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ABSTRACT

This course provides information about air pollution control efforts since the passage of the Clean Air Act and places in perspective various issues that have arisen since passage of the act--significant deterioration, maintenance of standards, indirect source review, and transportation controls. Court decisions affecting these issues are cited and discussed. The course consists of four units or modules. Each unit consists of an audio cassette tape and supplementary printed materials, designed to be followed while listening to the recorded presentation. The format is designed to be self-instructional, but could be used by groups. Questions are included at the end of each section of each unit. The units of the course are as follows and may be taken in any sequence: (1) National Ambient Air Quality Standards and State Implementation Plans, (2) Federal Standards for Stationary and Mobile Sources, (3) Maintenance of National Ambient Air Quality Standards, and (4) Significant Deterioration of Air Quality. (BT)

SI:428

TOPICS IN AIR POLLUTION CONTROL

AIR POLLUTION TRAINING INSTITUTE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Control Programs Development Division

1974

This material has been reviewed in the Office of Air Quality Planning and Standards, U. S. Environmental Protection Agency, and approved for publication as a training course. It is not an official policy and standards document. The opinions, findings, and conclusions are those of the authors and not necessarily those of EPA.

INTRODUCTION

BACKGROUND AND CONTENT. This series of course modules, covering the topics listed below, has been prepared by Anne Rampacek and Linda Chaput of the Instructional Development Section in the U.S. Environmental Protection Agency's Air Pollution Training Institute. The course is designed to supplement information contained in the "Air Pollution Control Orientation Course" (SI 422). In a concise manner, this series of lessons provides information about air pollution control efforts since passage of the Clean Air Act and places in perspective various issues that have arisen since passage of the Act -- significant deterioration, maintenance of standards, indirect source review, etc. Court decisions affecting these issues are cited and discussed.

The units of the course are as follows and may be taken in any sequence.

1. National Ambient Air Quality Standards and State Implementation Plans
2. Federal Standards for Stationary and Mobile Sources
3. Maintenance of National Ambient Air Quality Standards
4. Significant Deterioration of Air Quality

FORMAT. Each unit of this series consists of an audio cassette tape and supplementary printed materials which should be followed while listening to the recorded presentation. The format is designed to be self-instructional but also lends itself to group use, provided printed material is duplicated so that each person in the group can follow it. Because of the self-instructional nature of the course, the student may progress at his or her own rate, stopping the tape when necessary to study the printed material or to listen to a portion of the material a second or third time.

Due to the changing nature of the material presented in this course, revisions will be necessary from time to time. The revisions and additions will be printed on colored paper and placed at the end of the applicable unit. It is advisable for the student to check the end of each unit for such revisions and review them before beginning the unit in order to be aware of the most recent information on the subject.

Questions are included at the end of each section of each unit to test the student's comprehension of the material. These questions are for the student's use in determining whether the material was understood and whether it is necessary to review portions of it before proceeding to the next section.

TEST AND CERTIFICATION. When all four units of the course have been completed, the student may request a test from the Manpower and Training representative of the appropriate EPA Regional Office. To obtain a certificate, the student should send the completed test to the Instructional Development Section, Air Pollution Training Institute, Environmental Protection Agency, Research Triangle Park, N.C. 27711. The test will be graded and the student notified of the result. A certificate will be awarded if the test score is satisfactory.

THE FEDERAL REGISTER AND CODE OF FEDERAL REGULATIONS

Throughout this course, there are frequent references to regulations promulgated by the Environmental Protection Agency in carrying out the requirements of the Clean Air Act. To be consistent and to avoid lengthy and repetitive references to the source of various regulations, the most commonly used method of citation is used in this course. The two documents cited are the Code of Federal Regulations (CFR) and the Federal Register (FR).

When EPA develops regulations governing any aspect of protection of the environment as authorized under the Clean Air Act, such regulations are published in the Federal Register. A typical reference to the Federal Register might be "38 FR 15197, June 8, 1973." This means that the information cited is located in Volume 38 of the Federal Register, June 8, 1973, page 15197. Each year has a different volume number. For example, the year 1972 was Volume No. 37, 1973 was Volume No. 38, and 1974 is Volume No. 39.

Once a year, all regulations that have been published in the Federal Register during that year are included in the Code of Federal Regulations. The Code is divided into 50 titles which represent broad areas subject to Federal regulation. Each title is divided into Chapters which usually bear the name of the issuing agency. Each Chapter is further subdivided into Parts covering specific regulatory areas. The regulations of the Environmental Protection Agency are included in Title 40 - Protection of the Environment, Chapter I - Environmental Protection Agency. Breaking the classification down further, Subchapter C covers regulations concerning Air Programs which is further broken down into more specific Parts.

Each time a new or amended regulation is promulgated in the Federal Register, a preliminary statement indicates under what Title and Part of the Code of Federal Regulations the promulgation will be included. A typical reference might be "40 CFR 51" which refers to the EPA regulations for the preparation, adoption, and submittal of State Implementation Plans. This citation indicates that the regulations are located in the Code of Federal Regulations, Title 40, Part 51. (Part 51 is included in Subchapter C - Air Programs.)

TOPICS IN AIR POLLUTION CONTROL

National Ambient Air Quality Standards and State Implementation Plans

Office of Air and Waste Management
Office of Air Quality Planning and Standards
Control Programs Development Division
Air Pollution Training Institute

1974

This unit, "National Ambient Air Quality Standards and State Implementation Plans," is part of the course Topics in Air Pollution Control (SI 428) developed by the Instructional Development Section of the U.S. Environmental Protection Agency's Air Pollution Training Institute at Research Triangle Park, North Carolina.

This unit, like the others consists of an audio cassette tape and this booklet. BOTH THE TAPE AND THIS BOOKLET MUST BE USED SIMULTANEOUSLY -- students are referred to appropriate sections of the booklet by the narrator of the recorded presentation.

NATIONAL AMBIENT AIR QUALITY STANDARDS AND STATE IMPLEMENTATION PLANS

OBJECTIVES

Upon completion of this unit, the student should be able to:

1. Name the pollutants for which national ambient air quality standards have been promulgated.

2. Cite 5 conditions for approval of state implementation plans specified in the Clean Air Act and 3 common deficiencies in state plans submitted in 1972.

3. State that a decision by the U.S. Court of Appeals in a suit brought by a citizens group accelerated the timetable for developing and implementing transportation control plans and precipitated the disapproval of all state plans with respect to provisions for maintenance of standards.

4. State that the U.S. Supreme Court upheld a lower court ruling having the effect of requiring states to include in implementation plans strategies for preventing significant deterioration of existing air quality.

5. State that, as a result of decisions rendered in several circuit courts of appeals, EPA must provide an opportunity for public comment prior to approval or disapproval of state implementation plan revisions.

6. State that the EPA has revised the secondary standards for sulfur dioxide.

7. State that the standard reference method for measurement of nitrogen dioxide has been determined to be unreliable and that three alternative methods have been proposed for study.

8. Describe supplementary control systems.

9. State that EPA has proposed a redefinition of reasonable time for the attainment of secondary standards for sulfur dioxide and particulate matter.

10. Cite 2 conditions that must be met by a source in order to qualify for use of supplementary control systems as a measure for attainment of national standards.

NATIONAL AMBIENT AIR QUALITY STANDARDS

CLEAN AIR ACT SECTION 109

PROPOSED: January 30, 1971 (36 FR 1502)
March 26, 1971 (36 FR 5867)

PROMULGATED: April 30, 1971 (36 FR 8186)
40 CFR 50

POLLUTANT	PRIMARY STANDARDS	SECONDARY STANDARDS	REFERENCE METHOD
SULFUR OXIDES (SULFUR DIOXIDE)	(a) 80 $\mu g/m^3$ (0.03 p.p.m.) annual arithmetic mean (b) 365 $\mu g/m^3$ (0.14 p.p.m.) maximum 24-hour concentration not to be exceeded more than once per year	[(a) 60 $\mu g/m^3$ (0.02 p.p.m.) annual arithmetic mean (b) 260 $\mu g/m^3$ (0.1 p.p.m.) maximum 24-hour concentration not to be exceeded more than once per year*] (c) 1,300 $\mu g/m^3$ (0.5 p.p.m.) maximum 3-hour concentration not to be exceeded more than once per year	PARAROSANILINE METHOD
PARTICULATE MATTER	(a) 75 $\mu g/m^3$ annual geometric mean (b) 260 $\mu g/m^3$ maximum 24-hour concentration not to be exceeded more than once per year	(a) 60 $\mu g/m^3$ ** (b) 150 $\mu g/m^3$ maximum 24-hour concentration not to be exceeded more than once per year	HIGH VOLUME METHOD
CARBON MONOXIDE	(a) 10 mg/m^3 (9 p.p.m.) maximum 8-hour concentration not to be exceeded more than once per year (b) 40 mg/m^3 (35 p.p.m.) maximum 1-hour concentration not to be exceeded more than once per year		NON-DISPERSIVE INFRARED SPECTROMETRY
PHOTOCHEMICAL OXIDANTS	160 $\mu g/m^3$ (0.08 p.p.m.) maximum 1-hour concentration not to be exceeded more than once per year		CHEMILUMINESCEN METHOD
NONMETHANE HYDROCARBONS+	160 $\mu g/m^3$ (0.24 p.p.m.) maximum 3-hour concentration (6 to 9 a.m.) not to be exceeded more than once per year		GAS CHROMATO-GRAPHIC METHOD
NITROGEN DIOXIDE	100 $\mu g/m^3$ (0.05 p.p.m.) annual arithmetic mean		[JACOBS-HOCHHEISER METHOD]

NOTE: Standards and reference methods in brackets have been revised or are under study. See pages 13 and 14.

* as a guide to be used in assessing implementation plans to achieve the annual standard
** as a guide to be used in assessing implementation plans to achieve the 24-hour standard
\+ for use as a guide in devising implementation plans to achieve oxidant standards

CLEAN AIR ACT (SEC. 110) CONDITIONS FOR APPROVAL OF STATE IMPLEMENTATION PLANS

Sec. 110 (a)(2)	Reasonable notice and public hearings
Sec. 110 (a)(2)(A)(i)	Primary standards to be attained within 3 years of plan approval (with provisions for an extension of up to 2 years)
Sec. 110 (a)(2)(A)(ii)	Secondary standards to be attained within a reasonable time ("reasonable time" defined by EPA as 3 years if standards could be met by application of reasonably available control technology)
Sec. 110 (a)(2)(B)	Emission limitations, schedules, and timetables for compliance "and such other measures as may be necessary to insure attainment and maintenance of such primary or secondary standards, including, but not limited to, land-use and transportation controls"
Sec. 110 (a)(2)(C)	Establishment and operation of appropriate devices, methods, systems, and procedures for monitoring, compiling, and analyzing ambient air quality data; making such data available to EPA upon request.
Sec. 110 (a)(2)(D)	New or modified source review procedure. Sec. 110 (a)(4): Such procedure must include authority to prevent construction or modification of stationary sources for which national performance standards have been established if emissions from the source would cause a violation of national standards. Source owners are required to submit necessary information to the State prior to construction. NOTE: EPA regulations (40 CFR 51.11(a)(4) and 51.18) broadened this requirement to include all stationary sources.

Sec. 110 (a)(2)(E)	Intergovernmental cooperation
Sec. 110 (a)(2)(F)	Adequate personnel, funding, and authority; requirements for source owners or operators to install monitoring equipment; requirements for periodic reports on the nature and amount of stationary source emissions; requirements that such reports be correlated by the State with existing emission limitations or standards and made available for public inspection; authority and contingency plans for abating emissions during emergency episodes.
Sec. 110 (a)(2)(G)	Periodic inspection and testing of motor vehicles (if necessary and practicable)
Sec. 110 (a)(2)(H)	Plan revisions, after public hearings, when new or revised national standards are promulgated; when new abatement methods are available; when EPA determines that the plan is inadequate to achieve national standards.

KEY FEDERAL REGISTER PUBLICATIONS RELATING TO

IMPLEMENTATION PLANS

August 14, 1971 (36 FR 15486)	Requirements for Preparation, Adoption, and Submittal of Implementation Plans (42 CFR 420 - republished and renumbered as 40 CFR 51 on November 25, 1971)
May 31, 1972 (37 FR 10842)	Approval and Promulgation of Implementation Plans (40 CFR 52)
June 14, 1972 (37 FR 11826)	Proposed regulations for States with deficient plans
July 27, 1972 (37 FR 15094)	
September 22, 1972 (37 FR 19829)	

Promulgation of plans and actions on plan revisions have been published in numerous issues of the Federal Register (see 38 FR 30626, November 6, 1973). All actions with respect to implementation plans are contained in 40 CFR Part 52.

COMMON IMPLEMENTATION PLAN DEFICIENCIES
(MAY 31, 1972)

LEGAL AUTHORITY - to make emission data available to the public
- to require source recordkeeping
- to require installation, maintenance, and use of emission monitoring devices

NEW SOURCE REVIEW PROCEDURES

EMERGENCY EPISODE PROCEDURES

COMPLIANCE SCHEDULES

CONTROL STRATEGIES - For SO_x in a few States (with large power plants, smelters, etc.) and for particulate matter and hydrocarbons in a few air quality control regions.

COURT ACTIONS - GENERAL

INDUSTRY	Challenged EPA disapproval actions, particularly with respect to control strategies Argued that EPA should have filed environmental impact statements for implementation plans
CITIZENS	Challenged EPA approval of many State implementation plans because they felt the plans were deficient in one way or another.

MAJOR COURT DECISIONS

I

"NATIONAL RESOURCES DEFENSE COUNCIL, INC., ET AL. v. ENVIRONMENTAL PROTECTION AGENCY" (Civil Action No. 72-1522) and seven related cases (72-1598, 72-1810, 72-1941, 72-1982, 72-1985, 72-2028, 72-2159). U.S. Court of Appeals for the District of Columbia decision January 31, 1973.

EPA Administrator ordered to:

1. Formally rescind the extension to February 15, 1973, granted to several States for submittal of the transportation control portions of their implementation plans.

2. Formally rescind extension granted to several States to stretch out implementation of their plans or portions thereof until May 31, 1977 (refers to extension for achievement of standards).

3. Inform States that have not submitted an implementation plan fully complying with Clean Air Act requirements that they are required to submit such a plan by April 15, 1973, providing for attainment of the primary standards by May 31, 1975, and including "emission limitations, schedules, and timetables as may be necessary to insure attainment and maintenance of such primary and secondary standard, including, but not limited to, land-use and transportation controls." The Court added that if States felt it would be impossible to achieve the primary standards by May 31, 1975, due to lack of technology, they could request an extension until 1977. If the request was granted, the States would revise their plans accordingly.

4. Approve or disapprove such plans by June 15, 1973.

5. Prepare, publish, and promulgate regulations for States that fail to submit a plan or that submit deficient plans by August 15, 1973. (This allows two months rather than the four months specified in Sec. 110(c) of the Clean Air Act.)

6. Not grant extensions for attainment of a primary standard except in accordance with procedures et out in Sec. 110(e) of the Clean Air Act

7. Permit the public to comment on State plans and on requests for extension of attainment dates.

8. In approving or disapproving plans, or in approving an extension for attainment of primary standards beyond May 31, 1975, state reasons.

9. Review maintenance provisions of all State implementation plans within 30 days; disapprove plans that do not contain necessary measures to insure maintenance of national standards or that do not properly analyze the problem of maintenance of standards and require those states to prepare a new implementation plan for maintenance of standards by April 15, 1973, with EPA action following the timetable and procedures ordered in paragraphs 4 and 5.

MAJOR COURT DECISIONS

II

"SIERRA CLUB ET AL.v. WILLIAM D. RUCKELSHAUS"

U.S. District Court for the District of Columbia, Case No. 1031-72, decision: May 30, 1972

U.S. Circuit Court of Appeals for the District of Columbia, Case No. 72-1528, decision: November 1, 1972

U.S. Supreme Court, Tie vote (4-4) June 11, 1973

ISSUE: Significant deterioration of existing air quality

ARGUMENT: 1) Court should invalidate Part 51.12(b) of 40 CFR:

"In any region where measured or estimated ambient levels of a pollutant are below the levels specified by an applicable secondary standard, the plan shall set forth a control strategy which shall be adequate to prevent such ambient pollution levels from exceeding such secondary standard."

2) Court should order EPA Administrator to disapprove implementation plans that do not ensure that air quality will not be significantly deteriorated in presently clean areas.

