardless of the fuel employed is not inconsistent with the actual statutory philosophy of standards reflecting the greatest practicable reduction of emissions. The amendment requires a more particularized determination of practicability, recognizing that plants starting with the advantage of clean fuel can practicably achieve a lower level of emissions. Thus one of the House Committee’s justifications for the amendment was that existing standards failed to “provide for maximum practicable emission reduction using locally available fuels, and therefore do not maximize potential for long-term growth.” Moreover, uniform standards “give a competitive advantage to those States with cheaper low-sulfur coal,” “aggravate compliance problems for existing . . . sources which cannot retrofit and which must compete with larger, new sources for low-sulfur coal,” and “operate as a disincentive to the improvement of technology for new sources.” On the other hand, the amendment would serve the legitimate but ulterior purpose of discouraging reliance on “expensive imported oil.”²¹⁷

Nevertheless, congressional restriction of the permissible means of meeting performance standards may stifle innovation. A comparable requirement for vehicle emissions, for example, could put an end to industry efforts to find a fuel with less potential for pollution. Moreover, the use of clean fuels has decided advantages over add-on control technology, for it simplifies enforcement and avoids risks of malfunction. In principle, indeed, it is hard to see why Congress drew the line where it did. The same policy of maximum control that justifies requiring those who use naturally clean fuels to install stack-cleaning technology would support extending that requirement to those who clean the fuel before burning it, and to those who employ a “low-polluting” process such as fluidized-bed combustion. As a general policy matter, therefore, a principle of refusing credit for clean fuels seems to be a questionable basis for formulating technology-based standards, whether or

²¹⁶ 42 U.S.C. § 7411(a)(1)(A)(i), (ii) (Supp. II 1978).

²¹⁷ H.R. REP. NO. 294, *supra* note 17, at 187, 193, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1266, 1271-72.

not it can be justified, in the case of low-sulfur fuels, by the need for additional reductions or by extraneous considerations of energy policy.

The language of the amendment, moreover, creates a number of difficulties, the most important of which is whether uniform percentage reductions are required for all sources. The EPA has concluded they are not. While it initially proposed to require eighty-five percent reduction of sulfur oxides from most new power plants regardless of the composition of their fuel,²¹⁸ its final regulations require a smaller percentage reduction for plants using low-sulfur fuel. The basic standard limits emissions to 1.2 pounds per million Btu and prescribes a ninety percent reduction, but only seventy percent reduction is required for plants emitting less than 0.6 pounds per million Btu.²¹⁹

At first glance the EPA's approach seems squarely contrary to Congress's decision: the "technological" requirement was based upon a policy against allowances for the use of clean fuel. Yet the statutory language is not air-tight. While it requires use of technological controls, it does not explicitly say that the same degree of technological control is the "best" everywhere; while it requires a percentage reduction for fuel-burning sources, it does not explicitly say that the same percentage must be applied to every plant. Even the House Report expressed the statutory purpose in terms that are less than absolute: it said that the amendment was designed to prevent compliance "merely by use of untreated oil or coal,"²²⁰ not that it was meant to forbid *any* credit for clean fuel. If this were the whole story, a uniform percentage reduction should be required; minor cracks in the phraseology would not obscure the overwhelming congressional objection to reliance on low-sulfur fuel.

The Conference Report, however, radically alters the picture:

[I]n establishing a national percent reduction for new fossil fuel-fired sources, the Conferees agreed that the Administrator may, in his discretion, set a range of pollutant reduction that reflects varying fuel characteristics . . . [upon] a finding that such a departure does not undermine the basic purposes of the House provision and other pro-

²¹⁸ See 43 Fed. Reg. 42,154 (1978).

²¹⁹ 40 C.F.R. § 60.43a(a)(1), (2) (1979) added by 44 Fed. Reg. 33,580, 33,614 (1979).

²²⁰ H.R. REP. NO. 294, *supra* note 17, at 188, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS 1266 (emphasis added).

visions of the act, such as maximizing the use of locally available fuels.²²¹

The latitude apparently conveyed by this passage does not contradict the statutory language, but it does seem to depart from the original intention. Conceivably a court might find that any substantial departure from uniformity based on fuel composition undermines the basic purpose to preclude reliance on clean fuel, but that interpretation would render meaningless the Conference's deliberate statement. A Conference Report is a more reliable indicator of the meaning of an ambiguous statute than is the earlier view of a single House Report which was meant to be superseded. I conclude that the House's firm policy against low-sulfur fuel was torpedoed in conference, and that the EPA acted lawfully in allowing a lesser degree of scrubbing when clean fuels are used.

Even the Conference Report, however, does not appear capable of avoiding the excessive rigidity of the statutory requirements in other cases. For example, finding that desulfurization of the exhaust from stationary gas turbines would triple or quadruple their cost, the Administrator sensibly proposed to declare clean fuel their best practicable means of control.²²² Similarly, on the basis of cost-benefit comparisons the final regulations impose limitations only in terms of pounds per million Btu upon plants burning anthracite,²²³ or located in Hawaii or on certain other islands,²²⁴ or burning liquid or gaseous fuel so clean as to emit less than 0.2 pounds per million Btu without controls.²²⁵ Quite apart from the perplexing question whether the definition of a "standard of performance" as one reflecting "the best technological system" allows the Administrator to require nontechnological controls when technology is impracticable, all of these efforts seem squarely contrary to the independent requirement of a percentage reduction from

²²¹ H.R. REP. No. 564, 95th Cong., 1st Sess. 130, reprinted in [1977] U.S. CODE CONG. & AD. NEWS 1511 (1977).

²²² 42 Fed. Reg. 53,782, 53,785 (1977).

²²³ 40 C.F.R. § 60.43a(d)(1) (1979), added by 44 Fed. Reg. 33,580, 33,615 (1979). Reasons given, *id.* at 33,590, include the low sulfur content of anthracite and the desire to make this fuel cost-competitive so as to encourage the reopening and ultimate reclamation of abandoned mines now causing water pollution.

²²⁴ 40 C.F.R. § 60.43a(d)(3) (1979). See 43 Fed. Reg. 42,157, 42,175 (1978), citing "the costs of requiring FGD systems in light of the limited land area available for sludge disposal."

²²⁵ 40 C.F.R. § 60.43a(b)(2), 44 Fed. Reg. 33,614 (1979). For explanation of an earlier proposal that would have extended this exemption to clean solid fuels such as wood because of the trivial benefits of costly scrubbing see 43 Fed. Reg. 42,154, 42,158 (1978).

uncontrolled emissions. The Agency once argued that compliance with a 0.2 limit for very clean fuels "would constitute compliance with the percentage reduction requirement."²²⁶ It would do nothing of the sort, for by hypothesis the 0.2 level can be met in such a case without any reduction in uncontrolled emissions. To allow the percentage reduction to be set at zero is to expunge the requirement from the statute.²²⁷

Moreover, there may be some difficulty in distinguishing "inherently low-polluting" processes, which are permissible means of achieving a standard, from unacceptable non-"technological" means. On its face I should have thought the term "process" referred to the method by which a product is manufactured or a fuel is burned, as opposed to a change in the raw materials used. Yet the House Report identifies "use of water-based paints instead of solvents" as a nonpolluting "process."²²⁸ I cannot see how such a substitution of ingredients differs analytically or in statutory terms from the fuel substitution the amendment was plainly designed to forestall.

In short, Congress seems to have purchased trouble by the terminology it used to express its simple command that plants burning low-sulfur fuel should also employ flue-gas desulfurization. Part of the difficulty stems from the attempt to generalize from this case to a broad principle favoring "technological" controls. The example of water-based paint shows that such a principle is not wise and that it does not accurately reflect what Congress had in mind. Similarly, the allowance of credit for pre-combustion fuel cleaning shows that the amendments do not reflect a general principle requiring cumulation of alternative control techniques. Congress simply disagreed with the Agency's evaluation of practicability in the context of fuels naturally low in sulfur, and it should not have attempted to state a more general principle.

Additionally, the flat requirement of a percentage reduction, while responsive to the felt need to require scrubbing despite use of low-sulfur coal, was obtusely insensitive to the likelihood of special situations in which the costs of scrubbing are quite unreasonable. Congress might at least have prescribed that percentage reduction was unnecessary if a specified insignificant emission level,

²²⁶ 43 Fed. Reg. 42,160 (1978).

²²⁷ See also 8 ENVIR. REP. (BNA) 822 (1977) (noting industry's objections to the necessary application of the percentage requirement, designed to deal with the problem of low-sulfur fuels, to particulates, and to nitrogen oxides).

²²⁸ H.R. REP. NO. 294, *supra* note 17, at 188, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1267. See text accompanying note 222 *supra*.

such as 0.2 pounds per million Btu, could be achieved without it. The case of the gas turbine,²²⁹ however, suggests the risks that attend any congressional effort to foresee and provide for every instance that does not fit into the general pattern.²³⁰ Assuming Congress was correct in insisting on the scrubbing of low-sulfur coal in ordinary cases, it should simply have required a percentage reduction with provision for categorical exemption based upon unusually high costs or low benefits. If the Agency cannot be trusted to administer such a safety valve in the spirit of the congressional purpose, it will find a way to frustrate even the most specific legislative direction.

e. "Continuous" Controls

The 1977 amendments also add that the control system reflected by the performance standards must be one of "continuous" emission reduction.²³¹ This requirement is derived from experience under the implementation-plan²³² provisions of section 110, which I have described elsewhere.²³³ It is intended to forbid reliance on intermittent control strategies, such as temporary use of low-sulfur fuels or reductions in plant output, which were once put forward as means of complying with ambient standards during adverse conditions without the necessity for installing permanent controls.²³⁴ Because new-source standards are not based upon ambient values, the requirement of continuous controls when available may even have been implicit in the original section 111. By defining a "standard of performance" as one requiring "continuous" controls, the amendment invites the conclusion that only continuous controls may be required, so that the Administrator cannot require under section 111 the stockpiling of clean fuels to limit emissions of a pollutant for which the available continuous-control technology is poorly developed. Such a result would be most unfortunate, since the aim clearly was to require more, rather than less, control. The courts should be expected to hold that the amendments only express a preference for continuous controls whenever they are practicable, but the language was not well chosen.

²²⁹ See text accompanying note 222 *supra*.

²³⁰ As does the problem of solid-waste disposal on islands. See note 224 *supra*.

²³¹ 42 U.S.C. § 7411(a)(1) (Supp. II 1978).

²³² *Id.* § 7423(a), (b).

²³³ See *Federal Air-Quality Standards*, *supra* note 7, at 375-77.

²³⁴ See H.R. REP. NO. 294, *supra* note 17, at 92, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1170-71.

D. Procedure for Adoption

1. The Portland Cement Reforms

The original section 111(b) provided only that interested persons should be afforded "an opportunity for written comment" on proposed new-source standards before their adoption.²³⁵ The Administrative Procedure Act (APA), which applied of its own force because it was not "expressly" modified or superseded by section 111,²³⁶ conferred a substantially identical right to "an opportunity to participate . . . through submission of written data, views, or arguments," together with advance notice in the Federal Register of "either the terms of substance of the proposed rule or a description of the subjects and issues involved" and "a concise general statement of . . . basis and purpose" in the rules as adopted.²³⁷

The performance standard for particulates challenged in *Portland Cement Association v. Ruckelshaus*²³⁸ was largely based, as I have noted,²³⁹ on tests run on two existing kilns. Yet the EPA did not give public notice of the details of those tests until after the regulation had been adopted and the case was in the court of appeals. As soon as the information became available, an industry expert who analyzed it pointed to apparent gross errors in testing procedures that, if substantiated, would have undermined the justification for the standard. The court remanded the matter "so that the agency might consider the additional comments on the tests."²⁴⁰ The EPA added the comments to the record but did not respond to them; the court remanded again, saying that "the purpose of our prior remand cannot be realized unless we hear EPA's response" to the industry comments. Although some of the claims made in court had not been presented to the EPA, the court required them to be considered since a remand was necessary on other grounds.²⁴¹

Three distinct principles—of considerable significance for rule-making procedure in general—are found in the two remands in *Portland Cement*. The first involves agency disclosure. In ordering the EPA to accept additional comments when the case was being appealed, the court declared that the agency had an obligation to

²³⁵ 42 U.S.C. § 1857c-6(b)(1)(B) (1970).

²³⁶ 5 U.S.C. § 559 (1970).

²³⁷ *Id.* § 553(b), (c).

²³⁸ 486 F.2d 375 (D.C. Cir. 1973).

²³⁹ See text accompanying notes 153-57 *supra*.

²⁴⁰ 486 F.2d at 393.

²⁴¹ *Id.* 392-95.

disclose not only the content of the proposed regulation, as required by the APA, but also the information on which the proposal was based:

It is not consonant with the purpose of a rule-making proceeding to promulgate rules on the basis of . . . data that . . . is known only to the agency. . . .