DECISION: District Court ordered the EPA Administrator, within 4 months (i.e., by September 30, 1972), to review and approve or disapprove portions of any plans dealing with significant deterioration and, within 2 additional months (i.e., by November 30, 1972), promulgate such portions of the plans where state plans are inadequate. Upheld, under appeal by EPA, by the U.S. Circuit Court of Appeals and the U.S. Supreme Court.

EPA ACTIONS: November 9, 1972 (37 FR 23836): EPA disapproved all State implementation plans insofar as they failed to provide for prevention of significant deterioration.

July 16, 1973 (38 FY 18986): EPA proposed 4 alternative regulations for prevention of significant deterioration. (When promulgated, these regulations will be 40 CFR 52.21.)

MAJOR COURT DECISIONS
III

6th Circuit Court of Appeals	Buckeye Power, et al. v. EPA (Case No. 72-1628) East Kentucky Rural Electric Cooperative Corporation, et al. v. EPA (Case No. 72-1629) Big Rivers Rural Electric Cooperative Corporation, et al. v. EPA (Case No. 72-1632)
4th Circuit Court of Appeals	Appalachian Power Co. et al. v. EPA (Case No. 72-1733)
3rd Circuit Court of Appeals	Duquesne Light Co. et al. v. EPA (Case No. 72-1542)
Decision:	1. National Environmental Policy Act (NEPA) environmental impact statements are not required for implementation plans. 2. EPA must provide an opportunity for public comment, according to the Administrative Procedures Act, prior to approving implementation plans.* 3. EPA must consider the economic and technological impact of implementation plans.

* The immediate result of these decisions was that the implementation plans for Kentucky and Ohio were invalidated and had to be resubmitted for EPA approval.

PROPOSED CLEAN AIR AMENDMENTS

1. Extension of attainment date for national primary standards where transportation control measures are required. (Sec. 110) One 5-year extension (May 31, 1982) with provision for an adidtional 5-year extension if necessary (May 31, 1987).

2. New source and hazardous pollutant standards (Sec. 111, 112). Use of design or equipment standards as an alternative to emission standards established for major new sources or for sources of hazardous pollutant emissions.

3. Waiver for technology innovations (Sec. 111). EPA Administrator could grant a waiver of compliance with applicable new source performance standards to a source wishing to apply a promising and apparently effective emission reduction system even though it has not been determined by the Administrator to be adequately demonstrated, provided primary standards are met. Designed to encourage development of control technology that is more efficient, in terms of both percent reduction and cost, than systems in use.

4. Assessment of civil penalties (Sec. 113). Civil penalties in lieu of or in addition to criminal penalties, in the form of a permanent or temporary injunction and/or a fine of not more than $25,000 per day of violation.

5. Enforcement orders (Sec. 113). Provides for enforcement orders specifying a compliance date beyond the attainment date for a national standard. In such a case, EPA could require the source to apply any interim control measures considered reasonably available.

6. Temporary suspensions of stationary source emission and fuel limitations (Sec. 119 added). EPA could temporarily suspend stationary source fuel or emission limitations, conditioned upon compliance with interim requirements established by EPA --

   a. until November 1, 1974 (without public notice or comment) if source cannot comply with a limitation because of unavailability of types or amounts of fuels.

   b. after November 1, 1974 to not later than January 1, 1980 (after public hearing)

      i. If source has been ordered by the President to convert from petroleum products or natural gas to coal

      ii. If suspension will not result in or contribute to ambient pollution levels in excess of a national primary standard

      iii. If source operates under compliance schedule providing for use of control methods which the EPA Administrator determines will assure continuing compliance with the fuel or emission limitation by Jan. 1, 1980.

7. Coal conversion and allocation (Sec. 120 added). After considering on a plant-by-plant basis environmental effects and energy needs, the President could prohibit the use of natural gas or petroleum products as a primary energy source by any major fuel-burning installation capable of burning coal. Sources ordered to convert to coal would be allowed to burn coal, regardless of applicable Federal, State, or local air pollution requirements, until Jan.1, 1980.

8. Review of State implementation plans and extension of compliance deadlines (Sec. 121 added). After EPA review of all SIP's to compare all emission requirements with available domestic clean fuel supplies and with available control systems, EPA may extend or suspend deadlines for meeting State or local emission requirements or limitations for any stationary source category or categories, determined on a source-by source basis.

    a. If domestic fuel suppliers are inadequate
    b. If supply of control systems is inadequate

    Extensions conditioned upon compliance with interim requirements established by EPA to minimize emissions posing a threat to public health prior to the national primary standards deadline and to assure maintenance of national primary standards whenever the extension period extends past the national primary standards deadline.

9. Applicability of the National Environmental Policy Act (Sec. 122 added). Environmental impact statement not required for Presidential orders for sources to convert to coal unless the order covers a period of more than one year. An impact statement equivalent to that required by NEPA would be required for an initial order covering a period of more than one year and to any action to extend the total period to more than one year.

10. Automobile emission standards (Sec. 202). Delay until the 1978 model year of the required 90% reduction in auto exhaust emissions for HC and CO by extending the 1975 interim standards through model year 1977. For NO_x, the 1975 standard would apply through the 1977 model year, with a more stringent standard for 1978 and later model years to be established by EPA by Nov. 30, 1976.

*11. Significant deterioration (Sec. 101). EPA would specifically not be authorized to establish standards more stringent than national primary and secondary ambient air quality standards. Thus EPA could not require clean areas of the country to maintain existing air quality; rather pollution levels in these areas would be permitted, unless controlled by the State or local government, to increase up to the secondary standard limits.

*12. "Intermittent" or "alternative" control measures (Sec. 110). Use of intermittent or alternative control measures (such as tall stacks for dispersion of pollutants as an alternative to installation of scrubbers or other control devices) specifically authorized as an acceptable control system for attaining and maintaining national primary and secondary air quality standards.

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*Forwarded to Congress by EPA but not recommended by EPA for adoption.

REVISED SECONDARY SO_2 STANDARD

1. Kennecott Copper Corp. v. EPA, 40 L.W. 2570-1 U.S. Court of Appeals for the District of Columbia decision (February 18, 1972) requested EPA to furnish information concerning the basis for establishing the annual secondary standard.

2. EPA review of SO_x criteria and secondary standard (See 37 FR 9577, May 12, 1972)

3. EPA proposal to revise secondary SO_2 standard by revoking the annual standard: May 7, 1973 (38 FR 11355).

4. EPA promulgated the revision, revoking the annual standard and also the 24-hour guide for assessment of plans to achieve the annual standard: September 14, 1973 (38 FR 25678); 40 CFR 50.5

Secondary SO_2 Standard

1,300 $\mu g/m^3$ (0.5 p.p.m.), maximum 3-hour concentration not to be exceeded more than once per year.

PROPOSED REVISION OF NO_2 REFERENCE METHOD

June 14, 1972 (37 FR 11826): EPA announced that the Jacobs Hochheiser reference method was suspected of being unreliable and that a reevaluation was in progress.

June 8, 1973 (38 FR 15174): EPA proposed three alternative methods (40 CFR 50 Appendix F)

1. Arsenite Method (Christie Method)

2. Continuous Chemiluminescence Method

3. Continuous Saltzman Method

NOTE: EPA expects to formally revoke the current method and propose a new reference method in 1974.

June 8, 1973 (38 FY 15180): EPA proposed a reclassification of air quality control regions (40 CFR 52)

SUPPLEMENTARY CONTROL SYSTEMS

PROPOSED DEFINITIONS

September 14, 1973 (38 FR 25697)

Original Definition	Proposed Redefinition
40 CFR 51.1(n) "Control strategy" means a combination of measures designated to achieve the aggregate reduction of emissions necessary for attainment and maintenance of a national standard, including, but not limited to, . . .	"Control strategy" means a combination of emission reductions and such other measures as may be necessary for the attainment and maintenance of a national standard, including, but not limited to, . . .
40 CFR 51.1(q) None	"Supplementary control systems" are systems which limit the rate of pollutant emissions during periods when meteorological conditions conducive to ground-level concentrations in excess of national standards exist or are anticipated.
40 CFR 51.13(b)(1) In any region where the degree of emission reduction necessary for attainment and maintenance of a secondary standard for sulfur oxides or particulate matter can be achieved through the application of reasonably available control technology, "reasonable time" for attainment of such secondary standard . . . shall be not more than 3 years unless the state shows that good cause exists for postponing application of such control technology.	"Reasonable time" for attainment of a secondary standard . . . shall be the time required to design, fabricate and install necessary control systems or to apply other control measures, unless the State shows that good cause exists for postponing their application. Good cause for postponing the application of such systems or other measures may include the unavailability of necessary control systems or measures, or the likelinood that their installation or application would cause severe adverse social and economic impacts. (b)(2) Where the time for attainment of a secondary standard established by the State extends beyond Jan. 1, 1978, the State shall submit, after notice and public hearing, a reanalysis of the plan at intervals of no more than five years from the date of plan approval by the Administrator. States shall consider application of reasonable interim emission reduction measures to minimize adverse welfare effects which occur at air quality levels in excess of the secondary standards.

SUPPLEMENTARY CONTROL SYSTEMS

To qualify for SCS as a part of a control strategy, the following conditions, specified in the proposed regulations, must be met [to be 40 CFR 51.13(e)(5)].

1. A source must be sufficiently isolated from others that the owner or operator is willing and able to accept full legal responsibility for maintaining the national standards throughout the area in which emissions from that source significantly influence ambient air quality.

2. A source must demonstrate that adequate constant emission reduction techniques are not available to attain and maintain the national standards, and that those techniques which are available would be applied to permanently reduce emissions to the maximum extent practicable prior to application of supplementary control systems.

3. A source must be willing to support and participate in an appropriate research, development, engineering, and demonstration program to insure that the supplementary control system can be replaced by constant emission limitation techniques as soon as possible.

QUESTIONS

1. Name the pollutants for which national ambient air quality standards have been promulgated.

2. The Clean Air Act specifies numerous conditions which must be met by the States before the EPA Administrator may approve implementation plans. List five of these conditions for approval.

   a.

   b.

   c.

   d.

   e.

3. Only a few of the 55 implementation plans submitted to EPA in 1972 were totally approved initially. Describe three areas of deficiency which were common in the disapproved plans.

   a.

   b.

   c.

4. All States will soon be required to include in their implementation plans strategies for preventing significant deterioration of existing air quality. EPA is under court order to promulgate regulations covering such strategies. Briefly explain how this has come about.

5. All States must now develop specific strategies for maintenance of ambient air quality standards beyond the attainment date. In addition, some States are required to implement transportation controls in order to attain the standards. Which of the following statements is true?

_____a. These requirements resulted from a U.S. Supreme Court ruling in favor of citizens' groups protesting EPA's failure to include such requirements.

_____b. EPA included these requirements in its original regulations pertaining to development of implementation plans and disapproved plans that did not adopt appropriate strategies. No citizens' suits were filed to compel these actions.

_____c. A U.S. Court of Appeals ruled that EPA had erred in granting extensions of the attainment date for automobile-related pollutant standards and that State plans must include strategies to maintain the standards. This ruling forms the basis for subsequent EPA regulations governing transportation controls and provisions for maintenance of standards.

6. Several courts have ruled that EPA is <u>not</u> required to provide an opportunity for public comment prior to approving State implementation plan revisions. True _____ False _____

7. The primary ambient air quality standard for sulfur dioxide has been revised downward as a result of a court suit and reevaluation of the health effects of the pollutant. True _____ False _____

8. The annual and 24-hour secondary ambient air quality standards for sulfur dioxide have been revoked. The original 3-hour secondary standard is still in effect. True _____ False _____

9. Which of the following statements concerning the reference method for nitrogen dioxide is (are) true?

_____a. The Jacobs-Hochheiser reference method has been proven reliable.

_____b. The Jacobs-Hochheiser reference method is considered suspect.

_____c. EPA has withdrawn the Jacobs-Hochheiser reference method and promulgated three new reference methods for nitrogen dioxide.

_____d. EPA has published three new methods for measurement of nitrogen dioxide for study and public comment and expects to designate a new reference method in 1974.

10. Which of the following statements concerning supplementary control systems is (are) true?

_____a. Supplementary control systems are controls applied to a source which cannot attain or maintain sulfur dioxide standards with existing emission reduction technology alone.

_____b. Supplementary control systems may be applied only if the source owner or operator is willing and able to accept full legal responsibility for maintaining the standards throughout the area influenced by emissions from that source.

_____c. Application of supplementary control systems may be approved upon condition that the source owner or operator, among other things, supports or participates in a research and development program to develop permanent emission controls which can replace the supplementary controls as soon as possible.

_____d. All of the above.

11. EPA has proposed a redefinition of "reasonable time" to allow States until 1978 or later to meet the secondary national standards.

True _____ False _____

ANSWERS

1. The pollutants are: sulfur oxides, particulates, oxides of nitrogen, carbon monoxide, photochemical oxidants, and hydrocarbons. Please note, however, that the standard for hydrocarbons was set for use as a guide for devising implementation plans to achieve the standard for photochemical oxidants.

2. Any five of the ten conditions for implementation plan approval listed on page 2 of the booklet, for example: adopted after reasonable notice and public hearings; attainment dates (3 years for primary standards, a reasonable time for secondary standards); emission limitations and other measures necessary for attainment and maintenance of standards; adequate monitoring systems and authority to make this data available to EPA; new stationary source review procedures; intergovernmental cooperation; adequate personnel, funding, and authority (including authority to make emissions data available to the public; etc.).

3. Common deficiencies in State plans include: inadequate legal authority, inadequate source review procedures, inadequate control strategies (especially for SO_x, particulates, and NO_2), inadequate emergency episode procedures, and inadequate compliance schedule requirements.

4. A suit filed by the Sierra Club and several other citizens' groups in a U.S. District Court resulted in a decision rendered by that court and upheld by an appellate court and ultimately by the U.S. Supreme Court requiring EPA to ensure that State implementation plans included adequate provisions to prevent significant deterioration of existing air quality.

5. c. These matters were not ruled upon by the Supreme Court, so a is false. EPA did not include the specific requirements relating to transportation controls and maintenance of standards now imposed on the SDates in the original regulations, so b is false.

6. False. As a result of rulings handed down in several courts, EPA is required to provide an opportunity for public comment prior to acting on any State implementation plan revisions.

7. False. The primary ambient air quality standard for sulfur dioxide has not been revised.

8. True.

9. b, d.

10. d.

11. True.

TOPICS IN AIR POLLUTION CONTROL

Federal Standards for Stationary and Mobile Sources

Office of Air and Waste Management
Office of Air Quality Planning and Standards
Control Programs Development Division
Air Pollution Training Institute

1974

This unit, "Federal Standards for Stationary and Mobile Sources," is part of the course Topics in Air Pollution Control (SI 428) developed by the Instructional Development Section of the U.S. Environmental Protection Agency's Air Pollution Training Institute at Research Triangle Park, North Carolina.

This unit, like the others consists of an audio cassette tape and this booklet. BOTH THE TAPE AND THIS BOOKLET MUST BE USED SIMULTANEOUSLY -- students are referred to appropriate sections of the booklet by the narrator of the recorded presentation.

FEDERAL STANDARDS FOR STATIONARY AND MOBILE SOURCES

OBJECTIVES

After completing this unit, you should be able to:

1. List the sources for which new source performance standards have been promulgated (as of March 1, 1974).

2. State that any source covered by new source performance standards must obtain State approval to construct and that the approval can be granted only if emissions from the source will not interfere with attainment or maintenance of national air quality standards in the vicinity of the proposed site.

3. State that EPA may delegate authority for enforcing new source performance standards to the states.

4. State that EPA consults with several advisory committees prior to proposing new source performance standards and that the members of these committees include representatives of industry, air pollution control agencies, equipment vendors, conservation groups, and Federal agencies.

5. Describe the new source performance standard regulations governing emissions during startup, shutdown, and malfunction.

6. List the three hazardous pollutants for which emission standards have been promulgated and name one major source of each pollutant.

7. State that the three types of motor vehicle emissions are crankcase emissions, fuel evaporative emissions, and exhaust emissions.

8. State that motor vehicle standards have been proposed or promulgated for light duty vehicles and heavy duty vehicles, both diesel and gasoline fueled, and that standards for motorcycles are now under consideration.

9. Name the three pollutants for which automotive emission standards have been promulgated; give the attainment date for which these standards were to be met according to the Clean Air Act; discuss the status of the standards (exclusive of consideration of changes resulting from emergency energy legislation).

10. Briefly discuss the potential problem with sulfate emissions from automobiles equipped with catalytic emission control systems and state two alternatives available to EPA for coping with the problem.