. . . .
[I]nformation should generally be disclosed as to the basis of a proposed rule at the time of issuance. If this is not feasible, . . . information . . . should be disclosed as it becomes available²⁴²

As a policy matter this disclosure requirement is exemplary. The Administrative Conference agrees with it, recommending that "to the extent feasible" an agency should "make available documents, materials and public submissions upon which a rule is based."²⁴³ The EPA itself endorsed disclosure: "There seems to be no adequate justification for revealing such material only at the time of final promulgation" or later; early disclosure will "improve the process of informal rulemaking itself and lessen . . . the need for judicial review" by "facilitating timely and informed comment and increasing the likelihood that hard problems will be addressed before final promulgation."²⁴⁴ The Supreme Court in *Morgan (II) v. United States* emphasized the importance of disclosure in the context of ratemaking for Kansas City livestock brokers: "The right to a hearing embraces not only the right to present evidence but also a reasonable opportunity to know the claims of the opposing party and to meet them. The right to submit argument implies that opportunity; otherwise the right may be but a barren one."²⁴⁵ The court of appeals echoed this reasoning in *Portland Cement*: "Obviously a prerequisite to the ability to make meaningful comment [as guaranteed by section 111 and by the APA] is to know the basis upon which the rule is proposed."²⁴⁶

That disclosure of the basis for a proposed rule is sound policy does not make it law, and the Supreme Court has recently empha-

²⁴² *Id.* 393-94.

²⁴³ Rec. 71-6, ACUS Recommendations & Reports 35 (1970-72).

²⁴⁴ EPA, Comments on Proposed ACUS Rec. 74-4, ¶1(4) 14, 22 (1974). The EPA integrated the *Cement* disclosure requirement into its practice for effluent guidelines under the Federal Water Pollution Control Act, 38 Fed. Reg. 21,202-06 (1973).

²⁴⁵ 304 U.S. 1, 18 (1938).

²⁴⁶ 486 F.2d at 393 n.67.

sized in *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*²⁴⁷ that the courts are not to impose upon agencies rule-making procedures beyond those required by statute or by the Constitution. The Constitution is not a likely source of support for *Portland Cement*, since the Supreme Court has held that, in general rulemaking, due process gives no right to be heard at all.²⁴⁸ The proceedings in *Morgan* itself, while involving rates of a number of brokers, were treated by the Supreme Court as "quasi-judicial,"²⁴⁹ and the decision was based on interpretation of a statutory requirement of a "full hearing" that is not found in the Clean Air Act or in the APA. The latter's notice requirement is no help, since it speaks only of the "terms or substance" of the proposal, not of its justification. And the attempts of the court of appeals to derive support for *Portland Cement* from the statutory provisions for judicial review,²⁵⁰ which say nothing about disclosure, may be too tenuous to survive *Vermont Yankee*.²⁵¹

Judge Leventhal, in the *Portland Cement* opinion, put his finger on the best legal argument for the disclosure requirement. In affording the "opportunity" for submission of written comments under both section 111(b) and the APA, the court implied, Congress must have intended a meaningful opportunity to comment. Since disclosure of the basis of a proposal is essential to make the opportunity meaningful, it may therefore be appropriate to construe the statutory right to comment as implicitly requiring disclosure. On this point the *Morgan* opinion is highly persuasive precedent: "The right to submit argument [in *Portland Cement*, the right to submit comments] implies" "a reasonable opportunity to know the claims of the opposing party."²⁵²

Nevertheless there are strong arguments for deciding that the opportunity for comment cannot properly be read to create an obligation to disclose the basis for a proposed regulation. Professor Scalia argues, for example, that the existence of the separate provision for notice in section 553(b), which does not include the basis

²⁴⁷ 435 U.S. 519 (1978).

²⁴⁸ *Bi-Metallic Inv. Co. v. Colorado*, 239 U.S. 441 (1915), cited with apparent approval in *United States v. Florida East Coast Ry.*, 410 U.S. 224, 245 (1973).

²⁴⁹ 304 U.S. at 14.

²⁵⁰ "We considered this opportunity to make further comments necessary to sound execution of our judicial review function." 486 F.2d at 393. See also *Home Box Office, Inc. v. FCC*, 567 F.2d 9, 54 (D.C. Cir. 1977).

²⁵¹ The strongest argument would be that a regulation based upon information there was no right to rebut was "arbitrary" or "capricious" under 5 U.S.C. § 706(2)(A) (1976) in that it was without adequate support.

²⁵² 304 U.S. at 18.

of the proposal, shows that the comment requirement was not meant to deal with disclosure.²⁵³ Although the notice provision may have been inserted out of unnecessary caution, Professor Scalia's interpretation is at least as probable. The *Portland Cement* interpretation, moreover, is a latter-day discovery; no one pretends that Congress had any such requirement in mind when it adopted the APA. Indeed, the House Report on the APA appeared to treat the disclosure of such information as optional: "Summaries and reports may also be issued as aids in securing public comment or suggestions," and "[o]pen proceedings may be aided by the submission of reports or summaries of data by agency representatives."²⁵⁴ Finally, there is nothing to show that in section 111's comment provision Congress meant to add anything to the apparently identical requirements of the APA. The fate of *Portland Cement's* wholesome disclosure requirement after *Vermont Yankee*, except in proceedings in which it has been specifically imposed by statute or regulation, appears uncertain.

The second procedural holding in *Portland Cement* was that the EPA had "an obligation to comment on matters identified as potentially significant by the court order remanding for further presentation."²⁵⁵ Once again, in policy terms this is an attractive requirement, as it adds to public confidence in the standard and facilitates evaluation of its propriety. A later Second Circuit decision has drawn legal support for this requirement from the APA's requirement of a "concise statement of basis and purpose" of the regulation:

[T]he comment that to apply the proposed [FDA food processing] requirements to whitefish would destroy the commercial product was neither discussed nor answered. We think that to sanction silence in the face of such vital questions would be to make the statutory requirement of a 'concise general statement' less than an adequate safeguard against arbitrary decision-making.²⁵⁶

Similarly, though the requirement of an explanatory statement had been read almost out of existence by the District of Columbia

²⁵³ Scalia, *Vermont Yankee: The APA, the D.C. Circuit, and the Supreme Court*, 1978 SUP. CT. REV. 345, 380-81 n.154.

²⁵⁴ H.R. REP. NO. 1980, 79th Cong., 2d Sess. 24-25 (1946).

²⁵⁵ 486 F.2d at 394.

²⁵⁶ *United States v. Nova Scotia Food Prods. Corp.*, 568 F.2d 240, 253 (2d Cir. 1977).

Circuit in *Kennecott Copper Corp. v. EPA*,²⁵⁷ other decisions of that court have construed it to require that the statement be detailed enough to show "what major issues of policy were ventilated . . . and why the agency reacted to them as it did."²⁵⁸

Committee reports on the APA seem to support the latter interpretation. After observing that the agency must "consider all relevant matter presented," both House and Senate Reports declared that the required statement "should not only relate to the data so presented but with reasonable fullness explain the actual basis and objectives of the rule."²⁵⁹ On the other hand, the Attorney General's respected Manual on the Administrative Procedure Act minimized the contents of the required statement.²⁶⁰ Additionally, the contrast with the APA's requirement of "findings and conclusions, and the reasons or basis therefor, on all the material issues of fact, law, or discretion presented" in formal adjudication²⁶¹ suggests that something much less elaborate was expected in informal rulemaking.²⁶²

In *Portland Cement* itself the court suggested another legal basis for the requirement of a response: "If this were a private lawsuit, we might reverse the order . . . for failure of its proponent to meet the burden of refutation or explanation."²⁶³ The implication was that the industry comments raised such substantial doubts as to EPA methodology that the materials before the court did not adequately support the standard. However, the proper disposition of a regulation if the record is inadequate to support it is to set it aside, not to order a response.²⁶⁴ Thus, the legality of the response requirement under the APA also appears uncertain after *Vermont Yankee*.

Finally, the *Portland Cement* court added that generally "challenges to standards must be limited to points made by petitioners in agency proceedings," because "to entertain comments made for the first time before this court would be destructive of a meaning-

²⁵⁷ 462 F.2d 846, 850 (D.C. Cir. 1972).

²⁵⁸ See, e.g., *Automotive Parts & Accessories Ass'n v. Boyd*, 407 F.2d 330, 338 (D.C. Cir. 1968).

²⁵⁹ H.R. REP. NO. 1980, 79th Cong., 2d Sess. 25 (1946); S. REP. NO. 752, 79th Cong., 1st Sess. 15 (1946).

²⁶⁰ [1947] ATTORNEY GENERAL'S MANUAL ON THE ADMINISTRATIVE PROCEDURE ACT 32.

²⁶¹ 5 U.S.C. § 557(c) (1976).

²⁶² See Scalia, *supra* note 253, at 378-80 ("There is no doubt that the burden meant to be imposed by this provision was minimal").

²⁶³ 486 F.2d at 393.

²⁶⁴ 5 U.S.C. § 706(2)(A) (1976).

ful administrative process.”²⁶⁵ Despite the obvious force of the court’s policy argument, such a requirement has the unfortunate potential for cutting off the rights of unsuspecting persons—a danger much reduced in adjudication because only parties are bound by the decision, whereas the regulation in *Portland Cement* was of general application.²⁶⁶ Moreover, no legal basis for this limitation was spelled out in the opinion, and it is not easy to find one.

2. The 1977 Amendments

In recent years Congress has exhibited an increasing lack of confidence in the basic rulemaking procedures of the APA; in statute after statute it prescribes additional procedures that must be followed in the adoption of various regulations.²⁶⁷ Section 307(d) of the Clean Air Act, added in 1977, is a reflection of this trend. For a broad range of rulemaking activities, including new-source performance standards under section 111,²⁶⁸ the amendment makes the APA inapplicable²⁶⁹ and institutes a much more demanding set of procedures than those explicitly found in the original section 111.

Section 307(d)(3) makes explicit the disclosure requirement of *Portland Cement* by requiring that Federal Register notice of a proposed regulation be “accompanied by a statement of its basis and purpose” including a summary of “(A) the factual data on which the proposed rule is based; (B) the methodology used in obtaining the data and in analyzing the data; and (C) the major legal interpretations and policy considerations underlying the proposed rule.”²⁷⁰

In addition to the opportunity to submit “written comments, data, or documentary information” on a proposed rule, section 307(d)(5) requires “an opportunity for the oral presentation of data, views, or arguments.”²⁷¹ All comments received, the transcript of any hearings, and newly available documents “of central relevance

²⁶⁵ 486 F.2d at 394. It did not apply this rule to the case before it because a remand was necessary on other grounds.

²⁶⁶ See Currie & Goodman, *Judicial Review of Federal Administrative Action: Quest for the Optimum Forum*, 75 COLUM. L. REV. 1, 48 (1975).

²⁶⁷ See Hamilton, *Procedures for the Adoption of Rules of General Applicability: The Need for Procedural Innovation in Administrative Rulemaking*, 60 CALIF. L. REV. 1276, 1277 (1972).

²⁶⁸ 42 U.S.C. § 7607(d)(1)(C) (Supp. II 1978).

²⁶⁹ *Id.* § 7607(d)(1).

²⁷⁰ *Id.* § 7607(d)(3).

²⁷¹ *Id.* § 7607(d)(5).

to the rulemaking," together with certain other specified materials,²⁷² are to be placed in a "rulemaking docket" ²⁷³ open to public inspection,²⁷⁴ and the record shall be kept "open for thirty days after completion of the proceeding . . . for submission of rebuttal and supplementary information."²⁷⁵ This last requirement was inserted in conference as a "substitute for cross-examination," which would have been provided by the House bill.²⁷⁶ The regulation "may not be based (in part or whole) on any information which has not been placed in the docket" by the time of promulgation.²⁷⁷ The rule itself is to be accompanied by a revised "statement of basis and purpose" as provided for a proposed rule, by "an explanation of the reasons for any major changes" from the proposal, and by "a response to each of the significant comments, criticisms, and new data submitted . . . during the comment period."²⁷⁸

The materials designated by section 307(d) constitute the exclusive record for judicial review,²⁷⁹ and no "objection" that was not made "during the period for public comment" may be raised during judicial review,²⁸⁰ but the EPA shall reopen the proceeding to consider objections that were "impracticable to raise" earlier if they are "of central relevance to the outcome of the rule."²⁸¹ Procedural errors, however, are to be grounds for setting regulations aside only if the failure was "arbitrary or capricious" and so "central" that "there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made."²⁸²

This complicated procedural framework is a careful response to the felt inadequacies of the traditional notice-and-comment procedure, and is designed to afford more meaningful opportunity for

²⁷² *Id.* § 7607(d)(4)(B). The additional materials are those relating to inter-agency review of regulatory proposals. *Id.* § 7607(d)(4)(B)(ii).

²⁷³ *Id.* § 7607(d)(2).

²⁷⁴ *Id.* § 7607(d)(4)(A).

²⁷⁵ *Id.* § 7607(d)(5). The reference to the "proceeding" is ambiguous. Although the Conference Report translates it as "hearing," H.R. REP. No. 564, *supra* note 221, at 177-78, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1558, the underlying purpose to allow rebuttal suggests it is not limited to the oral hearing but refers to the entire "comment period" prescribed under § 307(d)(3).

²⁷⁶ H.R. REP. No. 564, *supra* note 221, at 177-78, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1558. See H.R. REP. No. 294, *supra* note 17, at 320-21, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1399-1400.

²⁷⁷ 42 U.S.C. § 7607(d)(6)(C) (Supp. II 1978).

²⁷⁸ *Id.* § 7607(d)(6)(A), (B).

²⁷⁹ *Id.* § 7607(d)(7)(A).

²⁸⁰ *Id.* § 7607(d)(7)(B).