11. Cite the two major reasons, specified in the Clean Air Act, for which EPA may regulate fuels and fuel additives.

12. Describe the two types of regulations promulgated to control leaded gasoline.

13. Briefly describe the health effects of lead which formed the basis for controlling the lead content in gasoline.

14. Describe the division of responsibility for aircraft emission control between EPA and the Department of Transportation.

15. State that EPA has established fuel venting and exhaust emission standards for certain new and in-use aircraft and that the Federal Aviation Administrator has since set regulations designed to ensure compliance with these standards.

GUIDELINES FOR DEVELOPING NEW SOURCE PERFORMANCE STANDARDS

1. Test data on existing well-controlled sources.

2. Interpretation of test results from a single best-controlled source -- interpretation must consider:

   a. representativeness of the source tested
   b. age and maintenance schedules for the control equipment tested and probable degradation of similar new equipment
   c. design uncertainties for the type of control equipment considered

3. Consideration of test data from pilot and prototype installations; existing design contracts; foreign technology; published literature.

4. Cost of new sources and the economic impact of control on the industry.

5. Where possible, the standards should permit flexibility for achievement through the use of more than one control technique or licensed process.

6. Where possible, standards should permit (and ideally encourage) use of process modification or new processes as a substitute for pollution control systems.

7. Where possible, standards should allow the use of multi-purpose control systems rather than pollutant-specific systems (e.g., scrubbers v. electrostatic precipitators)

8. Where appropriate, opacity (visibility) standards should be established which are compatible with mass emission standards.

ASSISTANCE IN ESTABLISHING NSPS IS PROVIDED BY . . .

1. INDUSTRY - Trade associations, equipment vendors, companies, and private groups

2. NATIONAL AIR POLLUTION CONTROL TECHNIQUES ADVISORY COMMITTEE - Members represent industry, control equipment manufacturers, air pollution control agencies, conservation groups, and consultants.

3. FEDERAL AGENCY LIAISON COMMITTEE - Members represent Federal agencies and departments.

4. OFFICE OF MANAGEMENT AND BUDGET COORDINATION

NEW SOURCE PERFORMANCE STANDARDS, GROUP I

Promulgated December 23, 1971 (36 FR 24876)

40 CFR 60

FOSSIL-FUEL FIRED STEAM GENERATORS (of more than 250 million B.t.u. per hour heat input)

1. Particulates

   a. 0.10 lb. per million B.t.u. heat input (0.18 g. per million cal.), maximum 2-hr. average.

   b. 20 percent opacity (40 percent opacity permissible for not more than 2 minutes in any hour). Not applicable when presence of uncombined water is the only reason for exceeding 20 percent opacity.

2. Sulfur Dioxide

   a. 0.80 lb. per million B.t.u. heat input (1.5 g. per million cal.), maximum 2-hr. average, when liquid fossil fuel is burned.

   b. 1.2 lbs. per million B.t.u. heat input (2.2 g. per million cal.), maximum 2-hr. average, when solid fossil fuel is burned.

   c. When different fossil fuels are burned simultaneously in any combination, the standard is determined by proportion.

3. Nitrogen Oxides

   a. 0.20 lb. per million B.t.u. heat input (0.36 g. per million cal.), maximum 2-hr. average, expressed as NO_2 when gaseous fossil fuel is burned.

   b. 0.30 lb. per million B.t.u. heat input (0.54 g. per million cal.), maximum 2-hr. average, expressed as NO_2 wher liquid fuel is burned.

   c. 0.70 lb. per million B.t.u. heat input (1.26 g. per million cal.), maximum 2-hr average, expressed as NO_2 when solid fuel (except lignite) is burned.

   d. When different fossil fuels are burned simultaneously in any combination, the standard is determined by proportion.

INCINERATORS (of more than 50 tons per day charging rate)

Particulates: 0.08 gr./s.c.f. (0.18 g./NM^3) corrected to 12 percent CO_2, maximum 2-hr. average.

PORTLAND CEMENT PLANTS (kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems)

Particulates

a. kiln:	1. 0.30 lb. per ton of feed to the kiln (0.15 Kg. per metric ton), maximum 2-hr. average.
	2. 10 percent opacity, except when presence of uncombined water is the only reason for exceeding 10 percent opacity.
b. clinker cooler:	1. 0.10 lb. per ton of feed to the kiln (0.050 Kg. per metric ton), maximum 2-hr. average.
	2. 10 percent opacity.
c. all other affected facilities:	10 percent opacity.

NITRIC ACID PLANTS (each nitric acid production unit)

Nitrogen Oxides: (all oxides of nitrogen except nitrous oxide)	1. 3 lbs. per ton of acid produced (1.5 kg. per metric ton), maximum 2-hr. average, expressed as NO_2.
	2. 10 percent opacity.

SULFURIC ACID PLANTS (each sulfuric acid production unit)

Sulfur Dioxide:	4 lbs. per ton of acid produced (2 kg. per metric ton), maximum 2-hr. average.
Acid Mist:	1. 0.15 lb. per ton of acid produced (0.075 kg. per metric ton), maximum 2-hr. average, expressed as H_2SO_4.
	2. 10 percent opacity.

EXAMPLE OF HOW NSPS ARE ESTABLISHED

FOSSIL-FUEL FIRED STEAM GENERATOR STANDARDS FOR SO_2

0.80 lb. per million B.t.u. heat input (1.4 g. per million cal.), maximum 2-hr. average when liquid fossil fuel is burned.

1.2 lbs. per million B.t.u. heat input (2.2 g. per million cal.), maximum 2-hr. average when solid fossil fuel is burned.

When different fossil fuels are burned simultaneously in any combination, the standard is determined by proportion

BACKGROUND INFORMATION FOR PROPOSED NEW-SOURCE PERFORMANCE STANDARDS: STEAM GENERATORS, INCINERATORS, PORTLAND CEMENT PLANTS, NITRIC ACID PLANTS, SULFURIC ACID PLANTS. EPA, 1971, Pages 10-13*

The standards for sulfur dioxide are based on limited demonstrations of stack-gas desulfurization processes and on the availability of low-sulfur fuels. At this time only the lime-slurry scrubbing system is considered adequately demonstrated on large steam generators. Three other processes have been shown capable of continuous operation at smaller installations.

A lime-slurry scrubbing system, demonstrated for 6 months on two coal-fired units of 125 and 140 Mw capacity, approached the SO_2 emission limit of 1.2 pounds per million b.t.u. This operation represents 73 percent removal of SO_2 from flue gases in instances where the bituminous coal contains 3.0 percent sulfur by weight. One of the units was selected for the EPA test program, resulting in a verification of the SO_2 removal performance reported by the control system manufacturer and facility operator. These lime-slurry systems have been operated at greater SO_2 removal efficiency, but only for limited periods, so that sustained operation at this level is not considered to have been adequately demonstrated. A prototype unit, however, employing a dual-bed design, has achieved emission levels as low as 1.0 pound per million B.t.u heat input for an extended period of time. This system is also applicable to steam generators burning fuel oil. The demonstrated removal efficiency (76 percent), applied to a typical fuel oil of 2.5 percent sulfur content, results in an emission level of 0.7 pound per million B.t.u. heat input, which is below the standard of performance. Lime-scrubbing systems are essentially throwaway processes that produce significant quantities of solid waste. For a 3.0-percent-sulfur coal, the additional wastes are roughly equal to the ash generated from the burning coal.

*References to source information which are included in this document have been deleted from the excerpt.

CONTINUED

CHALLENGES TO GROUP I NEW SOURCE PERFORMANCE STANDARDS

SULFURIC ACID PLANT STANDARDS	Essex Chemical Corp. et al. v. Ruckelshaus (Case no. 72-1072, filed Jan. 21, 1972)
PORTLAND CEMENT PLANT STANDARDS	Portland Cement Association v. Ruckelshaus (Case no. 72-1073, filed Jan. 21, 1972)
FOSSIL-FUEL FIRED STEAM GENERATOR STANDARDS	Appalachian Power Co., et al. v. Ruckelshaus (Case no. 72-1079, filed Jan. 21, 1972)

(Decision: June 29, 1973)

(Applied to all 3 cases which were consolidated in the U.S. Court of Appeals)

Emission limitations are proper and adequately supported by technical data.

EPA not required to prepare environmental impact statement for NSPS.

EPA not required to justify different standards for different industries.

EPA need only show that a standard can be achieved.

Standards remanded to EPA for further information concerning opacity and stack gas desulfurization sludge disposal problems.

NEW SOURCE PERFORMANCE STANDARDS, GROUP II

Promulgated March 8, 1974 (39 FR 9308)
40 CFR 60

ASPHALT CONCRETE PLANTS

Particulates

a. 90 mg/dscm (0.04 gr/dscf)
b. 20 percent opacity. Not applicable when the presence of uncombined water is the only reason for exceeding 20 percent opacity.

PETROLEUM REFINERIES: Fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boilers, and fuel gas combustion devices.

1. Particulates

   a. 1.0 kg/1000 kg (1.0 lb/1000 lb) of coke burn-off in the catalyst regenerator.
   b. 30 percent opacity, except for 3 minutes in any 1 hour. Not applicable when the presence of uncombined water is the only reason for exceeding 30 percent opacity. When auxiliary liquid or solid fossil fuels are burned in the fluid catalytic cracking unit incinerator-waste heat boiler opacity greater than 30 percent is permitted except that the incremental rate of particulate emissions shall not exceed 0.18 g/million cal (0.10 lb/million BTU) of heat input attributable to such liquid or solid fuel.

2. Carbon Monoxide (From the fluid catalytic cracking unit catalyst regenerator): 0.050 percent by volume

3. Sulfur Dioxide: Fuel gas burned in any fuel gas combustion device limited to 230 mg/dscm (0.10 gr/dscf) hydrogen sulfide content. Not applicable to the combustion of process upset gas in a flare or the combustion in a flare of process gas or fuel gas released to the flare as a result of relief valve leakage.*

*The regulations allow the owner or operator to elect to treat gases resulting from the combustion of fuel gas in a manner that limits release of SO_2 to the atmosphere if it is shown to the EPA Administrator that this will be as effective as these stated requirements.

STORAGE VESSELS FOR PETROLEUM LIQUIDS: With a storage capacity greater than 151,412 liters (40,000 gallons)*

Hydrocarbons

a. If true vapor pressure of the petroleum liquid as stored is ≥78mm Hg (1.5 psia) but ≤570 mm Hg (11.1 psia), the storage vessel must be equipped with a floating roof, a vapor recovery system, or their equivalents.
b. If true vapor pressure of the petroleum liquid as stored is >570 mm Hg (11.1 psia), the storage vessel must be equipped with a vapor recovery system or its equivalent.

SECONDARY LEAD SMELTERS: Pot furnaces of more than 250 kg (550 lb) charging capacity, blast (cupola) furnaces, and reverberatory furnaces.

Particulates

a. Blast (cupola) and reverberatory furnaces

   i. 50 mg/dscm (0.022 gr/dscf)
   ii. 20 percent opacity. Not applicable when presence of uncombined water is the only reason for exceeding 20 percent opacity.

b. Pot furnace: 10 percent opacity. Not applicable when presence of uncombined water is the only reason for exceeding 10 percent opacity.

SECONDARY BRASS AND BRONZE INGOT PRODUCTION PLANTS: Reverberatory and electric furnaces of 1,000 kg (2,205 lb) or greater production capacity and blast (cupola) furnaces of 250 kg/hr (550 lb/hr) or greater production capacity.

Particulates

a. Reverberatory furnaces

   i. 50 mg/dscm (0.022 gr/dscf)
   ii. 20 percent opacity. Not applicable when presence of uncombined water is the only reason for exceeding 20 percent opacity.

b. Blast (cupola) and electric furnaces: 10 percent opacity. Not applicable when presence of uncombined water is the only reason for exceeding 10 percent opacity.

*Does not apply to storage vessels for crude petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer.

IRON AND STEEL PLANTS: Basic oxygen furnaces

Particulates: 50 mg/dscm (0.022 gr/dscf)

SEWAGE TREATMENT PLANTS: Incinerators which burn sludge produced by municipal sewage treatment facilities

Particulates

a. 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input)

b. 20 percent opacity. Not applicable when presence of uncombined water is the only reason for exceeding 20 percent opactiy.

SOURCES FOR WHICH NSPS ARE BEING CONSIDERED

Primary copper, lead, and zinc smelters

Coal preparation plants

Kraft pulp mills

Phosphate fertilizer plants

Ferroalloy plants

Stationary gas turbines

Electric arc furnaces

By-product coke ovens

Feed and grain elevators

Sulfur recovery from fuel gas (refineries)

Crushed stone plants

Detergent manufacturers

Fiberglass plants

Electric furnaces used in grey iron foundries

Lime plant

REGULATIONS CONCERNING EMISSIONS DURING STARTUP, SHUTDOWN, AND MALFUNCTION

(40 CFR 60.2, 60.7, 60.8, 60.11)

PROPOSAL 1:	August 25, 1972 (37 FR 17214)
PROPOSAL 2:	May 2, 1973 (38 FR 10820)
PROMULGATION:	October 15, 1973 (38 FR 28564)
Malfunction:	"any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner."
Reports:	To be submitted by the source owner to EPA by the 30th day following the end of any calendar quarter in which there have been excess emissions. Reports must include: Magnitude of excess emissions (measured by required monitoring equipment) Date and time of beginning and end of each period of excess emissions Nature and cause of any malfunction Corrective action taken or preventive measures adopted
Operating and Maintenance Requirements:	"At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions."
Periods of Excess Emissions to be Reported:	Varies according to source category and pollutant.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

(40 CFR 61)

March 31, 1971 (36 FR 5931)	Initial list of hazardous air pollutants: asbestos, beryllium, and mercury.
December 7, 1971 (36 FR 23239)	Proposed emission standards for asbestos, beryllium, and mercury.
April 6, 1973 (38 FR 8820)	Promulgated emission standards for asbestos, beryllium, and mercury.

NATIONAL EMISSION STANDARDS FOR ASBESTOS -- RATIONALE

HEALTH EFFECTS

Asbestos causes asbestosis; is related to higher-than-expected incidences of bronchial cancer; is a causal factor in development of mesotheliomas (cancers of chest and abdomen membranes).

CONSTRAINTS

Numerical limits for ambient concentrations or emissions of asbestos are not practical because of the following:

1. Means of measuring ambient concentrations of asbestos have only recently been developed (historical data are lacking--makes dose-response relationship impossible to quantify at present).

2. Satisfactory methods of measuring asbestos emissions are not available at present (emission limitations are, therefore, not enforceable).

APPROACHES TO CONTROL

1. Ban on emissions of asbestos to the atmosphere.

   a. Ban on production, processing, and use of asbestos: considered impractical because of the importance of many of these activities and unnecessary to protect the public health.

   b. Ban on all emissions of asbestos into the atmosphere: impractical because of the impossibility of enforcement and unnecessary to protect the public health.

2. Control of emissions from major man-made sources of asbestos

   a. Visible emissions limitations

   b. Use of specified control equipment, implementation of certain procedures, and prohibitions on the use of certain materials or operations.

NATIONAL EMISSION STANDARDS FOR ASBESTOS

ASBESTOS MILLS	No visible emissions (or installation and use of specified air cleaning equipment).
ROADWAYS	Surfacing of roadways with asbestos tailings is prohibited except for temporary roadways on an area of asbestos ore deposits. "Surfacing" includes deposition of asbestos tailings on roadways covered with snow or ice.
MANUFACTURING OF cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials; cement products; fireproofing and insulating materials; friction products; paper, millboard, felt; floor tile; paints, coatings, caulks, adhesives, sealants; plastics, rubber materials; chlorine.	No visible emissions (or installation and use of specified air cleaning equipment).
DEMOLITION OF STRUCTURES INSULATED OR FIREPROOFED WITH FRIABLE ASBESTOS MATERIAL (excluding 1- to 3-family units)	Notice of intent to demolish to be provided to EPA at least 20 days prior to demolition; friable asbestos materials must be wetted and removed before wrecking; all pipes and structural members covered with friable asbestos insulating or fireproofing materials and friable asbestos debris must be carefully lowered to ground level rather than dropped or thrown. Debris from buildings of 50 or more feet in height must be transported to the ground in dust-tight chutes or containers.*
SPRAYING	No visible emissions from spray-on application of materials containing more than 1 percent asbestos (dry weight basis) used to insulate or fireproof equipment and machinery (or installation and use of air cleaning equipment); spray-on materials used to insulate or fireproof buildings, structures, pipes, and conduits are limited to 1 percent asbestos content (dry weight basis); report of intention to spray asbestos materials must be provided to EPA at least 20 days prior to commencement of the spraying operation.

*Some exceptions are made for structures declared by State or local authority to be [illegible]nger of imminent collapse.

NATIONAL EMISSION STANDARDS FOR BERYLLIUM

HEALTH EFFECTS

1. Beryllium has proven acute and chronic lethal inhalation effects and skin and conjunctival (mucous membranes around the eye) effects.

2. The body has no mechanism for complete elimination of beryllium. The possibility of long residence time in the body may, thus, enhance the opportunity for cancer induction.

3. The Beryllium Case Registry, maintained by the Massachusetts General Hospital, Boston, Mass., contains over 820 proven cases of beryllium-related disease. Chronic beryllium disease is associated with exposure during machine operations on beryllium materials (64 Registry cases) as well as with activities involving extraction processes. There are at least 45 cases of non-occupationally-incurred diseases, half of which have been fatal. (None of these worked in beryllium plants; they had either worked or resided near a beryllium plant or had come in close contact with dust from the clothes of beryllium plant employees.) Studies of these cases indicated the lowest concentration which produced disease was> 0.01 $\mu g/m^3$ and probably <0.10 $\mu g/m^3$.

4. In 1949 the Atomic Energy Commission (AEC) adopted 0.01 $\mu g/m^3$ as the limit for beryllium concentrations in community air, averaged over a 30-day period. The National Academy of Sciences concluded that this limit was a safe level of exposure.

STANDARDS

1. EPA adopted a standard of 10 grams per day for most affected sources as the emission limit necessary to ensure that ambient concentrations of beryllium do not exceed 0.01 $\mu g/m^3$, averaged over a 30-day period. Sources may, however, request EPA approval to meet the 0.01 $\mu g/m^3$ ambient concentration limit averaged over a 30-day period.

2. Separate standards were established for beryllium rocket motor firing. Time-weighted concentrations from rocket-motor test sites are limited to 75 μg minutes/m^3 within the limits of 10-60 minutes, accumulated during any 2 consecutive weeks, in areas in which public health could be endangered. Emissions from a closed tank in which combustion products from firing of beryllium propellant are collected must not exceed 2 grams/hour and a maxium of 10 grams/day.

AFFECTED SOURCES

Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste; machine shops which process beryllium, beryllium oxides, or any alloy containing more than 5 percent beryllium by weight.

NATIONAL EMISSION STANDARDS FOR MERCURY

HEALTH EFFECTS	Mercury is a known toxin, affecting the central nervous system and the kidneys. Knowledge of the effects of mercury vapors comes from experiments with animals and studies of industrial exposure. Data indicate that prolonged exposure to airborne mercury is a hazard.
RELATIONSHIP BETWEEN AIRBORNE MERCURY AND MERCURY IN FOOD AND WATER	It was determined that the airborne burden must be considered together with water- and food-borne burdens and that, lacking direct knowledge of the effects of mercury vapors, exposures to vapors and to methyl-mercury from diet (about which there is knowledge) should be considered to be equivalent and additive. A study of mercury poisoning episodes in Japan indicated that 30 μg/day of methylmercury is an acceptable exposure for an average adult and at the same time protects against effects on sensitive individuals. Mercury intakes of 10 μg/day from diet can be expected. Therefore, intake from air must be limited to 20 μg/day. Since the average person inhales 20 cubic meters of air each day, daily ambient concentration of mercury must be limited to 1 $\mu g/m^3$.
STANDARD	To prevent ambient concentrations of mercury from exceeding 1 $\mu g/m^3$ in a 24-hour period, the emission standard is 2,300 grams of mercury per day.
SOURCES	Stationary sources that process mercury ore to recover mercury; stationary sources that use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide.

QUESTIONS

1. New source performance standards have been promulgated for which of the following stationary source categories:

   ___a. Storage vessels for petroleum liquids

   ___b. Kraft pulp mills

   ___c. Fossil-fuel fired steam generators

   ___d. Phosphate fertilizer plants

   ___e. Portland cement plants

   ___f. Nitric acid plants

   ___g. Primary aluminum reduction plants

   ___h. Asphalt concrete plants

   ___i. Grey iron foundries

   ___j. Secondary brass and bronze production plants

   ___k. Incinerators

   ___l. Sewage sludge incinerators

   ___m. Fiberglass plants

   ___n. Sulfuric acid plants

   ___o. Petroleum refineries

   ___p. Zinc smelters

   ___q. Secondary lead smelters

   ___r. Iron and steel plants: basic oxygen furnaces

   ___s. Ferroalloy plants

   ___t. Lime plants

2. EPA must give final approval for sources covered by new source performance standards to construct. True_____ False_____.

3. EPA has authority under the Clean Air Act to delegate responsibility for enforcement of new source performance standards to the States under certain conditions. True_____ False_____.

4. New source performance standards are reviewed by several committees before they are formally proposed. Describe the makeup of these committees.

5. Which of the following cases describes a "malfunction" during which the plant owner or operator would not be held responsible for violations of an applicable new source performance standard?

___a. Fabric filters (bag houses) can be used in Portland cememt plants to control emissions of particulates from the kiln to the level required by the national standards of performance. The average life of a fabric filter as used in Portland cement plant applications is one year. A Portland cement plant installed new fabric filters in June 1973, and in the following October several filters began to leak, causing particulate emissions to exceed the standards.

___b. Sulfur dioxide and acid mist emissions from sulfuric acid plants are limited by national performance standards. Sulfuric acid mist can be controlled by passing the stack gas through a glass wool filter treated with methyl clorosilane. However, it is necessary to flush the wool filter to prevent violation of the acid mist opacity standard. A plant employee reports that the opacity standard is being violated. The plant immediately begins flushing the filter, but the flushing procedure takes two hours.

___c. New source performance standards for large fossil-fuel fired steam generators limit emissions of particulates, sulfur dioxide, and nitrogen oxides. A supplemental boiler was fired up at a plant to reduce NO_x emissions. However, not enough air was supplied for complete combustion of the fuel and, as a result, enough non-combustible particulates escaped to cause the particulate standard to be violated.

6. Name the three hazardous pollutants for which national emission standards have been promulgated and list one major source of each pollutant.

Pollutant	Source
_____	_____
_____	_____
_____	_____

7. Hazardous pollutant emission standards apply to both new and existing sources. True_____ False_____.

ANSWERS

1. Standards were promulgated for sources c, e, f, k, and n in December 1971. Standards were promulgated for sources a, h, j. l, o, q, and r in March 1974.

2. False. EPA determines if a source complies with applicable new source performance standards once the facility has been constructed but the State must determine if the source may locate in the proposed site. This determination is based on whether or not emissions from the source will interfere with attainment or maintenance of national air quality standards in the vicinity of the proposed site. If the State determines that the source would interfere with attainment or maintenance of the national standards, even though it meets the new source performance standards, the State must refuse to authorize construction.

3. True.

4. The National Air Pollution Control Techniques Advisory Committee has 16 members representing industry, control equipment manufacturers, air pollution control agencies, conservationists, and consultants. The Federal Agency Liaison Committee's membership represents 19 Federal agencies and departments who review proposed standards in light of the agencies' missions and interests. In addition the Office of Management and Budget coordinates an evaluation which analyzes the impact of the proposed standards on the program and responsibilities of the Federal agencies.

5. a The fabric filter leaks would be considered premature and beyond the control of the plant officials since they occurred before the filters could reasonably be expected to deteriorate. In the case of the sulfuric acid plant, since proper operating procedures (flushing of the glass wool filters) were not followed, the plant owner or operator would probably be held responsible. The same would be true of the example of the steam generator since the equipment operators should have known how much air was needed for proper combustion.

6. Asbestos - asbestos mills

   Beryllium - extraction plants, rocket motor firing

   Mercury - processing of mercury ore; mercury chlor-alkali plants

   NOTE: Other sources are acceptable; see pages 16-18 of the booklet.

7. TRUE.

MOTOR VEHICLE EXHAUST EMISSION STANDARDS
AUTHORITY

CLEAN AIR ACT OF 1965 CLEAN AIR ACT of 1967	Title II ("Motor Vehicle Air Pollution Control Act") empowers HEW to establish emission standards for pollutants from new motor vehicles. Emissions regulated by HEW were crankcase emissions (HC), fuel evaporative emissions (HC), and exhaust emissions (CO and HC).
CLEAN AIR ACT OF 1970	Specifies 90 percent reduction in exhaust emissions of CO and HC from allowable 1970 levels by the 1975 model year and 90 percent reduction in NO_x exhaust emissions from average measured 1971 levels by the 1976 model year. Provision is made for one one-year suspension of both the 1975 and the 1976 standards under certain conditions.

STANDARDS FOR LIGHT DUTY MOTOR VEHICLES* (40 CFR 85)

MODEL YEAR	TEST PROCEDURE	EXHAUST EMISSIONS (Grams per vehicle mile)			FUEL EVAPORATIVE EMISSIONS (HC) (Grams/Test)	CRANKCASE EMISSIONS (Grams/Mile)
		HC	CO	NO_x		
Pre 1968	FTP	(11)	(80)	(4)	(60)	(3)
1968-1969		3.2	33.0	NS	NS	0
1970		2.2	23.0	NS	NS	0
1971		2.2	23.0	NS	6.0	0
Pre 1968	CVS-72	(9.5)	(98)	(3.4)	(60)	(3)
1972		3.4	39	NS	2.0	0
1973-1974		3.4	39	3.0	2.0	0
Pre 1968	CVS-75	(8.6)	(87.5)	(3.5)	(60)	(3)
1973-1974		(3.0)	(28)	(3.1)	(2.0)	0
1975		0.41[a]	3.4[a]	3.1	2.0	0
1976		0.41	3.4	0.4[a]	2.0	0

*Except for trucks, motorcycles, and motor vehicles with an engine displacement of 50 cu. in.

() Numbers in parenthesis are estimates

NS No Standard

[a] These are the standards required by the Clean Air Act. Interim standards have since been established in response to requests for one-year suspensions of these standards. Suspension of standards will be discussed later.

FTP -- 1958 Federal Test Procedure
- Cold start followed by 137-second cycle repeated 7 times for a total of 6 miles
- Emission Concentrations measured continuously and data from specific portions of the test weighted and converted to grams per mile

CVS-72 -- 1972 Mass Emissions Procedures
- Cold start followed by 7.5 mile simulated urban trip
- Proportional mass sample of exhaust collected in a bag throughout test and emissions measured at end
- Result expressed as grams per mile

CVS-75 -- 1975 Mass Emissions Procedure
- Cold start followed by 7.5 mile simulated urban trip, consisting of 3.6 mile warm-up trip (Bag A) and 3.9 mile hot trips (Bag B)
- Car stopped and allowed to stand for 10 minutes
- Car restarted and 3.6 mile warm-up trip repeated (Bag C)
- Proportional mass samples of exhaust collected in three bags and emissions measured at end
- Weighted emissions = 43% Bag A + 100% Bag B + 57% Bag C
- Result expressed as grams per mile

CLEAN AIR ACT (1970) CONDITIONS FOR GRANTING
ONE-YEAR SUSPENSION OF STANDARDS
Section 202(b)(5)(D)

. . . The Administrator shall grant such suspensions only if he determines that

(i) such suspension is essential to the public interest or the public health and welfare of the United States,

(ii) all good faith efforts have been made to meet the standards . . .,

(iii) the applicant has established that effective control technology, processes, operating methods, or other alternatives are not available or have not been available for a sufficient period of time to achieve compliance prior to the effective date of such standards, and

(iv) the study and investigation of the National Academy of Sciences . . . and other information available to him has not indicated that technology, processes, or other alternatives are available to meet such standards.

SUSPENSION OF 1975 CO AND HC STANDARDS

March 13, 1972	First application for suspension filed by Volvo, followed by Chrysler, Ford, General Motors, and International Harvester.
May 12, 1972	All applications denied
June 8-12, 1972	International Harvester, Chrysler, Ford, and General Motors appealed to the U.S. Court of Appeals for the District of Columbia (Case Nos. 72-1517, 72-1525, 72-1529, 72-1537)
February 10, 1973	Court remanded the four applications to EPA for reconsideration
April 11, 1973	Suspension granted to the four manufacturers and American Motors; interim standards set (see 38 FR 10317, April 26, 1973; 38 FR 17441, July 2, 1973; 40 CFR 85.075-1)
May 15 - June 21, 1973	Applications for one-year suspension filed by 27 foreign automobile manufacturers.
July 16, 1973	Applications granted; interim standards set (see 38 FR 20365)

	Original 1975 Standards	Interim 1975 Standards Nationwide	Interim Standards California
HYDROCARBONS	0.41 gpm	1.5 gpm	0.9 gpm
CARBON MONOXIDE	3.4 gpm	15.0 gpm	9.0 gpm

SUSPENSION OF 1976 NO_x STANDARDS

July 30, 1973
(See 38 FR 22474,
August 21, 1973;
40 CFR 85.076-1)

EPA granted Ford, General Motors, and Chrysler a one-year suspension of 1976 NO_x standard (0.4 gram/mile) and set 2.0 grams/mile as the interim standard for 1976 model year vehicles (several foreign automobile manufacturers have filed applications for suspension since then). EPA did not set a different interim standard for California. California already has an NO_x standard of 2.0 g.p.m. in effect for model years 1974 and 1975. Unless California adopts a more stringent standard for 1976 model vehicles and is granted a waiver of Federal preemption, the 1976 interim NO_x standard of 2.0 g.p.m. will apply to California as well as to the rest of the nation.

SULFATE EMISSIONS FROM CATALYST VEHICLES

Recent evidence suggests that sulfate emissions from the average catalyst car will be greater than from non-catalyst cars. The amount may be as much as 0.05 gram/mile if gasoline with 0.03% sulfur content (national average) is used. This would be 3 to 5 times more than emissions from non-catalyst cars.

Modeling studies indicate that after some small number of model years of catalyst cars are put into use, the amount of total sulfate emissions from automobiles may be sufficient to cause adverse health effects.

Studies to date have been very limited. Studies are hampered by the fact that there is no generally accepted measurement procedure for quantifying sulfate emissions from motor vehicles. Emission rates vary according to 1) sulfur content in fuel; 2) type and age of catalyst; 3) fuel economy of vehicles; 4) other factors. Methods for predicting atmospheric levels are not precise.

Two alternatives available if existence of sulfate problem is proven:

1. Delay or ban the use of catalysts

2. Regulate sulfur content in fuel

CLASSES OF MOTOR VEHICLES

LIGHT DUTY VEHICLE (Gasoline Fueled)	A passenger car or passenger car derivative capable of seating 12 passengers or less. 38 FR 21362, August 7, 1973; 40 CFR 85.002(a)(5)
LIGHT DUTY TRUCK	Any motor vehicle, rated at 6,000 pounds GVW (gross vehicle weight) or less, which is designed primarily for purposes of transportation of property, or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use. 38 FR 21364, August 7, 1973; 40 CFR 85.202(a)(5)
LIGHT DUTY VEHICLE (Diesel Fueled)	Any motor vehicle either designed primarily for transportation of property and rated at 6,000 pounds GVW or less or designed primarily for transportation of persons and having a capacity of 12 persons or less. 38 FR 21348, August 7, 1973; 40 CFR 85.102(a)(5)
HEAVY DUTY VEHICLE	Any motor vehicle either designed primarily for transportation of property and rated at more than 6,000 pounds GVW or designed primarily for transportation of persons and having a capacity of more than 12 persons. 40 CFR 85.702(a)(6), 85.802(a)(5)

MOTOR VEHICLE EMISSION STANDARDS
(OTHER THAN LIGHT DUTY GASOLINE-FUELED VEHICLES)

VEHICLE TYPE	CFR OR DATE PROPOSED	MODEL YEAR	EXHAUST EMISSIONS HC	CO	NO_x	FUEL EVAPORATIVE EMISSIONS (HC)	CRANKCASE EMISSIONS
GASOLINE-FUELED LIGHT DUTY TRUCKS	40 CFR 85.275 85.276	1975 and 1976	2.0 g.p.m.	20 g.p.m.	3.1 g.p.m.	2 grams/test	0
GASOLINE-FUELED HEAVY DUTY VEHICLES	45 CFR 85.21	1970 (After Jan.1)	275 p.p.m.	1.5% by volume	NS	NS	
	40 CFR 85.773	1973	275 p.p.m.	1.5% by volume	NS	NS	0
	40 CFR 85.774	1974	16 grams/ brake horsepower hour (HC + NO_x)	40 grams/ brake horsepower hour	See HC	NS	
DIESEL-FUELED LIGHT DUTY VEHICLES	40 CFR 85.175	1975	0.41 g.p.m.	3.4 g.p.m.	3.1 g.p.m.	NS	NS
	40 CFR 85.176	1976	0.41 g.p.m.	3.4 g.p.m.	0.4 g.p.m.	NS	
DIESEL-FUELED LIGHT DUTY TRUCKS	Proposed 1/25/74 (39 FR 3276)	1976	2.0 g.p.m.	20 g.p.m.	3.1 g.p.m.	NS	0
DIESEL-FUELED HEAVY DUTY VEHICLES EXHAUST EMISSION REGULATIONS	40 CFR 85.974	1974	16 grams/ brake horsepower hour (HC + NO_x)	40 grams/ brake horsepower hour	See HC	NS	NS
			ACCELERATION MODE		LUGGING MODE	PEAKS IN EITHER MODE	
SMOKE EMISSION REGULATIONS	45 CFR 85.41	1970 (After Jan.1)	40% opacity		20% opacity		
	40 CFR 85.773	1973	40% opacity		20% opacity		
	40 CFR 85.774	1974	20% opacity		15% opacity	50% opacity	

NS = No Standard

NATIONWIDE ESTIMATES OF MOTOR VEHICLE EMISSIONS OF HC, CO, AND NO_x

		1960	1968	1969	1970	1971
HC	Emissions (10^6 tons/yr.)	16.2	17.6	17.1	12.0	11.5
	Percent of total	51.3	50.0	48.6	44.0	43.2
CO	Emissions (10^6 tons/yr.)	74.3	99.4	97.8	63.7	63.1
	Percent of total	58.0	66.3	63.5	63.3	63.0
NO_x	Emissions (10^6 tons/yr.)	7.2	8.6	8.7	7.9	8.2
	Percent of total	51.4	40.4	38.7	35.7	37.3

NEW MOTORCYCLE EMISSION STANDARDS UNDER CONSIDERATION

Advanced Notice of Proposed Rulemaking January 17, 1974
(39 FR 2108)

Model Year	EXHAUST EMISSION STANDARDS			CRANKCASE EMISSIONS
	HC	CO	NO_x	
1976-1978	8.0 gpm	28 gpm	2 gpm	0 emissions

QUESTIONS

1. Name the three types of motor vehicle emissions.

   a.

   b.

   c.