²⁸¹ *Id.*

²⁸² *Id.* § 7607(d)(8), (9)(D).

public participation without unduly encumbering the administrative process. It builds heavily on the *Portland Cement* opinion and on a proposal put forward by EPA attorney William Pedersen.²⁸³ How it will work in practice remains to be seen, but I view it as a major step forward.

The disclosure requirement, I have already argued,²⁸⁴ is indispensable to give content to the opportunity to comment, and the duty to respond to devastating criticisms is a useful means of assuring adequate support for the regulations. The drafting of the latter provision may cause some difficulty. On the one hand it requires responses only to information received "during the comment period," which may not include the thirty-day opportunity for rebuttal to be afforded "after the completion of the proceeding." Although there obviously should be an end to the proceeding,²⁸⁵ a statement drafted at the time of promulgation should respond to all that was submitted during the authorized prior proceedings.

On the other hand, while the *Portland Cement* opinion required a response only with respect to "matters identified as potentially significant by the court order" of remand, section 307 (d) requires a response to "each of the significant comments, criticisms, and new data submitted." If broadly construed, this provision could impose an overwhelming burden. The House Report warned against overenforcement but left much room for interpretation:

While these statements need not be exhaustive or respond to every argument regardless of weight, they must be of sufficient depth and complexity to show that the Administrator did consider public comments . . . and to permit any court reviewing the rule under section 307 (b) to be fairly apprised of the basis for the Administrator's action.²⁸⁶

Because *Portland Cement* forms the backdrop of this requirement, it would seem appropriate to take the court's words as guidelines for interpreting the statutory term "significant":

²⁸³ Pedersen, *Formal Records and Informal Rulemaking*, 85 YALE L.J. 38 (1975). See H.R. REP. NO. 294, *supra* note 17, at 319, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1398.

²⁸⁴ See text accompanying note 252 *supra*.

²⁸⁵ See *South Terminal Corp. v. EPA*, 504 F.2d 646, 658-59 (1st Cir. 1974).

²⁸⁶ H.R. REP. NO. 294, *supra* note 17, at 321, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1400.

[C]omments must be significant enough to step over a threshold requirement of materiality before any lack of agency response or consideration becomes of concern. The comment cannot merely state that a particular mistake was made in a sampling operation; it must show why the mistake was of possible significance in the results of the test.²⁸⁷

It will be useful to bear in mind that the principal criticism to which the court required a response was a well-documented argument that the EPA test on which the regulation was chiefly based had misreported achievable emissions by a factor of two.²⁸⁸ When this background is coupled with the generally sensible tradition of judicial application of administrative findings requirements,²⁸⁹ and with the explicit limitations on procedural reversals in section 307(d) itself, the response provision will probably not prove unreasonable.

The provision for oral presentation, my experience suggests,²⁹⁰ is in the absence of cross-examination basically a cosmetic gesture and is therefore probably not worth the time and expense it entails. Written rebuttal is an inadequate substitute for the give and take of cross-examination,²⁹¹ but the costs of cross-examination are high, and the decision to forgo its benefits in general rulemaking under the Act was surely not unreasonable.²⁹²

Limiting the EPA and the court to consideration of materials that have been subjected to public scrutiny follows logically from the disclosure requirement of *Portland Cement*. The harshness of that case's dictum against allowing objections that were not raised before the Agency is ameliorated to some extent by the statutory exception for objections that could not practicably have been made.

A safety valve against oppressive administrative burdens is afforded by section 307(d)(1)'s incorporation of the APA's per-

²⁸⁷ 486 F.2d at 394.

²⁸⁸ *Id.*

²⁸⁹ See, e.g., *Minneapolis & St. L. Ry. v. United States*, 361 U.S. 173 (1959); *Colorado Interstate Gas Co. v. FPC*, 324 U.S. 581 (1945).

²⁹⁰ See Currie, *supra* note 99, at 470.

²⁹¹ *Id.* 471-72.

²⁹² In setting a date for public hearing on proposed new § 111 standards for power plants the EPA announced that it would allow participants to submit written questions for the hearing panel to put to those testifying, as had been done in the vehicle-emission waiver proceeding in the *Harvester* case. See *International Harvester Corp. v. Ruckelshaus*, 478 F.2d 615, 630 (D.C. Cir. 1973); 43 Fed. Reg. 42,184 (1978).

mission to sidestep the prescribed procedures upon a finding that "notice and public procedure therein are impracticable, unnecessary, or contrary to the public interest."²⁹³ Decisions interpreting this exception strictly in accord with its narrow purpose²⁹⁴ should be a substantial safeguard against its abuse.

A final 1977 procedural provision is section 317, which requires a detailed "economic impact assessment" of proposed regulations, including section 111 standards, but which does not "alter the basis on which a standard or regulation is promulgated" or "authorize or require any judicial review . . . on the basis of failure to comply with this section."²⁹⁵

E. Enforcement and Waiver

Section 111(e) makes it "unlawful for any owner or operator of any new source to operate such source in violation of any standard of performance."²⁹⁶ Under section 113 (a)(3) the Administrator "may" issue an order or bring a civil action against anyone violating section 111(e),²⁹⁷ and for a "knowing" violation section 113 (c)(1)(C) provides substantial criminal penalties.²⁹⁸ I have discussed these provisions, which also apply to a variety of other violations,²⁹⁹ in another article.³⁰⁰ For present purposes I note only that in a civil action the court may now impose money penalties as well as an injunction;³⁰¹ that the bringing of suit is now intended to be mandatory in the case of a "major stationary source";³⁰² and that an administrative order may apparently extend the date for compliance set in the regulation, because in issuing it the Administrator is to "specify a time for compliance

²⁹³ 42 U.S.C. § 7607(d)(1) (Supp. II 1978); 5 U.S.C. § 553(b)(B) (1976). Similarly, § 307(d) is inapplicable to "interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice." 5 U.S.C. § 553 (b)(A) (1976).

²⁹⁴ See, e.g., *Texaco, Inc. v. FPC*, 412 F.2d 740 (3d Cir. 1969). Compare *Sharon Steel Corp. v. EPA*, 597 F.2d 377 (3d Cir. 1979), and *United States Steel Corp. v. EPA*, 595 F.2d 207 (5th Cir. 1979), with *United States Steel Corp. v. EPA*, 605 F.2d 283 (7th Cir. 1979), for recent applications of this exception in the context of the Clean Air Act.

²⁹⁵ 42 U.S.C. § 7617 (Supp. II 1978).

²⁹⁶ *Id.* § 7411(e).

²⁹⁷ *Id.* § 7413(a)(3).

²⁹⁸ *Id.* § 7413(c)(1)(C). Those convicted of offenses under § 7413(c)(1) are also limited by § 7606(a) in their ability to enter into federal government contracts.

²⁹⁹ See, e.g., 42 U.S.C. § 7412(c) (Supp. II 1978) (hazardous emissions).

³⁰⁰ *Federal Air-Quality Standards*, *supra* note 7, at 398-407.

³⁰¹ 42 U.S.C. § 7413(b) (Supp. II 1978).

³⁰² *Id.*

which the Administrator determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply.”³⁰³ Under section 304(a)(1) “any person” may also sue to enforce an “emission standard or limitation,” which expressly includes “any requirement under section [111] . . . (without regard to whether such requirement is expressed as an emission standard . . .).”³⁰⁴

Section 111 itself does not establish a permit system. Section 110(a)(2)(D) requires that plans for implementing air-quality standards include a procedure for pre-construction “review . . . of the location of new sources to which a standard of performance will apply,”³⁰⁵ but the purpose of such review is to assure compliance with ambient standards, not with section 111.³⁰⁶ The 1977 amendments, however, impose two permit requirements that effectively provide for pre-construction determination of compliance with section 111 by most “major” sources. Where the air is cleaner than that prescribed by the ambient standards, section 165(a) requires major new sources to obtain construction permits, and one requisite for issuance of a permit is that the facility will not violate any “emission standard or standard of performance” under the Act.³⁰⁷ Where ambient standards are violated, section 172(b)(6) requires a similar permit, for whose issuance section 173(2) demands a showing of compliance with “the lowest achievable emission rate,” which must be at least as demanding as the section 111 standard.³⁰⁸

Section 114 authorizes the Administrator to require regulated operators to monitor, sample, keep records, and submit reports. The Administrator is also authorized to enter premises (subject to constitutional warrant requirements)³⁰⁹ and run his own tests in order to determine compliance with various provisions, including

³⁰³ *Id.* § 7413(a)(4). See *Federal Air-Quality Standards*, *supra* note 7, at 404-05. The 1977 amendment precluding this construction in the case of implementation plans, 42 U.S.C. § 7410(i) (Supp. II 1978) does not apply to § 111 cases.

³⁰⁴ 42 U.S.C. § 7604(a)(1), (f)(3) (Supp. II 1978).

³⁰⁵ *Id.* § 7410(a)(2)(D).

³⁰⁶ *Id.* § 7410(a)(4). The House Committee in 1977 would have required in addition a showing of compliance with § 111. See H.R. REP. NO. 294, *supra* note 17, at 360. A district court confused the two issues in *Sierra Club v. Drain*, 11 E.R.C. 1173, 1174-75 (D. Neb. 1976), finding that a new source would not cause an ambient violation *because* its emissions would meet the § 111 performance standard.

³⁰⁷ 42 U.S.C. § 7475(a)(1), (3) (Supp. II 1978).

³⁰⁸ *Id.* §§ 7502(b)(6), 7503(2), 7501(3).

³⁰⁹ See *Marshall v. Barlow's, Inc.*, 436 U.S. 307 (1978) (warrant required for OSHA search).

section 111.³¹⁰ The regulations implement this authority, requiring, among other things, the submission of reports of a performance test soon after operation begins.³¹¹

Under section 116 the states are not pre-empted by statute from adopting and enforcing new-source performance standards of their own, so long as they are not "less stringent" than applicable federal standards.³¹² Section 111(c)(1), moreover, authorizes the Administrator to "delegate" to a state that utilizes "adequate procedures" his authority to implement and enforce the federal standards "for new sources located in such State."³¹³ The aim of this provision, as explained in connection with an earlier draft that would have imposed a compliance certification procedure, was to shift some of the enforcement burden to the states: "It is expected that every effort will be made to have States assume this responsibility."³¹⁴ Substantively it seems to add little to the law, because states are free to enforce identical standards under section 116³¹⁵ and because section 111(c)(2) wisely provides that "[n]othing in this subsection shall prohibit the Administrator from enforcing any applicable standard of performance."³¹⁶ The provision may serve to call attention to the desirability of state enforcement, and a "delegation" should relieve the Administrator from the obligation of enforcement under section 113(b)³¹⁷ against major sources, which otherwise would require a duplication of enforcement efforts, contrary to the statutory purpose. A number of delegations have in fact been made, typically providing that the state shall have "primary responsibility" for enforcement but that if it "acts in a manner inconsistent with the terms of this delegation, EPA may exercise its concurrent enforcement authority."³¹⁸

Section 111(j) authorizes the Administrator to grant waivers from new-source standards "to encourage the use of an innovative technological system . . . of continuous emission reduction."³¹⁹

³¹⁰ 42 U.S.C. § 7414(a) (Supp. II 1978).

³¹¹ 40 C.F.R. § 60.8 (1979). *See also, id.*, §§ 60.7 (notification and record keeping); 60.45 (monitoring of power-plant emissions).

³¹² 42 U.S.C. § 7416 (Supp. II 1978).

³¹³ *Id.* § 7411(c)(1).

³¹⁴ S. REP. NO. 1196, *supra* note 14, at 18.

³¹⁵ 42 U.S.C. § 7416 (Supp. II 1978).

³¹⁶ *Id.* § 7411(c)(2).

³¹⁷ *Id.* § 7413(b).

³¹⁸ *See, e.g.*, 42 Fed. Reg. 62,197 (Puerto Rico), 64,735 (Kentucky). Though the 1977 amendments omitted the pre-existing ban on delegation of authority over emissions from federal facilities, these delegations continue to except such facilities.

³¹⁹ 42 U.S.C. § 7411(j)(1)(A) (Supp. II 1978).

Similar provisions are found in connection with motor-vehicle standards³²⁰ and implementation plans,³²¹ but there are differences. As in the case of implementation plans, there must be a showing that the system is likely to do a better job than that otherwise required.³²² The system must not create "an unreasonable risk to public health, welfare, or safety,"³²³ and the waiver must be on conditions adequate to assure that "emissions from the source will not prevent attainment . . . of any national ambient air quality standards."³²⁴ Practicable interim measures must be taken to reduce interim emissions.³²⁵ There must be "notice and opportunity for public hearing,"³²⁶ which for reasons given elsewhere I would construe to be an adjudicatory hearing.³²⁷ Waivers are renewable, but no waiver may extend the date more than seven years beyond "the date on which any waiver is granted" to the source or four years after "any portion" of a source "commences operation, whichever is earlier."³²⁸ This seems to mean that the total waiver period, including all renewals, cannot exceed seven years. In short, the waiver provisions are quite detailed, and the discrepancies in language among the three similar sections can only serve to exacerbate the burden of interpretation.³²⁹

F. Revision

The original section 111(b) blandly provided, in apparently discretionary terms, that the Administrator "may, from time to time revise" new-source performance standards.³³⁰ Consequently, when affected citizens sued in *Oljato Chapter of the Navajo Tribe v.*

³²⁰ *Id.* § 7521(b)(6)(A).

³²¹ *Id.* § 7413(d)(4).