2. List the categories of motor vehicles for which emission standards have been proposed or promulgated by EPA.

3. The Clean Air Act requires a 90% reduction in emissions of the three pollutants for which automotive emission standards have been set. Name the three pollutants and indicate the model year in which the 90% reduction was originally to have been attained. Then indicate the attainment date in effect since EPA granted extensions.

Pollutant	Original Attainment Date	Current Attainment Date

4. Briefly discuss the potential problem with sulfate emissions from automobiles equipped with catalytic emission control systems.

5. Should the sulfate emissions from catalyst vehicles result in ambient concentrations harmful to the public health or welfare, what two alternatives are now available to EPA under the Clean Air Act to solve the problem?

a. _____

b. _____

6. EPA is considering promulgating emission standards for motorcycles.
True _____ False _____

ANSWERS

1. Exhaust, fuel evaporative, and crankcase emissions.

2. Gasoline fueled: light duty vehicle (passenger car), light duty truck, heavy duty vehicles (trucks and buses); diesel fueled: light duty vehicles, light duty trucks, heavy duty vehicles (trucks and buses).

3.

Pollutant	Original Attainment Date	Current Attainment Date
Hydrocarbons	1975	1976
Carbon monoxide	1975	1976
Nitrogen Oxides	1976	1977

4. Some preliminary research has indicated that automobiles equipped with catalytic control systems to reduce emissions of hydrocarbons, carbon monoxide, and oxides of nitrogen may emit more sulfate than vehicles without these control devices. It is feared that by the time the population of catalyst equipped vehicles reaches a certain level (after several model years) the level of sulfate emissions may be sufficient to cause adverse health effects. The evidence is limited and inconclusive to date, and further study is now underway.

5. One alternative would be to delay or ban the use of catalytic control systems. This option, however, would delay achievement of the reduction of emissions of hydrocarbons, carbon monoxide, and nitrogen oxides. The other alternative would be to promulgate regulations limiting the sulfur content in gasoline. Efforts are now underway to draft such regulations should they be necessary.

6. True.

REGULATION OF FUELS AND FUEL ADDITIVES

CLEAN AIR ACT (1970) SECTION 211

1. Empowers EPA to require manufacturers of certain fuels or fuel additives to:

   a. register fuels and/or fuel additives with EPA;

   b. conduct tests to determine health effects of these fuels or additives;

   c. furnish information about the fuel and additives: analytical techniques, recommended range of concentration of additives, recommended purpose-in-use of additives, and other reasonable information.

2. EPA may prescribe regulations to prohibit or control manufacture or sale of fuels or fuel additives which cause emissions that

   a. may endanger the public health or welfare;

   b. significantly interfere with the performance of motor vehicle emission control devices or systems;

3. No fuel or fuel additive may be controlled or prohibited

   a. for reasons of the public health and welfare except after consideration of available medical and scientific evidence, including consideration of other technologically or economically feasible means of achieving motor vehicle emission standards;

   b. for protection of motor vehicle emission control systems except after consideration of available scientific and economic data, including cost benefit analysis comparing emission control systems which require such fuel control with systems which do not require such fuel control;

   c. unless EPA finds (and publishes findings) that prohibition will not cause use of any other fuel or fuel additive which will produce emissions that will endanger the public health or welfare to the same or greater degree than the fuel or additive to be prohibited.

REGULATIONS PROVIDING FOR GENERAL AVAILABILITY

OF LEAD-FREE GASOLINE

40 CFR 80.20, 80.25

PROPOSED: February 23, 1972 (37 FR 3882)

PROMULGATED: January 10, 1973 (38 FR 1254)

1. Unleaded gasoline produced after July 1, 1974, must contain no more than 0.05 gram lead and 0.005 gram phosphorus per gallon.

2. Retail outlets selling 200,000 or more gallons in any calendar year after 1971 required after July 1, 1974, to market at least one grade of unleaded gasoline of not less than 91 octane (except that in high altitude areas lower octane levels are permitted).

3. Major brand refiners are responsible for ensuring that unleaded gasoline sold at retail outlets meets the lead and phosphorus standards.

4. After July 1, 1974, retail outlets must clearly label gasoline pumps "Unleaded gasoline" or "Contains lead antiknock compounds."

5. After July 1, 1974, retail outlets must prominently display the following notice:

   Federal law prohibits the introduction
   of any gasoline containing lead or
   phosphorus into any motor vehicle labeled
   "UNLEADED GASOLINE ONLY"

6. Automobile manufacturers required to place permanent "Unleaded Gasoline Only" labels on all motor vehicles equipped with lead sensitive emission control devices (on the instrument panel and near the gasoline tank inlet).

7. Leaded gasoline pump nozzles must have outside diameters no smaller than 0.93"; unleaded nozzles must be no greater than 0.85".

8. Automobile manufacturers must equip catalyst vehicles with nozzle restrictors no greater than 0.91" in inside diameter that will activate the automatic shut-off of the larger leaded gasoline nozzles to prevent leaded gasoline from being pumped into the tank.

LEADED GASOLINE REGULATIONS

(40 CFR 80)

PROPOSED: February 23, 1972 (37 FR 3882)
REPROPOSED: January 10, 1973 (38 FR 1258)
PROMULGATED: December 6, 1973 (38 FR 33734)*

1. At any refinery average lead content per gallon for each 3-month period (Jan.-March, April-June, July-September, October-December) shall not exceed:

After Jan. 1, 1975:	1.7 grams of lead per gallon**
After Jan. 1, 1976:	1.4 grams of lead per gallon**
After Jan. 1, 1977:	1.0 grams of lead per gallon
After Jan. 1, 1978:	0.8 grams of lead per gallon
After Jan. 1, 1979:	0.5 grams of lead per gallon

2. For each 3-month period the average lead content per gallon shall be computed by each refinery as follows:

$$\frac{\text{total grams of lead used in the manufacture of gasoline}}{\text{total gallons of gasoline manufactured}}$$

3. Within 15 days of the close of each 3-month period, each refiner shall submit a report to EPA containing the following information

   a. total grams of lead in lead additive inventory on the first day of the period

   b. total grams of lead received during the period

   c. total grams of lead in lead additive inventory on the last day of the period

   d. total gallons of gasoline produced during the period

   e. average lead content in each gallon of gasoline produced during the period

*The preamble to the promulgated regulations includes a lengthy discussion of the effects of lead, the lead exposure problem among children and the general population, and the relationship of leaded gasoline to the overexposure problem.

**These provisions do not apply to certain small refiners in recognition of special lead-time problems faced by this group.

CONSIDERATIONS REQUIRED BY THE CLEAN AIR ACT
WITH RESPECT TO LEADED GASOLINE REGULATIONS

I. OTHER TECHNOLOGICALLY OR ECONOMICALLY FEASIBLE MEANS OF CONTROLLING AUTOMOTIVE EMISSIONS THAT ENDANGER THE PUBLIC HEALTH OR WALFARE

EPA believes that the only alternative to regulating lead content in gasoline is to impose a lead emission standard that would require the use of lead traps on autos.

Lead traps would not be efficient enough to protect lead sensitive emission control systems. Unleaded gasoline would still be required for model year 1975 and later vehicles. Thus the lead traps would be effective only on in-use pre-1975 models. EPA does not have statutory authority to prescribe emission standards for in-use vehicles.

II. IMPACT OF FUEL REGULATIONS

A. Will control of one fuel or fuel additive result in use of another fuel or fuel additive that would also endanger public health?

It is expected that leaded gasoline regulations will result in greater use of blending stocks with high aromatic hydrocarbon concentrations or antiknock additives to increase octane levels of unleaded gasoline.

1. Anticipated increase in aromatic hydrocarbon content in gasoline is not expected to have a significant impact on automobile emissions photochemical reactivity because of increasingly stringent hydrocarbon emission control systems. Polynuclear aromatic hydrocarbons have been decreasing since introduction of hydrocarbon emission control systems. NOTE: EPA has the authority to regulate the aromatic hydrocarbon content of gasoline should this become necessary.

2. The only other cost effective fuel additive to increase octane levels is manganese. Studies indicate that manganese additives may plug catalysts. EPA has authority to regulate the use of manganese additives if they are used and if studies show that manganese will interfere with catalyst systems and/or cause adverse health effects.

3. Lead additives account for a large portion of the exhaust particulates. Therefore, particulate emissions are expected to decrease as a result of leaded gasoline regulations.

B. What is the impact of leaded gasoline regulations on cost and energy?

1. Expected cost to the refinery industry ranges from $82 million to $113 million. The $113 million increase would increase the cost of producing gasoline by less than .1¢ per gallon.

2. Less than .4% increase in crude oil usage by 1980 is expected in the worst instance. A possible 3.5% fuel penalty may occur as a result of newer low-compression engines requiring lower octane fuel. Total fuel penalty, at worst, would be less than 4%.

1. Under the Clean Air Act, EPA has authority to prescribe regulations which prohibit or control the manufacture or sale of fuel or fuel additives under which of the following conditions:

   I. If it is determined that the fuel or fuel additive interferes with the performance of automobile emission control systems designed to reduce emissions of carbon monoxide, hydrocarbons, and nitrogen oxides.

   II. If it is determined that the fuel or fuel additive causes automobile emissions that endanger the public health or welfare.

   III. If it is determined that the fuel or fuel additive results in poor fuel economy.

   _____a. I only
   _____b. II only
   _____c. III only
   _____d. I and II
   _____e. I and III
   _____f. I, II, and III

2. Which of the following statements about EPA's regulations concerning the general availability of unleaded gasoline are true?

   _____a. Issued because lead-free gasoline is needed to ensure effectiveness of catalytic devices to be installed in automobiles to control emissions of carbon monoxide and hydrocarbons.

   _____b. Permit only trace lead levels of up to 0.05 gram per gallon in certain fuels.

   _____c. Also limit the phosphorus content of gasoline.

   _____d. Retail outlets of a certain size are required to market at least one grade of unleaded gasoline after July 1, 1974.

   _____e. Leaded and unleaded gasoline pump nozzle sizes are specified.

   _____f. All of the above.

3. Which of the following statements about EPA's regulations limiting the lead content in all grades of leaded gasoline are true?

   _____a. Issued primarily to protect the public health from adverse effects of ambient lead concentrations.

   _____b. Promulgated before the regulations concerning general availability of unleaded gasoline and are expected to be rescinded one or two years after automobiles with catalytic emission control systems requiring unleaded gasoline are manufactured.

Question continued on next page.

_____c. Provide for a reduction in the average lead content in leaded gasoline produced by an individual refinery during each quarter.

_____d. The prescribed reduction schedule is intended to reduce lead usage and lead emissions by 60-65% by 1979 (over the base year 1971).

ANSWERS

1. d.
2. f.
3. a, c, and d.

AIRCRAFT EMISSION STANDARDS

Clean Air Act Section 231	1. EPA must make a study of the impact of aircraft emissions or air quality and determine the feasibility of controlling these emissions.
	2. EPA must publish results of the study and propose and after public hearings promulgate emission standards for aircraft. Standards must be prescribed after consultation with the Secretary of Transportation.
Clean Air Act Section 232	1. Secretary of Transportation, after consultation with the EPA Administrator, must promulgate regulations to ensure compliance with EPA standards.
	2. Department of Transportation is responsible for enforcement. NOTE: Both of these functions were delegated to the Administrator, Federal Aviation Administration on May 12, 1971 (36 FR 8733)
December 12, 1972	1. "Aircraft Emissions: Impact on Air Quality and Feasibility of Control" published by EPA.
	2. Aircraft emission standards proposed by EPA (37 FR 239)
July 17, 1973 (38 FR 19088)	EPA emission standards promulgated for aircraft manufactured in 1979 or later and for gas turbine and piston engines (effective dates range from 1974 to 1981). Standards limit fuel venting emissions and exhaust emissions and apply to new and in-use aircraft and engines. (40 CFR Part 87)
July 17, 1973 (38 FR 19050)	EPA proposed emission standards for in-use aircraft after January 1, 1983. These standards would require retrofit of control systems designed for new aircraft on in-use gas turbine engines of a class not covered in the promulgated standards.
December 21, 1973 (38 FR 35000)	EPA extended the effective date of fuel venting and smoke regulations from Jan. 1, 1974, to Feb. 1, 1974, and provided for granting of temporary exemptions on or after Feb. 1, 1974, by EPA.
November 2, 1973 (38 FR 30277)	FAA published Notice 73-29 proposing regulations to ensure compliance with EPA standards on fuel venting and exhaust emissions.
December 28, 1973 (38 FR 35437)	FAA promulgated a Special Federal Aviation Regulation covering fuel venting and smoke emissions from aircraft included in EPA standards. (14 CFR 11, 21, 91)

QUESTIONS

The following statements describe responsibilities and/or accomplishments in the area of aircraft emission standards and regulations. For each statement indicate who has the responsibility by writing

a for EPA Administrator

b for Secretary of Transportation (delegated to Administrator, Federal Aviation Administration)

_____1. Published a report of a study of the impact of aircraft emissions on air quality and of the feasibility of controlling emissions.

_____2. Promulgated emission standards applicable to fuel venting and exhaust emissions from certain types of aircraft beginning in 1974.

_____3. Promulgated regulations designed to ensure compliance with the aircraft emission standards.

_____4. Responsible for granting exemptions from applicable aircraft emission standards and authorizing revised or alternate methods for testing compliance with standards.

_____5. Responsible for enforcing emission regulations applicable to aircraft or aircraft engines.

ANSWERS

1. a.
2. a.
3. b.
4. a.
5. b.

TOPICS IN AIR POLLUTION CONTROL

Maintenance of National Ambient Air Quality Standards

Office of Air and Waste Management
Office of Air Quality Planning and Standards
Control Programs Development Division
Air Pollution Training Institute

1974

This unit, "Maintenance of National Ambient Air Quality Standards," is part of the course Topics in Air Pollution Control (SI 428) developed by the Instructional Development Section of the U.S. Environmental Protection Agency's Air Pollution Training Institute at Research Triangle Park, North Carolina.

This unit, like the others consists of an audio cassette tape and this booklet. BOTH THE TAPE AND THIS BOOKLET MUST BE USED SIMULTANEOUSLY -- students are referred to appropriate sections of the booklet by the narrator of the recorded presentation.

OBJECTIVES

Upon completion of this self-instructional unit, you should be able to meet the following learning objectives:

1. State that the January 31, 1973, decision by the U.S. District Court of Appeals was in large part the reason for EPA's requirement for specific maintenance provisions in all state implementation plans.

2. Identify the two main requirements of the regulations promulgated by EPA on June 18, 1973, for (1) localized and (2) area-wide maintenance of standards--(1) procedures for individual source review and (2) 10-year maintenance plans where necessary for designated air quality maintenance areas.

3. Define "indirect source" and give examples.

4. Identify six of the elements required for an acceptable SIP revision for review of indirect sources.

5. Identify major areas of controversy concerning the indirect source review regulations.

6. State that different sizes of indirect sources are subject to review within an SMSA than those outside of an SMSA.

7. Identify items of information which must be included in an application to construct or modify an indirect source.

8. State that an indirect source may not be constructed or modified if the reviewing agency finds that it will interfere with attainment or maintenance of a national standard or violate a state's control strategy.

9. Identify the conditions which may be imposed on an approval to construct or modify an indirect source.

10. Name the automotive-related pollutant for which an analysis must be conducted in reviewing all indirect sources; name the two other pollutants which must be analyzed in reviewing airports and large highways.

11. Identify the criteria on which the reviewing agency's determinations must be based.

12. State that the regulations provide for adequate opportunity for public comment on review of applications to construct or modify indirect sources.

13. Define and identify the terms for the following abbreviations: AQCR, AQMA, AQMP, SMSA, NAAQS.

14. List the sequence of tasks to be accomplished in development of 10-year maintenance plans.

15. State that the first task in designation of AQMA's is to differentiate between obvious problem and non-problem areas and identify the criteria for doing so.

16. Cite three of the reasons for always considering SMSA's for possible designation as AQMA's.

17. State that AQMA designations should be pollutant-specific and that the analysis need be done for only those pollutants specified.

18. Identify the factors that should be considered in deciding upon the particular boundaries of the AQMA.

19. Name the five pollutants for which standards have been set that must be considered in designation of AQMA's.

20. State that AQMA's may have the boundaries changed or may be "de-designated" if detailed analysis indicates that national standards are not in jeopardy during the next ten years.

MAINTENANCE OF STANDARDS

This term has attracted a great deal of attention since the early part of 1973. "Maintenance of air quality standards" involves measures to prevent a national ambient air quality standard from being exceeded once such a standard is attained in 1975 or at some other time. Regulations were promulgated by EPA on June 18, 1973, requiring states to include specific maintenance measures in their implementation plans.

COURT DECISION

U.S. Court of Appeals for the District of Columbia

Natural Resources Defense Council, Inc., et al
v.
Environmental Protection Agency
(and seven other related cases)

Filed January 31, 1973

In view of the competing contentions with respect to whether or not each state plan approved by the Administrator provided for maintenance of the primary and secondary standards beyond the May 31, 1975, attainment date, and in view of the absence of any definite indication in the present record as to whether or not such a state-by-state determination was made, the Administrator shall, within 30 days from the date of this order, review the maintenance provisions of all state implementation plans presently approved. Those plans which do not provide for measures necessary to insure the maintenance of the primary standard after May 31, 1975, and those plans which do not analyze the problem of maintenance of standards in a manner consistent with applicable regulations . . . shall be disapproved. In such a case, the state should be directed to prepare a new implementation plan for maintenance of standards by April 15, 1973.*

*This date was later appealed and changed to August 15, 1973, to give the states time to prepare plan revisions.

EVOLVEMENT OF THE MAINTENANCE REGULATIONS

January 31, 1973

U.S. District Court of Appeals ordered the Administrator of the Environmental Protection Agency to review all state implementation plans (SIP's) and to require revisions of those not containing specific provisions to ensure maintenance of air quality standards.

March 8, 1973

After review of all SIP's, the Administrator found that none contained adequate maintenance provisions and, therefore, disapproved them all. (38 FR 6280) Although there already existed such measures as new source review procedures, new source performance standards, emission standards for new motor vehicles, and the authority of the Administrator to call for revision of SIPs when necessary to maintain standards, it was determined that such measures alone were not adequate.

EPA issued an advance notice of proposed rulemaking that would require revisions to SIP's to include provisions for indirect source review. (38 FR 6279)

April 18, 1973

EPA proposed regulations that would require SIP revisions to provide for indirect source review. (38 FR 9600)

June 18, 1973

EPA promulgated final regulations requiring SIP's to provide for indirect source review and long-term maintenance plans. (38 FR 15835)

MAINTENANCE REGULATIONS
PROMULGATED JUNE 18, 1973
(38 FR 15835)

Legal Authority

State must have authority to prevent construction, modification, or operation of a facility, building, structure, or installation, which directly or indirectly results or may result in emissions of any air pollutant at any location which will prevent the attainment or maintenance of a national standard. (40 CFR 51.11)

Procedural Matters in Developing Indirect Source Review Measures

Discussed in detail later in the unit and described on pages 11 and 12. (40 CFR 51.18)

General Growth Analysis

Discussed in detail later in the unit and described on page 30. (40 CFR 51.12)

REQUIREMENT FOR SPECIFIC GROWTH ANALYSIS IN IMPLEMENTATION PLANS

April 18, 1973

"Though not required by the proposed amendments to 40 CFR 51.18, greater state and local attention to the regional air quality impact of growth clearly would be desirable in the long run. State and local agencies are encouraged to initiate efforts to make a careful analysis of projected growth of population, industrial activity, and use of motor vehicles and estimate how such growth is likely to affect air quality." (38 FR 9600)

June 18, 1973

"In the preamble to the proposed amendments, the Administrator called attention to the importance of analyzing the general growth of population, industrial activity, and mobile sources in relation to regional air quality. The Administrator did not propose to require such analysis, but urged that states consider the use of such procedures. A number of comments were received urging that such analysis be required on the ground that the preconstruction review of individual sources could not adequately deal with generalized growth and its impact on regional air quality. It is the Administrator's judgment that such procedures, in addition to review of new or modified sources, are necessary to insure maintenance of the national standards, particularly because source-by-source analysis is not an adequate means of evaluating, on a regional scale, the air quality impact of growth and development." (38 FR 15834)

QUESTIONS

1. Regulations promulgated on June 18, 1973, by EPA requiring that all state implementation plans include provisions for maintenance of standards resulted in part from the January 31, 1973, decision by the U.S. District Court of Appeals in the case of NRDC vs. EPA (and seven other related cases).
   True_____ False_____

2. The two main requirements of the June 18, 1973, regulations on maintenance are stated below. Identify which of the two is localized and which is area-wide in nature.

   Procedures for individual source review

   (a) localized
   (b) area-wide

   10-year maintenance plans where necessary for designated Air Quality Maintenance Areas.

   (a) localized
   (b) area-wide

3. Why did EPA consider it necessary to require states to develop 10-year maintenance plans in addition to requirements for review of individual sources?

ANSWERS

1. True

2. Procedures for indirect source review involve measures to assure maintenance of standards on a localized basis, within the vicinity of the source.

   The 10-year maintenance plans involve methods for assuring maintenance of standards on an area-wide or regional basis by controlling the impact of growth on air quality.

3. EPA required states to develop 10-year maintenance plans as well as individual source review procedures "because source-by-source analysis is not an adequate means of evaluating, on a regional scale, the air quality impact of growth and development." (38 FR 15834)

INDIRECT SOURCES

An "indirect source" is a facility, building, structure, or installation which causes or may cause mobile source activity that results in emissions of a pollutant for which there is a national standard. Indirect sources include, but are not limited to, the following:

Highways and roads
Parking facilities
Retail, commercial and industrial facilities
Recreation, amusement, sports, and entertainment facilities
Airports
Office and government buildings
Apartment and condominium buildings
Education facilities

INDIRECT SOURCE REVIEW TIMETABLE

January 31, 1973	U.S. Court of Appeals for the District of Columbia orders EPA to review all SIP's with respect to maintenance.
March 8, 1973	EPA disapproves all SIP's due to their lack of indirect source review provisions. (38 FR 6279)
April 18, 1973	EPA proposes indirect source review regulations. (38 FR 9599)
June 18, 1973	EPA promulgates regulations requiring revisions of SIP's to include provisions for area-wide maintenance of standards and review of indirect sources. (38 FR 15834)
August 15, 1973	Deadline for states' submittal of SIP revisions to include indirect source review procedures.
October 15, 1973	Deadline for EPA review and approval or disapproval of SIP revisions.
October 30, 1973	EPA proposes indirect source review procedures for all states not submitting approvable SIP revisions. (38 FR 29893)
February 25, 1974	EPA promulgates indirect source review procedures for all states except Florida and Guam. (39 FR 7270)

ELEMENTS OF AN ACCEPTABLE SIP REVISION FOR INDIRECT SOURCE REVIEW

(38 FR 15836; 40 CFR 51.18)

1. The plan must contain legally enforceable procedures by which a state or local agency can determine if construction or modification of a facility will either directly or indirectly interfere with attainment or maintenance of a national standard or violate a control strategy.

2. If the agency determines that a standard will be exceeded or a control strategy violated, it must have the authority to prevent construction or modification of the facility.

3. In order for the agency to make its determination, the owner or operator of the facility may be required to furnish information on the nature and amounts of emissions from the source and/or from associated mobile sources. The owner may also be required to provide information on the location, design, construction, and operation of the facility.

4. The plan must make it clear that approval of any construction or modification shall not relieve responsibility of the owner or operator to comply with applicable portions of the control strategy. For example, if after approval for construction of a regional shopping center, it becomes obvious that the traffic generated will interfere with the existing transportation control plan, the owner or operator of the shopping center must work out some arrangement to comply with that plan, perhaps by providing mass transportation for customers and employees.

5. The plan must identify the state or local agency responsible for meeting the indirect source review requirements. EPA does not require that it be the air pollution control agency. However, if another agency is designated, it must consult with the appropriate state or local air pollution control agency in carrying out the review provisions. In such a case, the air pollution control agency should have considerable input prior to a final decision by the designated agency on whether or not to allow construction or modification of an indirect source. The state plan should include a description of how this would be done and exactly how much influence the air pollution control agency would have in the final decision.

6. The plan must identify the types and sizes of sources that will be classified as indirect sources subject to review and discuss the basis for their selection. This identification will vary considerably, depending on local considerations and on whether or not the source is located in a designated air quality maintenance area. Generally, review procedures should cover any facility which can reasonably be expected to cause sufficient mobile source activity so that the resulting emissions might be expected to interfere with the attainment or maintenance of a national standard. The sources listed on page 10 would normally fit this category, regardless of location or local conditions.

7. The plan must include administrative procedures to be followed in determining whether or not there is potential for violation of a national standard.

8. The plan must require the state or local agency to provide opportunity for public comment on 1) the information submitted by the owner or operator, and 2) on the Agency's analysis of the effect of the source's construction on ambient air quality, including the agency's proposed approval or disapproval. This information must be available for public inspection in at least one location in the region affected with notice by prominent advertisement of the location. The notice of availability must also be sent to the EPA Administrator through the appropriate regional office, to all other state and local air pollution control agencies having jurisdiction in the affected region, and to any other agency in the region having responsibility for implementing indirect source review procedures. A 30-day period for submittal of public comment must be allowed unless it would conflict with the state's existing requirements for acting on requests for permission to construct or modify. In such a case, the state may submit for approval a comment period consistent with existing requirements.

QUESTIONS

1. An indirect source is:

   _____a. A facility, building, structure, or installation which may cause interference with attainment or maintenance of a national standard because of its pollutant emissions.

   _____b. A facility, building, structure, or installation which causes or may cause mobile source activity that results in emissions of a pollutant for which there is a national standard.

   _____c. Any mobile source of pollutant emissions, such as automobiles, trucks, buses, airplanes, etc.

   _____d. None of the above.

2. Which of the following are examples of indirect sources?

   _____a. Highways and roads

   _____b. Parking facilities

   _____c. Automobiles

   _____d. Sports stadiums

   _____e. All of the above

   _____f. a, b, and d

3. State whether the following statements are true or false in reference to an acceptable plan revision for indirect source review.

   a. Plan must provide that the agency have authority to prevent construction or modification of an indirect source if necessary.
   True_____ False_____

   b. Plan must provide that the source owner or operator is not required to submit information on nature and amounts of emissions or on location, design, construction, and operation of source.
   True_____ False_____

   c. Plan must provide that approval to construct or modify exempts source owner or operator from compliance with control strategy.
   True_____ False_____

   d. Plan must identify state or local agency responsible for meeting the indirect source review requirements.
   True_____ False_____

   e. Plan must identify the types and sizes of sources subject to review
   True_____ False_____

   f. Plan need not provide for public comment.
   True_____ False_____

ANSWERS

1. An indirect source is

   (b) a facility, building, structure, or installation which causes or may cause mobile source activity that results in emissions of a pollutant for which there is a national standard.

2. Examples of indirect sources include the following:

   (a) Highways and roads

   (b) Parking facilities

   (d) Sports stadiums

   The answer is (f).

3. a. True

   b. False

   c. False

   d. True

   e. True

   f. False

PUBLIC COMMENTS ON INDIRECT SOURCE REVIEW REGULATIONS

COMMENT: EPA does not have the legal authority to require indirect source review.

EPA REPLY: "Several comments were received which questioned whether EPA has legal authority to promulgate requirements for review of the indirect impact of new or modified sources, i.e., the impact arising from associated mobile source activity. Essentially, the argument was made that EPA's authority in this regard is limited to requiring an assessment of the air quality impact of pollutants emitted directly from stationary sources. EPA believes that this argument is inconsistent with the provisions of section 110(a)(2)(B), which requires that implementation plans include " . . . such other measures as may be necessary to insure attainment and maintenance of such primary and secondary standard, including, but not limited to, land-use and transportation controls." In the Administrator's judgment, review of the indirect impact of new or modified sources is just as necessary to insure maintenance of the national standards as is review of the direct impact." (38 FR 15835)

COMMENT: States do not have the legal authority to implement the regulations promulgated by EPA.

EPA REPLY: "It is recognized that many states do not yet have adequate legal authority to approve or disapprove construction or modification of indirect sources. EPA regulations in 40 CFR 52.02(d), published May 31, 1972, (37 FR 10842) provide that any regulatory provisions of a state implementation plan approved or promulgated by EPA are enforceable by EPA and the state and by local agencies in accordance with their assigned responsibilities under the state plan. Thus, these proposed regulations would be enforceable by state and local agencies designated by a Governor to be responsible for indirect source review." (38 FR 29894)

COMMENT: Indirect source review will severely limit growth and development.

EPA REPLY: The purpose of the regulations is not to preclude development except in those rare cases in which no accommodation with air quality maintenance can be reached. Applications for most sources subject to review will probably be approved.

COMMENT: EPA is infringing on rights of states and localities and trying to dictate how their land should be used.

EPA REPLY: The regulations do not dictate ways in which land may be used, but they do require such use to be compatible with the maintenance of national ambient air quality standards. Furthermore, EPA has repeatedly urged states to develop their own review procedures, taking into consideration local situations which cannot adequately be accounted for in EPA's promulgation.

COMMENT: The regulations ignore social and economic considerations and require approval decisions to be based solely on air quality considerations.

EPA REPLY: While it is true that one criterion for approval or disapproval of a source's application to construct is the source's potential effect on air quality, it is also true that this determination is only one necessary step among many other measures already established in review of building applications. EPA believes that these regulations will not cause serious social or economic disruption. Such considerations were taken into account during the rule-making process.

COMMENT: Urban renewal and redevelopment projects should be exempted from review once the project has begun.

EPA REPLY: " . . . it would not be consistent with the purpose of the Act or these regulations to allow any major indirect source subject to these regulations and which commences construction on or after January 1, 1975, to be exempt from review." (39 FR 7273)

" . . . the Administrator feels that any disruptive effect on urban renewal projects caused by these regulations should be minimal. Indirect sources for which on-site grading or construction work is begun before January 1, 1975, will not be subject to review. For those sources that will be reviewed, it should again be stressed that the primary emphasis of these regulations is to ensure that facilities will be designed properly in accordance with air quality considerations. It should be necessary to deny an approval only in unusual situations where it is impossible to construct a facility with design or other traffic-related conditions imposed so as to meet the tests for review." (39 FR 7273)

COMMENT: The effective date of the regulations and the stage of construction at which a source would be subject to review are unjustified.

EPA REPLY: It was the intent of Congress that parking facilities not be subject to review until January 1, 1975. The stage of construction at which a source would be subject to review was based on (1) consideration of economic disruption for developers, and (2) the desirability of prohibiting otherwise eligible sources from escaping review (those which may have entered into a general construction contract by the effective date but had not made plans to actually begin construction for several months or years to come).