³²² *Id.* § 7411(j)(1)(A)(ii).

³²³ *Id.* § 7411(j)(1)(A)(iii).

³²⁴ *Id.* § 7411(j)(1)(B)(i).

³²⁵ *Id.* § 7411(j)(2)(B).

³²⁶ *Id.* § 7411(j)(1)(A).

³²⁷ See *Mobile-Source Provisions*, *supra* note 7, at 837-47. The decision in *Costle v. Pacific Legal Foundation*, 100 S. Ct. 1095 (1980), construing a comparable permit provision in the Clean Water Act so as not to require an adjudicatory hearing in the absence of a timely request or a showing that relevant facts were in dispute, does not detract from this conclusion.

³²⁸ 42 U.S.C. § 7411(j)(1)(E) (Supp. II 1978).

³²⁹ Despite statutory references to waivers for "proposed" sources, the Seventh Circuit has held that a § 111(j) waiver may be applied for after the source has begun operation because "startup *per se* has no substantive significance to waiver eligibility," and because the EPA had conceded that application could be made during construction. *Central Ill. Pub. Serv. Co. v. EPA*, 594 F.2d 636 (7th Cir. 1979).

³³⁰ 42 U.S.C. § 1857c-6(b)(1)(B) (1976).

*Train*³³¹ to compel the Administrator to revise the section 111 power-plant standards, the statutory language suggested that the challenge lacked merit.

The court, however, found a statutory basis for a duty of revision in section 307(b), which limited the time for judicial review of regulations except when the "petition is based solely on grounds arising after" the usual review deadline.³³² Citing the Senate Report, the court held that this provision was intended "to provide a legal mechanism . . . to assure that standards were revised whenever necessary."³³³ The Senate Report states that

[I]t is clear that new information will be developed and that such information may dictate a revision or modification of any promulgated standard or regulation established under the act. The judicial review section, therefore, provides that any person may challenge any promulgated standard, regulation, or approved or promulgated implementation plan after the date of promulgation whenever it is alleged that significant new information has become available.³³⁴

This was a most unexpected conclusion. On reflection, however, it is not easy to visualize how "grounds arising after" the review deadline can be relevant to the validity of the original regulation unless, as the court held in *Oljato*, the regulation must be revised as technology improves. However awkward the phrasing, this is not such an implausible rendering of the statutory language as to justify ignoring such a clear statement of legislative intent. The court was probably right in *Oljato*, but the statute was in dire need of amendment: a judicial review provision ought not be made to bear the weight of an implicit duty of revision that contradicts the apparently plain words of another section of the same statute.

The 1977 amendments, responsive to this concern, make revision mandatory when appropriate: "The Administrator shall, at least every four years, review and, if appropriate, revise such standards" ³³⁵ A mechanism for enforcing this duty is provided by a new section 111(g), which requires revisions of specified types

³³¹ 515 F.2d 654 (D.C. Cir. 1975).

³³² 42 U.S.C. § 7607(b)(1) (Supp. II 1978).

³³³ 515 F.2d at 660. *Accord*, *Union Elec. Co. v. EPA*, 515 F.2d 206 (8th Cir. 1975) (dictum), *aff'd*, 427 U.S. 246 (1976).

³³⁴ S. REP. NO. 1196, *supra* note 14, at 41-42.

³³⁵ 42 U.S.C. § 7411(b)(1)(B) (Supp. II 1978).

upon application by "the Governor of a State."³³⁶ It would be odd if this procedure were held to be exclusive, since the amendments appear to have been designed to reinforce the duty of revision, not to limit avenues of enforcing it provided elsewhere in the Act. The *Oljato* route of private actions by affected citizens appears to remain open.

G. Existing Sources

The performance standards to be adopted under section 111 (b) apply only to "new" sources.³³⁷ Sources of pollution in existence before the proposal date of such standards are subject to regulation under the provisions relating to "hazardous" pollutants (section 112)³³⁸ or plans for implementing ambient standards (sections 108-110).³³⁹ Section 111 (d), however, provides additional authority for regulation of certain existing sources.

There are two threshold requirements for regulation under section 111(d). First, the emission must be one "to which a standard of performance under . . . [subsection (b) of this section] would apply if such existing source were a new source"; second, the pollutant must not be already regulated under sections 108 or 112.³⁴⁰ The states are invited to submit "plan[s]" establishing and providing for enforcement of "standards of performance" applicable to such emissions.³⁴¹ The Administrator has "the same authority . . . to prescribe a plan . . . where the State fails to submit a satisfactory plan" and "to enforce the provisions of such plan . . . where the State fails to enforce them as he would have" in the case of a plan for implementing federal air-quality standards.³⁴²

The original section 111(d) was apparently silent as to the criteria against which to determine whether the state standards

³³⁶ *Id.* § 7411(g)(4).

³³⁷ *Id.* § 7411(a)(2).

³³⁸ *Id.* § 7412. See text accompanying notes 354-403 *infra*.

³³⁹ 42 U.S.C. § 7410 (Supp. II 1978).

³⁴⁰ *Id.* § 7411(d)(1). Thus, the draft guidelines for standards governing kraft pulp mills apply only to reduced sulfur (H₂S, mercaptans, etc.) and not to particulate matter, for which new-source standards have been adopted, 43 Fed. Reg. 7,568 (1978), but which is also subject to ambient standards. See 43 Fed. Reg. 7,597 (1978).

³⁴¹ 42 U.S.C. § 7411(d)(1) (Supp. II 1978).

³⁴² *Id.* § 7411(d)(2)(A), (B). Cf. §§ 7410(c), 7413(a). Because federal enforcement of the latter type of plan is not limited to cases in which the state "fails to enforce," see *Federal Air-Quality Standards*, *supra* note 7, at 398-99, 399 n.160, this reference is unfortunate. The explicit analogy suggests that "such plan," which the EPA may enforce, is the § 111(d) plan whether adopted by the state or by the Administrator.

were "satisfactory."³⁴³ The EPA regulations implementing section 111(d) required that, in the case of a pollutant found to endanger public health, the standards be "no less stringent than the corresponding emission guideline(s) specified in subpart C of this part," absent a showing of "unreasonable cost," "physical impossibility," or "[o]ther factors . . . that make . . . a less stringent standard . . . significantly more reasonable" in a particular case or for any class of facilities.³⁴⁴ This formula on its face gave the states plenty of latitude, but as late as 1977 no guidelines at all were to be found in "Subpart C."³⁴⁵ Section 111(d) was a dead letter.

It was not surprising that in 1977 Congress found a need "to clarify the basis for standard-setting for existing sources under section 111(d)."³⁴⁶ The result was a new definition of "standard of performance" for purposes of section 111(d):

a standard . . . which reflects the degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any nonair quality health and environmental impact and energy requirements) . . . has been adequately demonstrated for that category of sources.³⁴⁷

Perhaps this definition looks familiar. Essentially it adopts the same best-practicable-control approach that section 111 has always applied to new sources. There are explicit differences, however. While the "best system" for existing sources must be one of "continuous" emission reduction, it need not be a "technological" one.³⁴⁸ Further, no "percentage reduction" in uncontrolled emissions is required for existing fuel-burning sources. This means, for example, that a switch to low-sulfur fuel may be found

³⁴³ 42 U.S.C. § 1857c-6(d) (1976). Arguably the same definition of "standard of performance" governed as in the case of new sources, *see* text accompanying note 93 *supra*, but until 1977 § 111(d) referred not to "standards of performance" but to "emission standards." 42 U.S.C. § 1857c-6(d) (1976).

³⁴⁴ 40 C.F.R. § 60.24(c), (f) (1979). Where only "public welfare" was at stake, the states were given freedom to "balance" the guideline information against "other factors of public concern." *Id.* § 60.24(d).

³⁴⁵ *See* 40 C.F.R., Parts 60 to 99 (1977), at 24.

³⁴⁶ H.R. REP. NO. 294, *supra* note 17, at 195, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1274.

³⁴⁷ 42 U.S.C. § 7411(a)(1)(C) (Supp. II 1978).

³⁴⁸ *See* H.R. REP. NO. 294, *supra* note 17, at 195, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1274.

sufficient for existing sources, though not for new sources.³⁴⁹ Even apart from the fuel question, the statute does not require a determination that the "best system" for existing sources be the same as that for new ones. Section 111(d) expressly allows the states (and requires the Administrator in case of a federal plan) to "take into consideration . . . the remaining useful life" of a particular source.³⁵⁰ Moreover, the insistence on adequate demonstration "for that category of sources," which has no counterpart in the new-source definition, seems to emphasize that the added costs of retrofitting existing sources, of which Congress was aware,³⁵¹ may be sufficient to make the standards appropriate for them more lenient than those for new sources.³⁵² The EPA has begun to promulgate guidelines for section 111(d) plans, and the first plans, for fluorine from fertilizer plants, were due by December 1, 1977.³⁵³

II. "HAZARDOUS" AIR POLLUTANTS

Section 112 of the Act, also adopted in 1970,³⁵⁴ provides for federal adoption of "emission standards" for "hazardous" air pollutants, to be set "at the level which . . . provides an ample margin of safety to protect the public health."³⁵⁵ Interesting and difficult questions are posed by this provision. Before they are addressed a few of its less controversial features will be noted.

A "hazardous" pollutant is defined in section 112(a)(1) as one "to which no ambient air quality standard is applicable and which in the judgment of the Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness."³⁵⁶ This is the formula inserted

³⁴⁹ Cf. text accompanying notes 209-34 *supra*.

³⁵⁰ 42 U.S.C. § 7411(d)(1), (2) (Supp. II 1978).

³⁵¹ See H.R. REP. NO. 294, *supra* note 17, at 185, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1264.

³⁵² Thus the § 111(d) draft guidelines for existing kraft pulp mills are less stringent in several respects than the performance standards for new mills. Compare 43 Fed. Reg. 7,597 (1978) (20 ppm reduced sulfur from existing lime kilns and recovery furnaces) with *id.* at 7568 (8 and 5 ppm from new lime kilns and recovery furnaces, respectively). Moreover, the guidelines permit up to six years to retrofit certain controls. *Id.* 7598.

³⁵³ See 42 Fed. Reg. 12,022 (1977). See also *id.* at 55,797 (sulfuric-acid mist); 43 Fed. Reg. 7,597 (1978) (reduced sulfur from pulp mills (draft)).

³⁵⁴ Pub. L. No. 91-604, 84 Stat. 1676, 1685 (1970) (codified at 42 U.S.C. § 7412 (Supp. II 1978)).

³⁵⁵ 42 U.S.C. § 7412(b)(1)(A), (B) (1976).

³⁵⁶ *Id.* § 7412(a)(1). Cf. the provision for effluent standards for "toxic" water pollutants under § 307 of the 1972 water-pollution statute, 33 U.S.C. § 1317(a) (1976), which applied to "those pollutants . . . which . . . will . . . cause death,

in various sections in 1977 to approve the cautionary approach espoused by the en banc decision in the *Ethyl* case,³⁵⁷ modified to emphasize that under section 112 the "nature of risk must be more serious than under other sections."³⁵⁸ Although on its face this definition could apply to almost any pollutant in high enough concentrations, legislative history indicates that the original intention was far narrower. Explaining an earlier draft that had specified that the contaminant must be harmful when present in "trace concentrations," the Senate Committee said that the provision would "encompass a limited number of pollutants," and listed the particularly poisonous pollutants asbestos, cadmium, beryllium, and mercury.³⁵⁹ Omission of the "trace" language arguably suggests that the statute as adopted may be broader. But the Conference Report reflects no decision to broaden coverage,³⁶⁰ and to hold that the EPA may set emission standards for all pollutants would so undermine the declaration in section 101(a)(3) that "the prevention and control of air pollution at its source is the primary responsibility of States and local governments"³⁶¹ that it ought not lightly to be inferred. The EPA has so far taken a modest view of its powers under section 112. In 1973 it promulgated emission standards for asbestos, beryllium, and mercury.³⁶² It added vinyl chloride in 1976³⁶³ and has since included benzene³⁶⁴ and radionuclides³⁶⁵ on the list of substances to be regulated.

In contrast to the provision for air-quality standards, there is no requirement that a "hazardous" pollutant come "from numerous or diverse mobile or stationary sources";³⁶⁶ by defining a "hazardous" pollutant as one "to which no ambient air-quality standard is applicable," the statute seems to indicate a preference for the flexibility of the implementation-plan approach when con-

disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions . . . or physical deformations." 33 U.S.C. § 1362(13) (1976).

³⁵⁷ See note 70 *supra* and text accompanying notes 69-70 *supra*.

³⁵⁸ H.R. REP. NO. 294, *supra* note 17, at 50, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1128.

³⁵⁹ S. REP. NO. 1196, *supra* note 14, at 20.

³⁶⁰ H.R. REP. NO. 1783, 91st Cong., 2d Sess. 46 (1970).

³⁶¹ 42 U.S.C. § 7401(a)(3) (Supp. II 1978).

³⁶² 38 Fed. Reg. 8,820 (1973), 40 C.F.R. §§ 61.20-61.34; 61.50-61.55 (1979).

³⁶³ 41 Fed. Reg. 46,564 (1976), 40 C.F.R. §§ 61.60-61.71 (1979).

³⁶⁴ 42 Fed. Reg. 29,332 (1977). Despite the time limits of § 112(b)(1)(B), the first of several benzene standards was not *proposed* until April 1980, 45 Fed. Reg. 26,660, and the EPA's published timetable called for adoption of the last benzene regulation in August 1981. See 45 Fed. Reg. 16,837 (1980).

³⁶⁵ 44 Fed. Reg. 76,738 (1979).

³⁶⁶ 42 U.S.C. § 7408(a)(1)(B) (Supp. II 1978).

trol options are multiplied by the existence of numerous sources. In contrast to section 111, standards for "hazardous" pollutants are to apply to existing as well as to new sources,³⁶⁷ in evident recognition of the extreme dangers they were intended to combat. As in the case of section 111, only "stationary" sources must comply;³⁶⁸ mobile sources are left to the separate provisions of Title II and to air-quality standards.

Adoption of hazardous-pollutant standards is mandatory after a pollutant is included on a "list" under section 112(b)(1).³⁶⁹ In providing that the Administrator "shall" list "each hazardous air pollutant for which he intends to establish an emission standard," the statute appears to confer broad discretion.³⁷⁰ Identical language in regard to air-quality standards, however, has been construed by the Second Circuit to impose a duty to list all pollutants meeting the statutory criteria, in order to give meaning to the word "shall."³⁷¹ There is no basis for distinguishing section 112. The list itself "shall" be revised from time to time, but nothing is said of revising standards once they have been adopted. I would expect that the courts would find an implicit authority to revise the standards, and that the District of Columbia Circuit would apply to section 112 its holding in the *Oljato* case that section 307(b) provides an avenue for *compelling* revision where appropriate on "grounds arising after" the normal period for judicial review.³⁷²

Unlike section 111, section 112 requires a "public hearing" before adoption of standards,³⁷³ presumably because of the greater stakes involved. The 1977 amendments attempt to make the distinction purely nominal by subjecting both section 111 "standard[s] of performance" and section 112 "emission standard[s]" to a complex new set of rulemaking procedures,³⁷⁴ discussed above,³⁷⁵ which include the right to make an "oral presentation."³⁷⁶

An "emission standard" under section 112 "shall become effective upon promulgation."³⁷⁷ Thereafter, "no air pollutant . . .

³⁶⁷ *Id.* § 7412(c)(1).

³⁶⁸ *Id.* § 7412(a)(2), (c)(1).

³⁶⁹ Unless the Administrator subsequently finds the pollutant "clearly" is not "hazardous." 42 U.S.C. § 7412(b)(1)(A), (B) (Supp. II 1978).

³⁷⁰ *Id.* § 7412(b)(1)(A).

³⁷¹ See text accompanying notes 78-82 *supra*.

³⁷² See text accompanying notes 330-336 *supra*.

³⁷³ Compare 42 U.S.C. § 7412(b)(1)(B) (Supp. II 1978) with *id.* § 7411(b)(1)(B).

³⁷⁴ *Id.* § 7607(d)(1)(C).

³⁷⁵ See text accompanying notes 267-95 *supra*.

³⁷⁶ 42 U.S.C. § 7607(d)(5)(ii) (Supp. II 1978).

³⁷⁷ *Id.* § 7412(b)(1)(C).

may be emitted from any stationary source in violation of such standard,"³⁷⁸ except that "an existing source" is given a ninety-day grace period.³⁷⁹ Recognizing that this period may be far less than what is required to install sophisticated control equipment,³⁸⁰ section 112(c)(1)(B)(ii) allows the Administrator to extend it in individual cases up to two years after the effective date "if he finds that such period is necessary for the installation of controls and that steps will be taken during the period of the waiver to assure that the health of persons will be protected from imminent endangerment."³⁸¹

The criteria for waiver are procrustean: the maximum two-year period for waiver may be too short in some cases,³⁸² and any hazard short of "imminent endangerment" may be permitted if time is required for installation, even if the cost of an immediate shutdown is trivial.³⁸³ Yet the statute says that a waiver "may," not "shall," be granted; apparently the Administrator has power to impose additional requirements.³⁸⁴ Nevertheless he should not feel free simply to refuse to grant any waivers at all; Congress seems to have contemplated that hardship sometimes would justify postponement. It would have been far better to require that a waiver be granted upon proof of unreasonable hardship. Further, requiring a case-by-case determination for every source seems on its face likely to be administratively burdensome because substantial construction is generally likely to take more than ninety days. Although no flood of waiver requests has appeared under the few existing regulations, I would have preferred to let the EPA set compliance dates for existing facilities in regulations applicable to entire categories of sources, with an additional safety valve for cases of individual hardship.

³⁷⁸ *Id.* § 7412(c)(1)(B).

³⁷⁹ *Id.* § 7412(c)(1)(B)(i). "New" and "existing" sources are defined substantially as they are in § 111. *Id.*, § 7412(a)(2), (3); 40 C.F.R. § 61.02 (1979) (proposed amendment, 44 Fed. Reg. 31,596 (1979)).

³⁸⁰ The EPA has estimated, for example, that the typical time required to design and install sulfur-dioxide scrubbing equipment runs from 27 to 36 months. See REPORT OF HEARING PANEL, NATIONAL PUBLIC HEARINGS ON POWERPLANT COMPLIANCE WITH SULFUR OXIDE AIR POLLUTION REGULATIONS 3 (1974).

³⁸¹ 42 U.S.C. § 7412(c)(1)(B)(ii) (Supp. II 1978).

³⁸² See note 380 *supra*.

³⁸³ While it is conversely true that "imminent endangerment" will block a waiver regardless of the most devastating consequences of shutdown (barring national security, see text accompanying note 389 *infra*), the "steps" to prevent endangerment in such a case could conceivably include evacuation.

³⁸⁴ The regulations may go further than the statute requires by providing for conditions "to assure protection of the health of persons" without mention of "imminent endangerment," and they repeat the discretionary word "may." 40 C.F.R. § 61.11(b)(3), (a) (1979).

The statute is silent as to procedure for waiver. The regulations provide for submission of a detailed waiver request, with opportunity "to present . . . additional information or argument" in response to a "[n]otice of the information and findings" on which the Administrator proposes to deny the application.³⁸⁵ Unfortunately, nothing is said of participation by the affected public. The format for "additional information or argument" is not specified; the language suggests that the EPA does not contemplate routine full adjudicative hearings, which would appear appropriate whenever facts peculiar to the applicant are in issue,³⁸⁶ as the criteria suggest will often be the case. The apparently discretionary nature of the waiver provision, however, probably means there is no such entitlement to relief as would make due-process constraints applicable.³⁸⁷

There is no waiver provision here, as there is in section 111,³⁸⁸ for innovative technology, presumably because of the extremely hazardous nature of the pollutants to be regulated. Section 112(c)(2), however, allows the President to exempt any source for a renewable two-year period "if he finds that the technology to implement such standards is not available and the operation of such source is required for reasons of national security."³⁸⁹ Again nothing is said of a hearing; again the authority appears largely discretionary. Further, the criteria may be too narrow: arguably technology is "available" even if its cost is, under the circumstances, excessive.³⁹⁰

Enforcement machinery is in large part the same as for section 111.³⁹¹ Violations of section 112(c) may be the subject of administrative orders or government actions for injunction and civil penalties.³⁹² Criminal sanctions are provided for "knowing" violations,³⁹³ and private actions may be brought to enforce "any requirement" under section 112.³⁹⁴

Unlike section 111, however, section 112(c) contains an additional provision prohibiting the construction of a new source, or

³⁸⁵ 40 C.F.R. §§ 61.10-11 (1979).

³⁸⁶ See note 327 *supra*.

³⁸⁷ *Id.*

³⁸⁸ See text accompanying notes 319-329 *supra*.

³⁸⁹ 42 U.S.C. § 7412(c)(2) (Supp. II 1978).

³⁹⁰ Cf. *Federal Air-Quality Standards*, *supra* note 7, at 380-81.

³⁹¹ See text accompanying notes 296-318 *supra*.

³⁹² 42 U.S.C. § 7413(a)(3), (b)(3) (Supp. II 1978).

³⁹³ *Id.* § 7413(c)(1)(C).

³⁹⁴ *Id.* § 7604(a)(1), (f)(3).

the modification of an existing one, "which in the Administrator's judgment, will emit an air pollutant to which such standard applies unless the Administrator finds that such source if properly operated will not cause emissions in violation of such standard."³⁹⁵ Though confusingly phrased, this provision appears to establish a pre-construction clearance requirement essentially indistinguishable from a permit system,³⁹⁶ and that is the way the EPA administers it. The Agency's regulations forbid construction of "any stationary source subject to [any] . . . standard" without prior "written approval of the Administrator."³⁹⁷ On submission of an "application for approval" containing pertinent information, the Administrator determines whether or not, "if properly operated," the facility will "cause emissions in violation of a standard." If the Administrator proposes to deny the application, he must give the applicant "notice of the information and findings on which such intended denial is based."³⁹⁸ As in the case of waivers for existing sources, it seems unfortunate that no provision is made for participation in the permit process by members of the public who may be affected by the proposed discharge. Moreover, since the regulations confer a right to approval upon meeting the requisite conditions, the "opportunity . . . to present . . . additional information or arguments"³⁹⁹ should be construed to require a full adjudicative hearing on facts peculiar to the applicant in order to avoid unconstitutionality.⁴⁰⁰

As under section 111,⁴⁰¹ state standards are preempted only if they are "less stringent" than the federal.⁴⁰² The Administrator may "delegate" to a state authority to enforce federal "emission standards," while retaining the right to enforce them himself.⁴⁰³

A. "Emission Standards"

Asbestos, now recognized as a highly dangerous air pollutant,⁴⁰⁴ has been widely used in building construction for fireproofing and

³⁹⁵ *Id.* § 7412(c)(1)(A).

³⁹⁶ Moreover, one requirement for issuance of permits for major new sources in clean areas is employment of control technology that may not be less effective than that required by standards under § 112. *Id.* §§ 7475(a)(1), (4), 7479(3).

³⁹⁷ 40 C.F.R. §§ 61.05, 61.07-.08 (1979).

³⁹⁸ *Id.* §§ 61.07-08.

³⁹⁹ *Id.* § 61.08(c)(2) (1979).

⁴⁰⁰ See note 327 *supra*.

⁴⁰¹ See text accompanying note 312 *supra*.

⁴⁰² 42 U.S.C. § 7416 (Supp. II 1978).

⁴⁰³ *Id.* § 7412(d)(1), (2). He has done so. See note 318 *supra*.

⁴⁰⁴ See, e.g., Horvitz, *Asbestos and Its Environmental Impact*, 3 ENV'TL AFF. 145 (1974).

insulation. The demolition of buildings therefore creates a risk that asbestos fibers will be emitted into the atmosphere. The history of administrative attempts to regulate asbestos emissions provides an interesting example of the pitfalls created by the language of the Clean Air Act.

Asbestos was one of the first three pollutants the Administrator addressed under section 112,⁴⁰⁵ and the standard he first proposed would have prohibited all "visible emissions" of asbestos "resulting from the repair or demolition of any building or structure, other than a single family dwelling."⁴⁰⁶ Because "it would be impracticable, if not impossible, to do such work without creating visible emissions,"⁴⁰⁷ the rule as adopted was modified to avoid outlawing demolition. Because "satisfactory means of measuring asbestos emissions are still unavailable,"⁴⁰⁸ the rule prescribed work practices rather than a numerical standard: "Friable asbestos material, used to insulate or fireproof any boiler, pipe, or load-supporting structural member, shall be wetted and removed . . . before wrecking . . . is commenced."⁴⁰⁹ In *Adamo Wrecking Co. v. United States*⁴¹⁰ the Supreme Court struck down this requirement: section 112 authorized the adoption only of "emission standards," and this was not an emission standard.

At the time the *Adamo* case arose, the statute did not define "emission standards," except for purposes of citizen suits brought under section 304.⁴¹¹ While that definition was largely tautological,⁴¹² its inclusion of a "control or prohibition respecting a motor vehicle fuel" illustrated a congressional understanding that the term might encompass more than a direct numerical limitation on emissions. The Supreme Court, however, held that "emission standard"

⁴⁰⁵ See text accompanying note 362 *supra*.

⁴⁰⁶ 36 Fed. Reg. 23,242 (1971).

⁴⁰⁷ 38 Fed. Reg. 8,821 (1973).

⁴⁰⁸ *Id.* 8,820.

⁴⁰⁹ *Id.* 8,829 (§ 61.22(d)(2)(i)). For the current version of these requirements, see 40 C.F.R. § 61.22(d)(4)-22(d)(6) (1979).

⁴¹⁰ 434 U.S. 275, 289 (1978).

⁴¹¹ 42 U.S.C. § 1857h-2(f) (1970) (current version at 42 U.S.C. § 7604(f) (Supp. II 1978)).