TYPES OF INDIRECT SOURCES SUBJECT TO REVIEW
(39 FR 7276; 40 CFR 52.22(b)(1))

Airports
Parking facilities
Highways and roads
Education facilities
Office and government buildings
Apartment and condominium buildings
Retail, commercial, and industrial facilities
Recreation, amusement, sports, and entertainment facilities

SIZES OF INDIRECT SOURCES SUBJECT TO REVIEW
(39 FR 7277; 40 CFR 52.22(b)(2))

Parking Facilities

I. Those located in an SMSA*

A. Any new parking facility, or other new indirect source with an associated parking area, with a parking capacity of 1,000 cars or more.

B. Any modified parking facility, or any modification of an associated parking area, which increases parking capacity by 500 cars or more.

II. Those located outside an SMSA

A. Any new parking facility or other new indirect source with an associated parking area, with a parking capacity of 2,000 cars or more.

B. Any modified parking facility, or any modification of an associated parking area, which increases parking capacity by 1,000 cars or more.

Highway Sections

I. Those located in an SMSA

A. Any new highway section with an anticipated average annual daily traffic volume of 20,000 or more vehicles per day within ten years of construction.

B. Any modified highway section which will increase average annual daily traffic volume by 10,000 vehicles per day within ten years after modification.

*SMSA is an abbreviation for Standard Metropolitan Statistical Area as designated by the U.S. Bureau of the Budget. An SMSA may be defined as a county or group of contiguous counties which contains at least one central city of 50,000 inhabitants or more or "twin cities" with a combined population of at least 50,000.

II. Those located outside an SMSA

With respect to highways, air quality problems would rarely be caused outside of urbanized areas. Highways generally connect one or more urbanized areas somewhere along their length and the regulation is written so as to focus the review on the most critical points along the highway, where the traffic volume and "background" concentrations are the greatest.

Airports

Any airport, the construction or general modification of which is expected to result in the following activity within ten years of construction or modification:

I. New airport

A. 50,000 or more operations* per year by regularly scheduled air carriers; or

B. Use by 1,600,000 or more passengers per year

II. Modified airport

A. Increase of 50,000 or more operations per year by regularly scheduled air carriers over the existing volume of operations; or

B. Increase of 1,600,000 or more passengers per year

CONSTRUCTION OR MODIFICATION OF A SOURCE IN SMALL INCREMENTS
(39 FR 7277; 40 CFR 52.22(b)(2))

"Where an indirect source is constructed or modified in increments which individually are not subject to review under this paragraph, all such increments occurring since the effective date of this regulation, or since the latest approval hereunder, whichever date is most recent, shall be added together for determining the applicability of this paragraph."

*The term "aircraft operation" means an aircraft take-off or landing.

INFORMATION REQUIRED OF SOURCE OWNER OR OPERATOR
(39 FR 7277; 40 CFR 52.22(b)(3))

For all indirect sources other than highways

1. The *name and address* of the applicant.

2. A *map* showing the location of the site and the topography of the area.

3. A *description of the proposed use of the site*, including the normal hours of operation of the facility, and the general types of activities to be operated therein.

4. A *site plan* showing the location of associated parking areas, points of motor vehicle ingress and egress to and from the site and its associated parking areas, and the location and height of buildings on the site.

5. An *identification of the principal roads, highways, and intersections* that will be used by motor vehicles moving to or from the indirect source.

6. An estimate, as of the date of the application, of the *average daily traffic volumes, peaking characteristics, and levels of service at controlled intersections* to be used by motor vehicles moving to or from the source located within one-fourth mile of all boundaries of the site.

7. An estimate of the *average daily vehicle trips*, and the peaking characteristics of such trips, required to move people to and from the source during the first year after the date all aspects of the indirect source are completed and open for business or fully operational.

8. An estimate of the *maximum nurber of vehicle trips* that would occur within one-hour and eight-hour periods during the first year after completion.

9. An estimate of the *average daily traffic volumes, peaking characteristics, and levels of service* that would occur at the intersections used by motor vehicles moving to or from the source during the first year after completion.

10. *Availability of existing and projected mass transit* to service the site.

11. *Any additional information or documentation* that the Administrator deems *necessary* to determine the air quality impact of the indirect source, including the submission of measured air quality data at the proposed site prior to construction or modification. This monitoring shall be limited to carbon monoxide and shall be conducted for a period of not more than 14 days.

For airports

1. All information required for other indirect sources.

2. An estimate of the average number and maximum number of aircraft operations per day by type of aircraft during the first, fifth, and tenth years after the date of expected completion.

3. A description of the commercial, industrial, residential, and other developments that the applicant expects will occur within three miles of the perimeter of the airport within the first five and the first ten years after the date of expected completion.

4. Expected passenger loadings at the airport.

For highway sections

1. A description of the average and maximum traffic volumes for one eight, and 24-hour time periods expected within ten years of expected date of completion.

2. An estimate of vehicle speeds for average and maximum traffic volume conditions.

3. A map showing the location of the highway section, including the location of buildings along the right-of-way.

4. A description of the general features of the highway section and associated right-of-way, including the approximate height of buildings adjacent to the highway.

5. Any additional information necessary for a determination of the air quality impact of the highway construction.

DETERMINATIONS WHICH MUST BE MADE BY REVIEWING AGENCY
(39 FR 7277; 40 CFR 52.22(b)(4-6))

For all indirect sources other than airports and highway sections, approval to construct or modify the source may not be granted if it is found that the source will:

1. cause a violation of the control strategy of the state implementation plan;
2. delay the attainment of the national standards for carbon monoxide beyond the target attainment date; or
3. cause a violation of the carbon monoxide standards after the attainment date has passed.

For airports subject to review, approval to construct or modify may not be granted if it is found that the source will:

1. cause a violation of the control strategy of the state implementation plan;
2. delay the attainment of the national standards for carbon monoxide, photochemical oxidants, and nitrogen dioxide beyond the target attainment date; or
3. cause violations of the national standards for these three pollutants after the attainment date has passed.

For a new highway section with an anticipated average annual daily traffic volume of 20,000 or more vehicles per day within ten years of construction or a highway section which will increase the volume by 10,000 vehicles per day within ten years of modification, approval to construct or modify may not be granted if it is found that the source will:

1. cause a violation of the control strategy of the state implementation plan
2. delay the attainment date for the national standards for carbon monoxide beyond the target attainment date; or
3. cause a violation of the carbon monoxide standards after the attainment date has passed.

For a new highway section with an anticipated average annual traffic volume of 50,000 or more vehicles per day within ten years of construction, or any modification to a highway section which will increase average annual daily traffic volume by 25,000 vehicles or more per day within ten years after modification, approval to construct or modify may not be granted if it is found that the source will:

1. cause a violation of the control strategy of the state implementation plan;
2. delay the attainment of the national standards for carbon monoxide, photochemical oxidants, or nitrogen dioxide beyond the target attainment date; or
3. cause a violation of the standards for carbon monoxide, photochemical oxidants, or nitrogen dioxide after the attainment date has passed.

CRITERIA TO BE USED BY REVIEWING AGENCY IN
DETERMINING EFFECT OF INDIRECT SOURCES ON AIR QUALITY
(39 FR 7277; 40 CFR 52.22(b)(4-6))

Indirect Sources other than highways and airports

For all indirect sources other than highway sections and airports, the determination may be based on whether the proposed source will be constructed or modified in accordance with sound design practices to produce traffic flow characteristics which would not result in violations of the carbon monoxide standards in the vicinity of the source. These traffic flow characteristics may include, but not be limited to, the following:

1. Minimizing vehicle running time within parking lots through the use of sound parking lot design.

2. Ensuring adequate gate capacity by providing for the proper number and location of entrances and exits and optimum signalization for such.

3. Limiting traffic volume so as not to exceed the carrying capacity on roadways significantly affected by the indirect source.

4. Limiting the level of service at controlled intersections significantly affected by the indirect source.

In cases where the use of the traffic flow characteristics would not be compatible with the tests for review under the regulation, the agency must consider a diffusion model in making the final determination. In cases where the developer does not believe that the traffic flow characteristics are necessary in order to ensure attainment and maintenance of the national standards for carbon monoxide, the developer may submit with his application the results of a diffusion model to support his contention.

Airports

To determine whether the construction or modification of an airport will interfere with attainment or maintenance of national standards for carbon monoxide, photochemical oxidants, or nitrogen dioxide, two analyses must be performed.

1. All emissions from stationary and mobile sources at the airport, along with emissions from the development of other new indirect sources expected to occur within three miles of the airport, must be added together in order to determine the aggregate impact on air quality for the ten-year period following the expected date of completion.

2. An area-wide air quality analysis, or other modeling technique approved by the Administrator, must be used to determine the expected ambient concentrations of carbon monoxide, photochemical oxidants, and nitrogen dioxide following construction or modification.

Roadways and parking facilities associated with airports should also be reviewed for their localized impact on carbon monoxide concentrations in addition to the area-wide review for carbon monoxide, photochemical oxidants, and nitrogen dioxide.

Highway Sections

The determination for all highway sections subject to review under the regulations must be made using an appropriate atmospheric diffusion model. The air quality impact of expected carbon monoxide emissions resulting from the maximum traffic volume should be evaluated for the ten-year period following the expected date of completion. The air quality impact should be determined at reasonable receptor or exposure sites which means locations where people might reasonably be exposed for time periods consistent with the national ambient air quality standards.

The expected concentrations of carbon monoxide, photochemical oxidants, and nitrogen dioxide must be estimated for the ten-year period following completion of construction or modification for:

1. Any new highway section with an anticipated average annual daily traffic volume of 50,000 or more vehicles per day within ten years of construction; or

2. Any modification to a highway section which will increase average annual daily traffic volume by 25,000 or more vehicles per day within ten years after modification.

To estimate these future concentrations, an area-wide air quality analysis or other modeling technique approved by the Administrator must be used.

CONDITIONS WHICH MAY BE IMPOSED BY REVIEWING AGENCY ON PERMIT TO CONSTRUCT OR MODIFY INDIRECT SOURCE (39 FR 7279; 40 CFR 52.22(b)(9-10))

1. Binding commitments to roadway improvements or additional mass transit facilities to serve the indirect source. These commitments should be secured by the owner or operator from the appropriate governmental agencies having jurisdiction.

2. Binding commitments by the owner or operator to specific programs for mass transit incentives for employees and patrons of the source.

3. Binding commitments by the owner or operator to construct, modify, or operate the indirect source in such a manner as may be necessary to achieve the traffic flow characteristics published by EPA.

4. Extent to which the indirect source may be further modified without resubmission for approval.

ADDITIONAL PROVISIONS CONCERNING RESPONSIBILITIES OF APPLICANT (39 FR 7279; 40 CFR 52.22(b)(11-13))

- An owner or operator of an indirect source who fails to construct and operate an indirect source in accordance with the application as approved and conditioned by the Administrator shall be subject to the penalties specified under section 113 of the Clean Air Act and shall be considered in violation of an emission standard or limitation. The same holds true for an owner or operator who commences construction or modification without applying for and receiving approval.

- Approval to construct or modify shall become invalid if construction or modification is not commenced within 18 months after receipt of approval. This provision is included to ensure that additional growth in the vicinity of the proposed facility would not invalidate the air quality impact calculations on which the original approval was based.

- The granting of approval to construct or modify an indirect source does not relieve the owner or operator of responsibility to comply with the control strategy and all local, State, and Federal regulations which are part of the applicable plan. If, after construction of a source, it is found that the predictions were inaccurate and that a control strategy is being violated, some arrangement would need to be worked out to bring the source back into compliance again.

PROCEDURES INVOLVED IN REVIEWING AN APPLICATION
TO CONSTRUCT OR MODIFY AN INDIRECT SOURCE
(39 FR 7278; 40 CFR 52.22(b)(8))

Upon receipt of an application, the Administrator must advise the owner or operator, within 20 days, of any deficiency in the information submitted in support of the application. In the event of such a deficiency, the date of receipt of the application shall be the date on which the required information is received by the Administrator.

↓ 30 days*

1. The Administrator must make a preliminary determination whether to approve, approve with conditions, or disapprove the indirect source.

2. The Administrator must make available in at least one location in each affected region: (a) a copy of all materials submitted by the owner or operator of the source; (b) a copy of the Administrator's preliminary determination; and (c) a copy or summary of other materials used in making the determination.

3. The public must be notified, by prominent advertisement in the newspaper, of the opportunity for written public comment. A copy of this notice must be sent to officials and agencies having cognizance over the location where the indirect source will be located (state and local air pollution control agencies, the chief executive of the city and county, any comprehensive regional land use planning agency, and any local board or committee responsible for activities in the conduct of the urban transportation planning process).

↓ 30 days*

Public comments must be submitted and made available for public inspection.

↓ 30 days*

The Administrator must take final action on the application. The applicant must be notified in writing of approval, conditional approval, or denial, with reasons for conditional approval or denial. This notification must also be made available for public inspection.

*Each of the time periods involved in the review process may be extended by the Administrator by no more than 30 days, or such other period as agreed to by the applicant and the Administrator, to allow for more time to make often complex and difficult technical decisions.

QUESTIONS

1. There has been much discussion and disagreement on the subject of EPA's legal authority to require indirect source review. This authority is based on:

   _____a. A Supreme Court decision in a suit brought against EPA by a citizen's group.

   _____b. Section 110 of the Clean Air Act of 1970.

   _____c. An executive order of the President.

2. There has been criticism of EPA's indirect source review regulations. The critics contend that growth and development will be severely limited and that EPA is infringing on rights of states and localities in dictating how their land can be used. In response to this criticism, EPA replies that:

   _____a. The critics are absolutely right, but EPA has no choice

   _____b. The critics are right, but EPA feels that Federal control is necessary since states and localities won't do anything on their own.

   _____c. The critics misunderstand the purpose of the regulations, which is not to limit growth, but to insure that growth and development is consistent with air quality considerations. EPA encourages states to develop and implement their own regulations as soon as possible, so that local situations may be more fully taken into consideration.

3. The sizes of indirect sources subject to review vary depending on whether they are located within or outside of an SMSA.
   True_____ False_____

4. Which of the following items must be included in the information which the applicant must submit to the reviewing agency?

   _____a. A map showing the location of the site and the topography of the area.

   _____b. An analysis of the air quality impact of the source.

   _____c. An identification of principal roads, highways, and intersections to be used by motor vehicles moving to or from the source.

   _____d. An estimate of the maximum number of vehicle trips that would occur within one-hour and eight-hour periods during the first year after completion.

   _____e. All of the above.

   _____f. a, c, and d.

5. If it is determined that construction or modification of an indirect source would interfere with attainment or maintenance of a national standard, approval of the application must be denied. However, certain conditions relating to air quality aspects may be imposed in order to grant approval of the application. Which of the following is not a condition allowed by the regulations?

_____a. Binding commitments by the owner or operator to specific programs for mass transit incentives for employees and patrons of the source.

_____b. Binding commitments by the owner or operator to construct, modify, or operate the indirect source in such a manner as may be necessary to achieve the traffic flow characteristics published by EPA.

_____c. Binding commitments by the owner or operator to conduct post-construction air quality monitoring.

6. Name the three major automotive-related pollutants discussed in this section.

Which of the three must be analyzed in reviewing all indirect sources?

Which of the three must be analyzed in reviewing airports and large highways?

7. Select from the following the criteria which must be used by the review agency in determining the effect of indirect sources on air quality.

_____a. Will the indirect source be constructed or modified in accordance with sound design practices to produce traffic flow characteristics considered necessary by EPA?

_____b. What will the aggregate impact on air quality be of all emissions from stationary and mobile sources at an airport and from other new indirect sources within three miles of an airport over the ten-year period following the completion of the airport?

_____c. As determined by use of an atmospheric diffusion model, what will be the air quality impact of expected carbon monoxide emissions resulting from the maximum traffic volume for the ten-year period following completion of a highway section?

8. The regulations do not provide for adequate opportunity for public comment on review of applications to construct or modify indirect sources.
True_____ False_____

ANSWERS

1. The answer is (b). Section 110(a)(2)(B) of the Clean Air Act requires that implementation plans include " . . . such other measures as may be necessary to insure attainment and maintenance of such primary and secondary standard, including, but not limited to, land-use and transportation controls."

2. The answer is (c).

3. True

4. The answer is (f). The applicant is not required to conduct an analysis of the air quality impact of the source. Such an analysis should be performed by the reviewing agency.

5. The answer is (c). The owner or operator cannot be required to conduct post-construction air quality monitoring. If the reviewing agency considers such monitoring necessary, it should conduct the monitoring.

6. The three pollutants are carbon monoxide, photochemical oxidants, and nitrogen dioxide.

   The pollutant which must be analyzed in <u>all</u> indirect source reviews is carbon monoxide.