⁴¹² For purposes of this section, the term "emission standard or limitation under this chapter" means—

(1) a schedule or timetable of compliance, emission limitation, standard of performance or emission standard, or

(2) a control or prohibition respecting a motor vehicle fuel or fuel additive,

which is in effect under this chapter

Id.

in section 112 had a narrower meaning: "[A] standard is a quantitative 'level' to be attained by use of 'techniques,' 'controls,' and 'technology' " ⁴¹³ (such as the simultaneously adopted limitation of emissions from chlor-alkali plants to "2300 grams of mercury per 24-hour period").⁴¹⁴

This was an extraordinarily hostile interpretation. As Mr. Justice Stevens pointed out in his dissent, "[t]he effect of the regulation is to curtail the quantity of asbestos which is emitted into the open air during demolition." ⁴¹⁵ Indeed, the regulation itself had required that certain "procedures," including wetting, "be used to prevent emissions of particulate asbestos material." ⁴¹⁶ I should have thought the term "emission standard" had been chosen to indicate that, in contrast to the air-quality standards authorized by section 109,⁴¹⁷ section 112 standards were to focus on reducing emissions at their source. As the Stevens dissent argued, it is difficult to believe that in using the term "emission standard" Congress meant to preclude measures to reduce the emission of hazardous pollutants for which measurement techniques were poorly developed.⁴¹⁸

The Court relied on clauses of section 112 that it thought "distinguish[ed] between emission standards and the techniques to be utilized in achieving" them.⁴¹⁹ For example, the Administrator may grant a temporary waiver if "necessary for the installation of controls," ⁴²⁰ and the President may grant such a waiver if "the technology to implement such standards is not available." ⁴²¹ Finally, the Administrator is to issue information on "control techniques," ⁴²² and standards are to be set "at the level which . . . provides an ample margin of safety." ⁴²³

⁴¹³ 434 U.S. at 286.

⁴¹⁴ 38 Fed. Reg. 8,832 (1973) (codified at 40 C.F.R. § 61.52(a) (1979)).

⁴¹⁵ 434 U.S. at 295 (Stevens, J., dissenting). *Accord*, *United States v. Big Chief, Inc.*, 7 E.R.C. 1840 (E.D. La. 1975), upholding the regulation. "There appears no justification for restrictively defining 'emission standard' so as to exclude standards such as this, which undeniably control the amount of ambient emissions," in light of § 101's expressed purpose "to protect and enhance the quality of the Nation's air resources . . ." *Id.* 1843.

⁴¹⁶ 38 Fed. Reg. 8,829 (1973) (§ 61.22(d)(2)).

⁴¹⁷ 42 U.S.C. § 7409 (Supp. II 1978).

⁴¹⁸ *See* 434 U.S. at 293 (1978) (Stevens, J., dissenting).

⁴¹⁹ *Id.* 285.

⁴²⁰ *Id.* 286 (quoting 42 U.S.C. § 7412(c)(1)(B)(ii) (Supp. II 1978)).

⁴²¹ *Id.* (quoting 42 U.S.C. § 7412(c)(2) (Supp. II 1978)).

⁴²² *Id.* (quoting 42 U.S.C. § 7412(b)(2) (Supp. II 1978)).

⁴²³ *Id.* (emphasis in original) (quoting 42 U.S.C. § 7412(b)(1)(B) (Supp. II 1978)).

The obvious fact that "control" and "technology" are not synonymous with "standards" no more suggests that standards may not expressly require methods of control than it suggests that they may not require them indirectly by numerical prescription. And while the word "level" is abstractly suggestive of a quantitative standard, the plain purpose of the clause was to ensure that the standards were stringent enough to protect health; there is no reason to think Congress meant to resolve in such a backhanded way the unrelated question whether work practices might be prescribed when quantitative standards were impracticable.

No legislative history was cited to support the Court's decision that numerical prescription was required. The dissent did concede that Congress had expressed "a preference for numerical emission standards,"⁴²⁴ quoting the Senate Committee's statement that the Agency "should not make a technical judgment as to how the standard should be implemented" but rather should "determine the achievable limits and let the owner or operator determine the most economic acceptable technique to apply."⁴²⁵ To the dissent this comment indicated only a "preference," not a rigid requirement. The majority did not cite it at all,⁴²⁶ probably because it was made in explanation of the term "standard of performance," which appeared in section 111 but not in section 112.

The Court even refused to defer to the Administrator's construction of "emission standard" as a reasonable one, as it had done not long before with a more debatable interpretation of section 110.⁴²⁷

Recognizing that the term "emission standard" was susceptible to the narrow interpretation ultimately rendered by the Supreme Court,⁴²⁸ Congress in 1977 attempted to close the possible loophole by adding a new section 112(e): "[I]f in the judgment of the Administrator, it is not feasible to prescribe or enforce an emission standard for control of a hazardous air pollutant or pollutants, he may instead promulgate a design, equipment, work practice, or operational standard, or combination thereof" ⁴²⁹ The House

⁴²⁴ *Id.* 298 (Stevens, J., dissenting).

⁴²⁵ S. REP. NO. 1196, *supra* note 14, at 17.

⁴²⁶ It did, however, cite a 1977 Senate Report to similar effect. 434 U.S. at 289 (1978). Mr. Justice Stevens criticized the majority's reliance on the 1977 document to interpret prior congressional action. *Id.* 303-05 (Stevens, J., dissenting).

⁴²⁷ See *Train v. Natural Resources Defense Council*, 421 U.S. 60 (1975).

⁴²⁸ See S. REP. NO. 127, 95th Cong., 1st Sess. 44 (1977).

⁴²⁹ Clean Air Act Amendments of 1977, Pub. L. No. 95-95, § 110, 91 Stat. 703, codified at 42 U.S.C. § 7412(e)(1) (Supp. II 1978). An emission standard

Committee remarked that the amendment "would fully authorize the present Federal regulations governing asbestos."⁴³⁰

Although the amendment took effect before the Supreme Court decision in *Adamo*, it came too late to apply to the case before the Court, which was a criminal prosecution for acts done before the amendment. The Court found in the amendment confirmation of its interpretation of the original language: by enacting a separate authorization for work-practice rules, Congress had "endorsed" the view that they were not "emission standards," and therefore the EPA's interpretation was not entitled to deference as a reasonable one.⁴³¹

Mr. Justice Stevens demolished this argument in his dissent. He began by questioning "the dubious premise that we can rely on the 95th Congress to tell us what the 93d had in mind."⁴³² Just a few years earlier, in fact, the Court had reaffirmed that "post-passage remarks of legislators, however explicit, cannot serve to enlarge the legislative intent."⁴³³ Moreover, said the dissent, the Senate Report in no way "endorsed" the narrow construction, but merely recognized an ambiguity:

As soon as someone challenged the Administrator's power to promulgate work practice rules . . . , Congress made it unambiguously clear that the Administrator had that power. . . .

. . . [This] persuasively indicates that, if Congress in 1970 had focused on the latent ambiguity in the term "emission standard," it would have expressly granted the authority that the Administrator regarded as implicit in the statute as written.⁴³⁴

One might expect, given its history, that the 1977 amendment would have reduced *Adamo* to a monument to the difficulty of

is not feasible if "(A) a hazardous pollutant or pollutants cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, . . . or (B) the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations." *Id.* § 7412(e)(2).

⁴³⁰ S. REP. NO. 127, *supra* note 428, at 44.

⁴³¹ 434 U.S. at 288-89.

⁴³² *Id.* 303 (Stevens, J., dissenting).

⁴³³ Regional Rail Reorganization Act Cases, 419 U.S. 102, 132 (1974). The passage was cited with approval only a few months after *Adamo* was decided. *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 193 (1978).

⁴³⁴ 434 U.S. at 305 (1978) (Stevens, J., dissenting).

drafting judge-proof statutes.⁴³⁵ Unfortunately, in burying the original section 112 the Supreme Court dealt a body blow to the amendment as well. Although the Administrator was clearly empowered to adopt a work-practice standard when an emission standard was not feasible, he might have been unable to enforce it, for section 112(c)(1), which gives the standards their teeth, still made it unlawful only to violate an "emission standard."⁴³⁶ Mr. Justice Stevens saw this difficulty as a basis for criticizing the majority's interpretation of the original section 112: if the work rule is not an "emission standard," it "will continue to be unenforceable even if promulgated anew pursuant to the authority expressly set forth in the 1977 Amendment."⁴³⁷ The Court appears to have agreed, noting that while Congress had amended the judicial-review provision of section 307(b) to include any "requirement under section 112,"⁴³⁸ "Congress has yet to apply this recognition to the enforcement provisions of section 112(c)."⁴³⁹

The dissent probably overstated the effect of the failure to amend section 112(c), for "any person"⁴⁴⁰ (including a state) may sue to enforce a work-practice regulation under section 304, which now defines an "emission standard or limitation" for its own purposes as "any requirement under section . . . 112 (. . . whether . . . expressed as an emission standard or otherwise)."⁴⁴¹ This provision highlights the absurdity of the statutory scheme as interpreted by *Adamo*: it is inconceivable that Congress intended that work-practice rules be enforceable by private citizens and not by the EPA.

Nor was the absence of federal enforcement machinery the only unintended flaw in the statutory provisions for work-practice standards following *Adamo*. A "new source" is defined as one whose construction commences after proposal of "an emission standard";⁴⁴² therefore, sources built after proposal of a "design"

⁴³⁵ See *National Ass'n of Demolition Contractors v. Costle*, 565 F.2d 748, 751 n.3 (D.C. Cir. 1977), in which the industry conceded, prior to *Adamo*, that the amendment authorized adoption of work practice rules for the future.

⁴³⁶ 42 U.S.C. § 7412(c)(1) (Supp. II 1978).

⁴³⁷ 434 U.S. at 306 (1978) (Stevens, J., dissenting).

⁴³⁸ 42 U.S.C. § 7607(b)(1) (Supp. II 1978).

⁴³⁹ 434 U.S. at 286 n.4 (1978).

⁴⁴⁰ 42 U.S.C. § 7604(a) (Supp. II 1978).

⁴⁴¹ *Id.* § 7604(f)(3) (Supp. II 1978). The EPA has also noted the importance of this possibility. See 43 Fed. Reg. 26,372 (1978).

Contrast the provisions for federal enforcement, whose sole reference to § 112 is to § 112(c), which includes only "emission standard[s]." 42 U.S.C. §§ 7413 (a)(3), (b)(3), (c)(1)(C) (Supp. II 1978).

⁴⁴² 42 U.S.C. § 7412(a)(2) (Supp. II 1978).

or "practice standard" under the 1977 amendment were never new. Only an "emission standard" becomes effective upon promulgation;⁴⁴³ the amendment gave no guidance as to the effective date of a design or practice standard. The ninety-day grace period for existing sources applies only to an "emission standard,"⁴⁴⁴ and so do the provisions for waiver to install controls⁴⁴⁵ or for national security.⁴⁴⁶ Delegation of enforcement authority to a state covers only "emission standards,"⁴⁴⁷ as does the rulemaking procedure prescribed under section 307(d).⁴⁴⁸ None of this could have been calculated; there was no conceivable reason for treating design and practice standards differently from numerical standards in any of these respects.

Legislative history shows conclusively that the failure to amend these various provisions was sheer accident. The Senate bill would have amended all of them in a single stroke by giving a broad definition to "emission standard": "[T]he Administrator may promulgate a hazardous emission standard in terms of a design, equipment, or operational standard" ⁴⁴⁹ The Conference slightly expanded the circumstances in which design standards would be permissible and made "minor clarifying modifications in the language" without expressing dissatisfaction with the obvious intention to amend all references to section 112 "emission standards."⁴⁵⁰ One of those "minor clarifying modifications" was to express the design provision as an additional authorization rather than as a definition.⁴⁵¹ There is no sign that anybody thought this stylistic alteration made any substantive difference.

⁴⁴³ See 42 U.S.C. § 7412(b)(1)(C) (Supp. II 1978).

⁴⁴⁴ *Id.* § 7412(c)(1)(B)(i).

⁴⁴⁵ *Id.* § 7412(c)(1)(B)(ii).

⁴⁴⁶ See *id.* § 7412(c)(2).

⁴⁴⁷ *Id.* § 7412(d)(i).

⁴⁴⁸ *Id.* § 7607(d)(1)(C).

⁴⁴⁹ See S. REP. No. 127, *supra* note 428, at 163.

⁴⁵⁰ H.R. REP. No. 564, *supra* note 221, at 131-32, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1511-13.

⁴⁵¹ Congress did add to § 302 a general definition of "emission limitation" or "emission standard" that might possibly be construed to embrace provisions like that struck down in *Adamo*: "a requirement . . . which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction." 42 U.S.C. § 7602(k) (Supp. II 1978). The legislative history does not explain the effect of this definition. The final clause was added in conference, and the explanation merely paraphrases the statute. See H.R. REP. No. 564, *supra* note 221, at 172, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1553. Because the amendment does not use the § 112 terms "design, equipment, [or] work practice," however, it seems likely it was meant only to authorize requirements for the proper maintenance and operation of

Happily, Congress corrected its oversight in 1978, amending section 112 yet again to provide that "[a]ny design, equipment, work practice, or operational standard . . . shall be treated as an emission standard for purposes of this chapter."⁴⁵² It appears that the inflexibility of section 112 has at last been remedied.

B. *"To Protect the Public Health"*

Section 112(b)(1)(B) requires the Administrator to set emission standards for hazardous pollutants "at the level which in his judgment provides an ample margin of safety to protect the public health," and section 112(e)(1) establishes the same criterion for design or operation standards.⁴⁵³ This phrasing raises important issues of interpretation and of policy.

The first issue is the apparently absolute nature of the requirement that standards provide "an ample margin of safety to protect the public health." This seems to say that health must be protected without regard to cost.⁴⁵⁴ In connection with air-quality standards under section 109, which uses virtually the same language,⁴⁵⁵ I have criticized the evident congressional determination that the last sneeze must be eliminated even if it doubles the national debt to do so.⁴⁵⁶ I have argued that the Occupational Safety and Health Act, which requires standards "to provide safe or healthful employment,"⁴⁵⁷ need not be construed to outlaw "all work in mines, on tall buildings, or in putting out fires";⁴⁵⁸ but that statute contains the flexible prefix "reasonably necessary or appropriate."⁴⁵⁹ Section 112(b) contains no such modifier; it appears to make cost irrelevant.

Nevertheless the Administrator explicitly took cost into account under section 112 in revising his proposed asbestos standard so as to avoid putting an end to the demolition business,⁴⁶⁰ and in allowing

emission-control devices, as the regulations required in connection with new-source performance standards under § 111. See 40 C.F.R. § 60.11(d) (1979).

⁴⁵² Health Service Research, Health Statistics, and Health Care Technology Act of 1978, Pub. L. No. 95-623, § 13(b), 92 Stat. 3458 (to be codified in 42 U.S.C. § 7412(e)(5)). Section 13(a) of the same Act makes a similar provision respecting "standard of performance" in § 111.

⁴⁵³ 42 U.S.C. § 7412(b)(1)(B), (e)(1) (Supp. II 1978).

⁴⁵⁴ Accord, W. RODGERS, ENVIRONMENTAL LAW 277 (1977).

⁴⁵⁵ 42 U.S.C. § 7409(b)(1) (Supp. II 1978): "[S]tandards the attainment and maintenance of which in the judgment of the Administrator, . . . allowing an adequate margin of safety, are requisite to protect the public health."

⁴⁵⁶ See *Federal Air-Quality Standards*, *supra* note 7, at 366-69.

⁴⁵⁷ 29 U.S.C. § 652(8) (1976).

⁴⁵⁸ Currie, OSHA, 1976 AM. B.F. RES. J. 1107, 1134.

⁴⁵⁹ 29 U.S.C. § 652(8) (1976). See *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 502 (5th Cir. 1978), *cert. granted*, 440 U.S. 906 (1979).

⁴⁶⁰ See text accompanying notes 406-09 *supra*.

demolition to take place without wetting when it is being undertaken at subfreezing temperatures, because "worker safety would be unduly jeopardized by the unsafe footing caused by ice formation."⁴⁶¹ In proposing the vinyl-chloride standard the EPA frankly rejected the suggestion that section 112 required absolute protection. Although finding that no level of exposure to vinyl chloride was safe, the Agency observed that to outlaw all emissions would shut down an important industry, and it construed the statute to authorize

emission standards that require emission reduction to the lowest level achievable by use of the best available control technology in cases involving apparent non-threshold pollutants, where complete emission prohibition would result in widespread industry closure and EPA has determined that the cost of such closure would be grossly disproportionate to the benefits of removing the risk that would remain after imposition of the best available control technology.⁴⁶²

The EPA has thus deftly equated section 112's requirement of "an ample margin of safety to protect the public health" with section 111's requirement of best technology considering cost. While Congress ought to have allowed costs to be taken into account, the EPA has taken excessive liberties; the difference between health standards and technology standards is too obvious to be explained away as accidental.⁴⁶³ The best chance for allowing cost to be considered under section 112 is to argue that to "protect the public health" means to afford reasonable protection in light of cost,⁴⁶⁴ but, as Professor Gelpe has concluded, Congress seems to

⁴⁶¹ 40 Fed. Reg. 48,295 (1975). See *National Ass'n of Demolition Contractors v. Costle*, 565 F.2d 748 (D.C. Cir. 1977), upholding the Administrator's refusal to extend the exemption to above-freezing temperatures. "Protection of the public . . . may necessitate use of different control measures . . . in different conditions." *Id.* 753.

⁴⁶² 40 Fed. Reg. 59,534 (1975). As adopted, the corresponding regulation was based on best available technology. 41 Fed. Reg. 46,560-62 (1976). In settlement of a suit challenging the regulation, the EPA agreed to modifications, including a zero-discharge "goal" but without abandoning the cost-benefit principle. See Gelpe, Regulation of "Hazardous" Air Pollutants (1980) (unpublished manuscript on file with the author). Similarly, in revising its demolition standard for asbestos the EPA had said its regulations were "based on the use of the best available emission control methods." 40 Fed. Reg. 48,295 (1975).

⁴⁶³ The EPA similarly managed to take practicability into account in regulating "toxic" water pollutants, despite the similarly absolute health requirement of a former version of the Water Pollution Control Act, 33 U.S.C. § 1317 (1976) (amended 1977). See La Pierre, *Technology-Forcing and Federal Environmental Protection Statutes*, 62 IOWA L. REV. 771, 798-805 (1977).

⁴⁶⁴ See Currie, *supra* note 458, at 1134.

have reached the uninformed conclusion that the benefits of protection from "hazardous" pollutants invariably exceed the costs.⁴⁶⁵

Second, whether or not health protection is to be absolute, an interesting challenge to administrative ingenuity is posed by the requirement that "emission standards" be set "at the level . . . to protect public health."⁴⁶⁶ This formulation is easily comprehended in the case of ambient standards, for it demands that the air we breathe be safe for the purpose. Section 112, however, requires that standards governing *discharge* be set to accomplish that end. It should be evident that no uniform emission standard is likely to assure that the ambient air is safe to breathe everywhere unless it requires the discharge to be clean enough to breathe as it emerges from the smokestack. This is because the harmfulness of a given discharge varies according to numerous factors: other nearby sources of the same or other pollutants, topographical and meteorological conditions affecting the dispersal of emissions, the height of the smokestack, and the proximity of people to be adversely affected.

One way out of this difficulty is to punt, as was done in the case of beryllium, by setting an air-quality standard rather than an emission standard: emissions shall not cause ambient levels in the vicinity of the source to exceed 0.01 $\mu\text{g}/\text{m}^3$ (thirty-day average),⁴⁶⁷ a level found to be of no danger to public health.⁴⁶⁸ The legality of this approach seems highly doubtful in light of *Adamo*, for the statute still authorizes only "emissions standard[s]" and "design, equipment, work practice, or operational standard[s]."⁴⁶⁹ An alternative beryllium standard is phrased in terms of emissions: beryllium emissions are not to exceed ten grams in a twenty-four-hour period⁴⁷⁰ because "[t]his level was determined through dispersion estimates as the level which would protect against the occurrence of thirty-day average ambient concentrations exceeding 0.01 $\mu\text{g}/\text{m}^3$."⁴⁷¹ I fail to see how this conclusion can be reached without regard for the particular conditions of each plant subject to the regulation.

⁴⁶⁵ See Gelpe, *supra* note 462. The District of Columbia Circuit has held that the Administrator need not, and strongly suggested that he may not, consider feasibility or cost under a similar, former version of the "toxic" pollutants provision of the Water Pollution Control Act, 33 U.S.C. § 1317 (1976) (amended 1977). *Hercules, Inc. v. EPA*, 598 F.2d 91, 110-14 (D.C. Cir. 1978).

⁴⁶⁶ 42 U.S.C. § 7412(b)(1)(B) (Supp. II 1978).

⁴⁶⁷ 40 C.F.R. § 61.32(b) (1979).

⁴⁶⁸ 38 Fed. Reg. 8,823 (1973).

⁴⁶⁹ 42 U.S.C. § 7412(b)(1)(B) (Supp. II 1978).

⁴⁷⁰ 40 C.F.R. § 61.32(a) (1979).

⁴⁷¹ *Id.*

For asbestos the problem was complicated by the absence of information as to dangerous ambient concentrations. Concluding that cases of illness in the neighborhood of asbestos sources had occurred only at concentrations which were "high by comparison with most community air," the EPA, without further explanation, forbade visible asbestos emissions from specified sources, but alternatively provided that compliance could be achieved by using a good baghouse.⁴⁷² Again, it seems somewhat uncertain whether either formula would suffice to protect public health without regard to such considerations as the concatenation of a number of similar sources.

The statutory requirement of absolute health protection through source controls ought to be modified. The Agency should be authorized to take cost into consideration under section 112(b). Additionally, Congress should make a choice between the two conflicting principles it has sought to combine in section 112, for varying conditions make it impossible to achieve a uniform level of health protection through uniform emission standards.

III. THE STRATOSPHERE

Finding that "halocarbon compounds introduced into the environment potentially threaten to reduce the concentration of ozone in the stratosphere," that "ozone reduction will lead to increased incidence of solar ultraviolet radiation at the surface of the Earth," and that "increased . . . radiation is likely to cause increased rates of disease in humans (including . . . skin cancer), threaten food crops, and otherwise damage the natural environment,"⁴⁷³ Congress in 1977 added to the Clean Air Act a new Part B intended to fill gaps in information⁴⁷⁴ and in regulatory authority⁴⁷⁵ respecting damage to the stratosphere. The heart of Part B is section 157(b), which directs the Administrator of the EPA, upon completion of a two-year study,⁴⁷⁶ to promulgate "regulations for the control of any substance, practice, process, or activity . . . which in his judgment may reasonably be anticipated to affect the stratosphere, especially ozone in the stratosphere, if such effect in the

⁴⁷² 40 C.F.R. § 61.22(a), (c), and (f) (1979); see 38 Fed. Reg. 8,820-22 (1973).

⁴⁷³ 42 U.S.C. § 7451(a)(1)-(3) (Supp. II 1978).

⁴⁷⁴ *Id.* § 7450.

⁴⁷⁵ H.R. REP. NO. 564, *supra* note 221, at 148, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1528.

⁴⁷⁶ See 42 U.S.C. §§ 7455, 7457(b) (Supp. II 1978).

stratosphere may reasonably be anticipated to endanger public health or welfare.”⁴⁷⁷

In broadly authorizing regulations to “control” substances or activities that may harm the stratosphere, Congress has avoided the risk of narrow construction inherent in such terms as “emission standard” or “standard of performance,” as illustrated by the Supreme Court’s decision in *Adamo Wrecking Co. v. United States*.⁴⁷⁸ Rather, the language is similar to that respecting control of vehicle fuels in section 211(c)(1).⁴⁷⁹ The House Report attempted to emphasize the broad range of options included: “‘controls’ may include design standards, work practice standards, prohibitions, and/or such other measures as may be necessary to assure protection for health and environment and to protect the stratosphere.”⁴⁸⁰ The question may arise, as it did in connection with fuels,⁴⁸¹ whether a requirement that nonpolluting substitutes be made available qualifies as a means of “control[ling]” harmful substances; the District of Columbia Circuit’s affirmative holding in *Amoco Oil Co. v. EPA*⁴⁸² under section 211(c)(1) seems fully in line with Congress’s explicit intention to convey a complete arsenal of regulatory techniques.

In allowing regulation to prevent effects that “may reasonably be anticipated to endanger public health or welfare,” Congress embraced, as it did in various other provisions, the sweeping precautionary approach taken by the en banc decision in *Ethyl Corp. v. EPA*.⁴⁸³ As the House Report stated:

[T]he Administrator need not produce rigorous evidence of deleterious health effects due to ozone depletion, nor need he refute every hypothesis counter to the chemical models predicting ozone depletion. . . . It is sufficient that the Administrator rely upon reputable scientific and medi-

⁴⁷⁷ *Id.* § 7457(b). The procedures of § 307(d) must be followed. *Id.* § 7607(d)(1)(H). The authority to revise regulations is explicit in § 157(b). See *id.* § 7457(b).

⁴⁷⁸ 434 U.S. 275 (1978). For a discussion of this case, see text accompanying notes 410-52 *supra*.

⁴⁷⁹ 42 U.S.C. § 7545(c)(1) (Supp. II 1978). See *Mobile-Source Provisions*, *supra* note 7, at 881-84.

⁴⁸⁰ H.R. REP. NO. 294, *supra* note 17, at 102 n.2, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1181 n.2.

⁴⁸¹ See *Mobile-Source Provisions*, *supra* note 7, at 883-84.

⁴⁸² 501 F.2d 722 (D.C. Cir. 1974).

⁴⁸³ See text accompanying note 69 *supra*; H.R. REP. NO. 294, *supra* note 17, at 49, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1127.

cal data and measurements from both the laboratory and the field to establish reasonable anticipation of harm.⁴⁸⁴

Sensibly, section 157(b) requires the Administrator, when promulgating standards to protect the stratosphere, to "take into account the feasibility and the costs of achieving such control."⁴⁸⁵ The House Report explains that awareness of costs is "necessary . . . in determining what combination of stratospheric protection measures are most appropriate."⁴⁸⁶ The Report cautions, however, that neither a cost-benefit analysis nor a social impact statement need be prepared; "[w]hat is required . . . is the same kind of analysis of costs and feasibility which must be undertaken in the development of new source standards of performance under section 111(b) of the Act. See *Portland Cement Ass'n v. Ruckelhaus* [sic]. . . ." ⁴⁸⁷ Moreover, the Report adds that, because "regulations . . . are to be based upon the degree of control necessary for stratospheric protection and for protection of health and environment," "[s]tratospheric protection measures are not confined to use of the best control technology or to requiring compliance with technologically feasible emission limitations."⁴⁸⁸

Unfortunately, this explanation may not speak with a single voice. The first sentence quoted appears to say that "health and environment" must be given absolute protection regardless of cost, which would contravene the clear statutory command that cost be taken into account. The Committee was right, however, in pointing out that a requirement that technology and cost be considered need not limit the Agency to available technology if the need for additional protection is sufficiently great.

In case the Administrator finds a need to regulate before the prescribed study is completed, section 157(a) directs him to do so.⁴⁸⁹ The threshold requirement for regulation is the same before as after the report is filed: reasonable anticipation of stratospheric effect "reasonably . . . anticipated to endanger public health or welfare."⁴⁹⁰ The House Report, however, suggests that premature regulation was to be undertaken only in special circumstances: "the Administrator should balance the anticipated benefits of com-

⁴⁸⁴ *Id.* 100, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1178 (quoting H.R. REP. NO. 575, 95th Cong., 1st Sess. 14 (1977)).

⁴⁸⁵ 42 U.S.C. § 7457(b) (Supp. II 1978).

⁴⁸⁶ H.R. REP. NO. 294, *supra* note 17, at 101, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1180.

⁴⁸⁷ *Id.* 102, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1180.

⁴⁸⁸ *Id.* n.2, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1181.

⁴⁸⁹ 42 U.S.C. § 7457(a) (Supp. II 1978).

⁴⁹⁰ *Id.* §§ 7457(a), (b).

pleting the authorized studies against the risks to public health and environment which may result from delaying a decision" ⁴⁹¹ The Report goes on to enumerate in detail factors relevant to this determination, further supporting the notion that premature regulation is to be undertaken cautiously. ⁴⁹²

Enforcement of the stratospheric regulations is carried out by the machinery of section 113, ⁴⁹³ except that administrative orders are not authorized, ⁴⁹⁴ and by citizen suit under section 304. ⁴⁹⁵ In keeping with the intention that Part B "fill regulatory gaps" and not "supersede" existing authority, ⁴⁹⁶ section 158 provides that "[n]othing in this part shall be construed to alter or affect the authority of the Administrator under other sections of the Act" or of "any other department, agency, or instrumentality of the United States under any other provision of law" respecting stratospheric protection. ⁴⁹⁷

As is increasingly common, section 159 contains a provision preempting state law. It is relatively mild: states are ousted from regulation only after a federal regulation "is in effect" for the "risk" in question. ⁴⁹⁸ Even then the state may guard against inadequate federal enforcement by implementing a regulation "identical" to the federal, ⁴⁹⁹ and there is no preemption of "any law or regulation of any State or political subdivision controlling the use of halo-carbons as propellants in aerosol spray containers." ⁵⁰⁰

IV. EMERGENCY POWERS

The final provision for direct federal authority to abate stationary-source pollution is section 303(a), which empowers the Administrator to seek appropriate relief in federal court against "an immi-

⁴⁹¹ H.R. REP. NO. 294, *supra* note 17, at 101, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1179.

⁴⁹² *Id.*

⁴⁹³ 42 U.S.C. § 7413 (Supp. II 1978).

⁴⁹⁴ *See id.* §§ 7413(b)(3) (civil actions), 7413(c)(1)(D) (criminal actions).

⁴⁹⁵ 42 U.S.C. § 7604(a)(1), (f)(3) (Supp. II 1978).

⁴⁹⁶ H.R. REP. NO. 564, 95th Cong., 1st Sess. 148, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS 1529.

⁴⁹⁷ 42 U.S.C. § 7458 (Supp. II 1978). Another clause of the same section preserves any rulemaking proceeding under the Toxic Substances Control Act, 15 U.S.C. §§ 2601-2629 (1976), begun prior to the enactment of the provisions relating to the stratosphere, despite a provision in such Act making it generally inapplicable when other statutes provide regulatory authority. *See* H.R. REP. NO. 564, *supra* note 496. For a discussion of the stratosphere-related regulatory authority of agencies other than the EPA, *see* S. REP. NO. 127, 95th Cong., 1st Sess. 63-64 (1977).

⁴⁹⁸ 42 U.S.C. § 7459(b) (Supp. II 1978).

⁴⁹⁹ *Id.*

⁵⁰⁰ *Id.*

ment and substantial endangerment to the health of persons.”⁵⁰¹ This provision was adopted in 1967 for the deserving purpose of avoiding “disaster episodes such as occurred in the heavily industrialized Meuse Valley in Belgium in 1930; in Donora, Pa., in 1948; in New York City in 1953; and in London in 1952 and 1962,”⁵⁰² and was initially viewed as a temporary measure needed only because of “the necessary passage of time . . . prior to establishment of enforceable [*sic*] standards” under other portions of the Act.⁵⁰³ It has, however, properly become a permanent safeguard against crises that somehow elude the normal regulatory process.

Section 303 is as broad as its underlying need, for it allows action to be taken against any pollutant from any source, whether stationary or mobile, and it was amended in 1977 to authorize temporary administrative abatement orders “[i]f it is not practicable to assure prompt protection of the health of persons solely by commencement of . . . a civil action.”⁵⁰⁴ Appropriately, given the severity of the health threat against which section 303 was to be used, the 1967 House Report observed that “the Secretary may obtain the necessary injunction regardless of technological and economic feasibility.”⁵⁰⁵ This should not be read to mean that the adverse effects of an injunction must in all cases be ignored. On the other hand, because it conveys such a potentially drastic and unlimited authority, section 303 does not apply unless health is seriously endangered. It does not reach, for example, imminent danger to crops, unless, perhaps, the threatened crop is essential enough that its loss would endanger human health. In theory some broadening of the criteria for emergency action might be desirable; in practice it seems likely that any air pollution so severe as to pose a serious threat to public welfare will also substantially endanger public health.

⁵⁰¹ *Id.* § 7603(a).

⁵⁰² H.R. REP. No. 728, 90th Cong., 1st Sess. 19 (1967).

⁵⁰³ *Id.*

⁵⁰⁴ 42 U.S.C. § 7603(a) (Supp. II 1978). For an explanation of the change, see H.R. REP. No. 294, *supra* note 17, at 327-29, reprinted in [1977] U.S. CODE CONG. & AD. NEWS at 1406-08.

The constitutionality of postponing a hearing until after the order is issued seems assured in such an emergency. See *Commissioner v. Shapiro*, 424 U.S. 614 (1976) (absconding taxpayer) (dictum); *North Am. Storage Co. v. Chicago*, 211 U.S. 306 (1908) (contaminated food). The order expires within 24 hours unless an action is filed, and then within 48 hours unless extended by the court. 42 U.S.C. § 7603(a) (Supp. II 1978). But see the argument in Rendleman, *Legal Anatomy of an Air Pollution Emergency*, 2 ENV'T'L AFF. 90 (1972), that the EPA should be careful to comply with the provisions of FED. R. CIV. P. 65(b) respecting notice and that the statute should be amended to provide compensation in the event of an erroneous order.

⁵⁰⁵ H.R. REP. No. 728, *supra* note 502, at 19.

The traditional deference to state authority is observed. Suit is to be brought only if "State and local authorities have not acted to abate such sources," and consultation with state and local authorities is required "prior to taking any action under this section."⁵⁰⁶ The House Report in 1977 endorsed the common-sense view that ineffective state action does not preclude federal suit under the former proviso.⁵⁰⁷ On the other hand, the House Committee also said that one occasion for the use of the new Administrative authority might be "emergency situations caused by automobile-related pollution, where the only effective method of protection . . . may . . . be . . . to require municipal officials to restrict or prohibit traffic."⁵⁰⁸ This may be taken as sufficient indication that section 303 should be read to authorize orders requiring state and local officers to regulate traffic, thus provoking a serious constitutional question which I have discussed in another context.⁵⁰⁹

Section 303(b) provides for civil penalties of up to \$5,000 per day for "willful" violation of an order of the Administrator under section 303(a).⁵¹⁰ Though the statute is silent as to the issues open in an action to recover penalties, the House Report explains that in such action "the defendant may obtain review of the validity of the Administrator's order, as well as raise factual defenses that the violation did not occur or that it was not willful."⁵¹¹ This is no more than what the Constitution requires, because there is no statutory requirement of a prior opportunity to challenge the issuance of the order.⁵¹²

V. CONCLUSION

Even apart from the separate provisions for motor vehicles and for a dominant federal role in the implementation of ambient

⁵⁰⁶ 42 U.S.C. § 7603(a) (Supp. II 1978).

⁵⁰⁷ H.R. REP. No. 294, *supra* note 17, at 327 n.10, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1406.

⁵⁰⁸ *Id.* 327-28, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1406-07.

⁵⁰⁹ *Federal Air-Quality Standards*, *supra* note 7, at 390-91.

⁵¹⁰ 42 U.S.C. § 7603(b) (Supp. II 1978).

⁵¹¹ H.R. REP. No. 294, *supra* note 17, at 328, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1407.

⁵¹² See *Federal Air-Quality Standards*, *supra* note 7, at 403. Section 303 has been invoked once, in Birmingham in 1971. According to the House Report, efforts by the county health officials to request voluntary emission reductions by 23 major sources during the early stages of the episode met with uneven results, at best. Effective action to reduce emissions at all major sources did not occur until the temporary restraining order was issued under section 303.

H.R. REP. No. 294, *supra* note 17, at 327, *reprinted in* [1977] U.S. CODE CONG. & AD. NEWS at 1406 (footnote omitted). For a detailed discussion of the Birmingham episode, see Rendleman, *supra* note 504, at 90; Walpole, *Another Look at the Air Pollution Crisis in Birmingham*, 3 ENVTL AFF. 243 (1974).

standards, the various grants of authority considered in this Article render quite hollow the statutory catechism that pollution control is primarily a state responsibility. In an emergency the federal courts may enjoin any contributing polluter. At all times the EPA must directly regulate significant new sources, stratospheric contaminants, and all sources of "hazardous" pollutants not subject to ambient standards. Finally, the long-dormant section 111(d) renders even the limitation to new sources or hazardous pollutants more apparent than real, because it authorizes regulation of all significant emissions from existing stationary sources not already addressed by air-quality standards.

Thus at first glance it may seem that the sacred cow of deference to the states has resulted not in a substantial limitation of federal power, but rather in a deceptive patchwork that risks both confusion and arbitrary gaps in federal coverage without giving real protection to state interests. In theory the growth of federal power may be cause for lamentation, for in the dispersal of authority lies protection against abuse. But the sad lesson of the past, confirming the dangers of interstate competition to attract businesses, has been that the alternative to federal regulation is ineffective regulation. It therefore may seem appropriate not that federal authority be curtailed, but that the fiction of state primacy be abandoned in order to permit rationalization of the federal program.

Separate statutory criteria for new sources, for "hazardous" pollutants, and for existing sources under section 111(d), the argument would run, complicate the statute and require arid line-drawing exercises with no sufficient justification. Whether a source is new or a pollutant especially hazardous should be a relevant factor for EPA consideration in setting standards for all sources under a single test requiring a comparison of costs and benefits. The statute should not take a dogmatic position respecting the desirability of uniform national standards. It should permit technology forcing by allowing a compliance date to be set in the future. It should neither prescribe particular means of achieving compliance nor limit the Agency's choice in determining the appropriateness of setting ambient standards.

Far from moving in the direction of a simplified federal program, the 1977 amendments not only complicate the new-source section itself but add provisions that both create further complexities and bid fair to reduce the section 111 standards to a largely academic exercise. The amendments effectively divide the country into two categories: those areas in which the ambient standards are

met and those in which they are not. The former are subject under Part C to new requirements to prevent "significant deterioration,"⁵¹³ the latter to the "nonattainment" requirements of Part D.⁵¹⁴ Major new sources in clean areas must utilize "the best available control technology,"⁵¹⁵ and those in nonattainment areas must comply with "the lowest achievable emission rate."⁵¹⁶ In either case the standard may not be less but may be more stringent than that required by section 111.⁵¹⁷ Thus section 111 standards are not determinative anywhere in the country with respect to pollutants regulated under the deterioration and nonattainment provisions.⁵¹⁸

Some room for the operation of section 111 remains because the new provisions apply only to "major" sources, and because they may not cover all pollutants for which section 111 standards are adopted. As I have argued in connection with the nonattainment and deterioration requirements,⁵¹⁹ it is debatable whether, especially in the latter case, the marginal gains justify the additional administrative costs of three differing requirements in the same statute for new-source standards.

Nevertheless, the simplifying suggestions I have made are subject to important reservations. The cumbersome implementation-plan provisions, while assuring federal control over ambient concentrations and thus diminishing interstate competition to attract polluters, give the states a dominant voice in determining what measures to take to achieve those ends in situations in which there are multiple options. The added administrative costs may be a tolerable price to pay for avoiding unnecessary aggrandizement of federal power at the expense of local self-determination. Moreover, in general my concerns are more cosmetic than substantive. Like the motor-vehicle provisions, the charter of other direct federal powers is untidy but still basically adequate to support a vigorous program, and, despite its tendency to give insufficient weight to cost, it has so far been administered so as to avoid catastrophic over-regulation.

⁵¹³ 42 U.S.C. §§ 7470-7491 (Supp. II 1978).

⁵¹⁴ *Id.* §§ 7501-7508.

⁵¹⁵ *Id.* § 7475(a)(4).

⁵¹⁶ *Id.* §§ 7502(b)(6), 7503(2).

⁵¹⁷ *Id.* §§ 7479(3), 7501(3).

⁵¹⁸ The EPA has recognized this in connection with adopting section 111 standards for particulate emissions from lime manufacturing plants. See 43 Fed. Reg. 9,452-53 (1978).

⁵¹⁹ *Nondegradation*, *supra* note 7, at 63; *Relaxation of Implementation Plans*, *supra* note 7, at 240-42.