   Photochemical oxidants and nitrogen dioxide must be analyzed (in addition to carbon monoxide) in any review of airports or large highways.

7. All three answers, a, b, and c, are correct.

8. False.

COMMON TERMS AND ABBREVIATIONS

AQCR (Air Quality Control Region)

A geographic area designated by EPA, or by the State and approved by EPA, for the purpose of planning a control strategy to ensure the attainment and maintenance of national ambient air quality standards.

AQMA (Air Quality Maintenance Area)

An area designated by an appropriate state agency and approved by EPA or designated by EPA as one which has the potential of exceeding a national ambient air quality standard within the next ten years.

SMSA (Standard Metropolitan Statistical Area)

Defined by the Bureau of the Budget as a county or group of contiguous counties which contains at least one central city of 50,000 inhabitants or more or "twin cities" with a combined population of at least 50,000.

NAAQS (National Ambient Air Quality Standards)

Standards that have been set by EPA for certain pollutants considered dangerous to the public health or welfare.

AQMP (Air Quality Maintenance Plan)

A plan developed for each designated AQMA to prevent any national standards from being exceeded over the subsequent ten-year period.

REGULATIONS REQUIRING 10-YEAR MAINTENANCE PLANS

Promulgated June 18, 1973

(38 FR 15836)

(e) The plan shall identify those areas (counties, urbanized areas, standard metropolitan statistical areas, et cetera) which, due to current air quality and/or projected growth rate, may have the potential for exceeding any national standard within the subsequent 10-year period.

(1) For each such area identified, the plan shall generally describe the intended method and timing for producing the analysis and plan required by paragraph (g) of this section.

(2) The area identification and description of method and timing required by this paragraph shall be submitted no later than 9 months following the effective date of this paragraph.

(3) At 5-year intervals, the area identification shall be reassessed to determine if additional areas should be subject to the requirements of paragraph (g) of this section.

(f) Based on the information submitted by the States pursuant to paragraph (e) of this section, the administrator will publish, within 12 months of the effective date of this paragraph, a list of the areas which shall be subject to the requirements of paragraph (g) of this section.

(g) For each area identified by the administrator pursuant to paragraph (f) of this section, the State shall submit, no later than 24 months following the effective date of this paragraph, the following:

(1) An analysis of the impact on air quality of projected growth and development over the 10-year period from the date of submittal.

(2) A plan to prevent any national standards from being exceeded over the 10-year period from the date of plan submittal. Such plan shall include, as necessary, control strategy revisions and/or other measures to insure that projected growth and development will be compatible with maintenance of the national standards throughout such 10-year period. Such plan shall be subject to the provisions of § 51.8 of this part.

(h) Plans submitted pursuant to paragraph (g) of this section shall be reanalyzed and revised where necessary at 5-year intervals.

TIMETABLE FOR PLAN DEVELOPMENT

May 10, 1974	States' submittal to EPA of identification of Air Quality Maintenance Areas (AQMA's)
August 16, 1974	EPA publication of list of AQMA's
June 18, 1975	States' submittal to EPA of: (1) Analysis of impact on air quality of projected growth in AQMA's. (2) Plan to prevent any national ambient air quality standard from being exceeded over the ensuing 10-year period.
1980, 1985, 1990, etc.	Plans to be re-analyzed and revised where necessary at 5-year intervals. New AQMA's may be designated.

QUESTIONS

1. Match the terms in the first list with the definitions in the second list below.

   _____a. AQCR
   (Air Quality Control Region)

   _____b. AQMA
   (Air Quality Maintenance Area)

   _____c. SMSA
   (Standard Metropolitan Statistical Area)

   _____d. NAAQS
   (National Ambient Air Quality Standards)

   _____e. AQMP
   (Air Quality Maintenance Plan)

   (1) An area designated by an appropriate state agency and approved by EPA or designated by EPA as one which has the potential of exceeding a national ambient air quality standard within the next ten years.

   (2) Standards that have been set by EPA for certain pollutants considered dangerous to the public health or welfare.

   (3) A geographic area designated by EPA, or by the State and approved by EPA, for the purpose of planning a control strategy to ensure the attainment and maintenance of national ambient air quality standards.

   (4) A county or group of contiguous counties which contain at least one central city of 50,000 inhabitants or more or "twin cities" with a combined population of at least 50,000.

   (5) A plan developed for each designated AQMA to prevent any national standards from being exceeded over the subsequent ten-year period.

2. Choose the correct sequence in which the following tasks are required in developing 10-year maintenance plans.

   _____a. 3, 2, 1, 4

   _____b. 3, 1, 2, 4

   _____c. 1, 2, 3 4

   1. States submit to EPA an analysis of AQMAs and 10-year plan.
   2. EPA publishes list of designated AQMAs.
   3. States submit to EPA their list of AQMAs.
   4. Plans are re-analyzed and revised where necessary.

ANSWERS

1. a. (3)

   b. (1)

   c. (4)

   d. (2)

   e. (5)

2. The answer is (a).

DESIGNATION
OF
AIR QUALITY MAINTENANCE AREAS

Each state must designate areas in which there is potential for exceeding a national standard within the next 10 years. All state and local agencies concerned should be consulted before final designations are made.

INITIAL DESIGNATION CRITERIA

Elimination of Obvious Non-Problem Areas

SMSA's which meet the following criteria may be automatically excluded from consideration as an AQMA for the particular pollutant; supporting information must substantiate this exclusion.

1. Particulate Matter

SMSA's which are located in AQCR's where data for the past two years indicates the AQCR is below all NAAQS.

2. Sulfur Dioxide

SMSA's which are located in AQCR's where data for the past two years indicates that the AQCR is below all NAAQS and the product of (a) the air quality concentration in the base year and (b) the relative growth in SMSA total earnings between the base year and 1985 is less than the NAAQS.

3. Carbon Monoxide

SMSA's whose CO concentration varies from 10 to 35 ppm (8-hour concentration) depending upon the mix of light-duty and heavy-duty vehicles in use in the area. To determine which SMSA's would be excluded from consideration as an AQMA:

(a) Estimate the percent contribution of CO emissions from light-duty vehicles (LDV) to total mobile source CO emissions on heavily used, central city streets; choose the LDV contribution which is representative of the local area in the vicinity of the air quality monitoring site.

(b) Locate the point on the graph on page 36 corresponding to the highest measured 8-hour CO concentration in the central city in 1970 and the LDV contribution to local mobile source emissions estimated under (a) above.

(c) If the intersection determined in (b), above, lies on or below the curve, the area may be automatically eliminated from consideration as an AQMA; if the point lies above the curve, a more in-depth analysis would be required.

4. Photochemical Oxidants

SMSA's

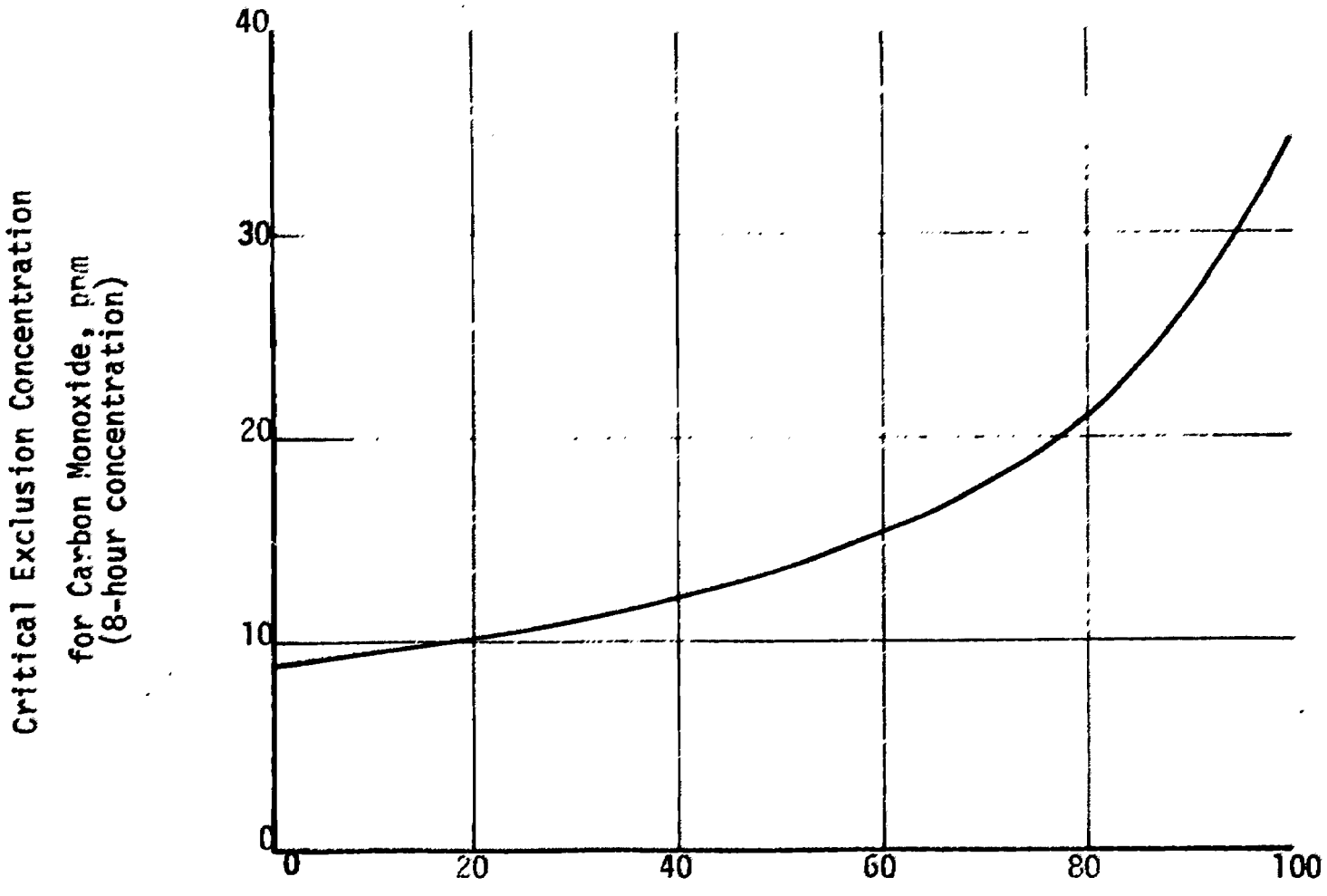
(a) which have no transportation control strategy for photochemical oxidants and

(b) which are located in AQCR's with a maximum 1-hour oxidant concentration of less than 320 $\mu g/m^3$ during the past two years.

5. Nitrogen Dioxide

SMSA's not designated by the inclusion criteria in #5 on page 37.

EXCLUSION CRITERION FOR CARBON MONOXIDE AS A FUNCTION OF THE DISTRIBUTION OF EMISSIONS BETWEEN LIGHT- AND HEAVY-DUTY VEHICLES ON LOCAL STREETS CLOSE TO THE AIR SAMPLING SITE BEING EVALUATED



Inclusion of Obvious Problem Areas

Areas which meet any one of the following criteria should be designated, in whole or at least in part, as an AQMA for the particular pollutant.

1 Particulate Matter

Areas within AQCR's which are not projected to attain the NAAQS for particulate matter by 1985.

2. Sulfur Dioxide

Areas within AQCR's which are not projected to attain the NAAQS for sulfur dioxide by 1985.

3. Carbon Monoxide

No automatic inclusion criteria.

4. Photochemical Oxidants

Any areas for which a transportation control strategy for photochemical oxidants is required.

5. Nitrogen Dioxide

The appropriate parts of those SMSA's whose central cities are Los Angeles, Chicago, New York, Denver, and Salt Lake City.

GEOGRAPHICAL AREAS TO CONSIDER

SMSA's (Standard Metropolitan Statistical Areas) should generally be analyzed for the following reasons:

1. SMSA's have higher growth rates of population than other areas.
2. SMSA's have the highest concentrations of population and industry.
3. Projections of population and economic indicators are available for SMSA's.
4. SMSA's change with time as population density increases.
5. SMSA's include about 70 percent of the nation's population but only about 10 percent of total land areas.

AREAS WHICH MIGHT BE USED FOR DESIGNATION

Air Quality Control Regions

Standard Metropolitan Statistical Areas

Urbanized Areas

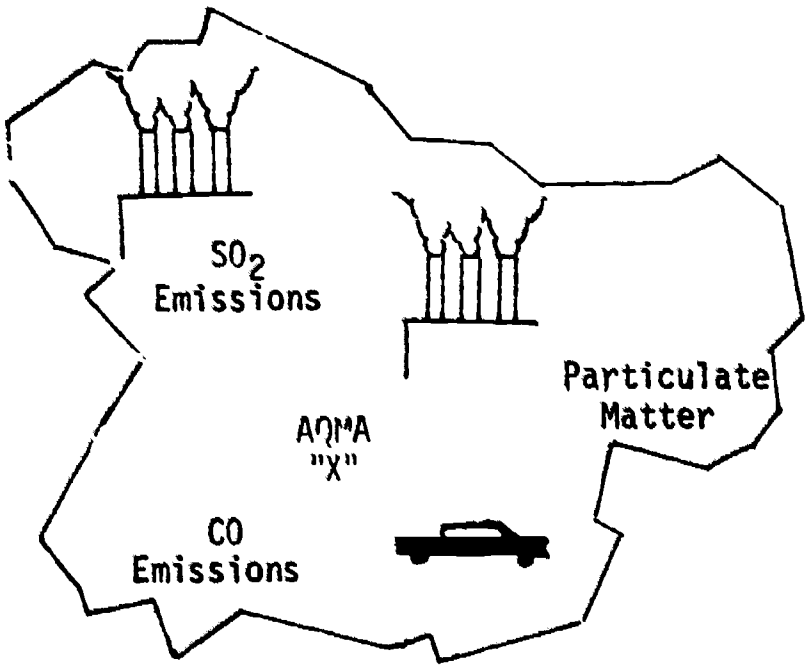
Counties

Groupings of: Cities, Townships, Boroughs

Planning regions used for transportation, land-use, or other planning

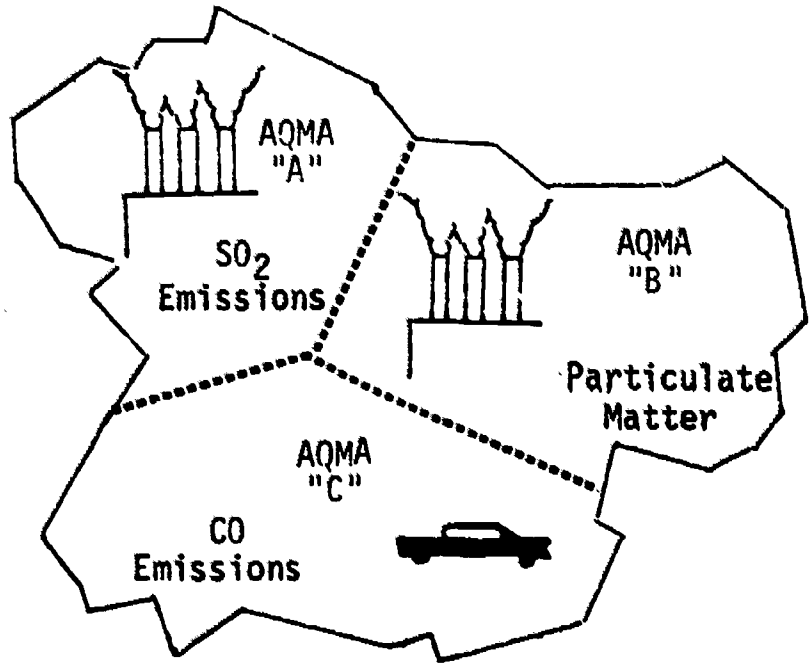
Sub-state planning districts

AQMA BOUNDARIES



YES

AQMA "X" has been designated as having a potential pollution problem from emissions of sulfur dioxide, particulates, and carbon monoxide.



NO

AQMA "A" has been designated as having a potential pollution problem from emissions of sulfur dioxide.

AQMA "B" has been designated as having a potential pollution problem from emissions of particulates.

AQMA "C" has been designated as having a potential pollution problem from emissions of carbon monoxide.

NAAQS TO BE CONSIDERED IN AQMA DESIGNATION*

Pollutant	Primary	Secondary
Particulate matter	(a) 75 $\mu g/m^3$, annual geometric mean (b) 260 $\mu g/m^3$, second highest 24-hr average per year	150 $\mu g/m^3$, second highest 24-hr average per year
Sulfur dioxide	(a) 80 $\mu g/m^3$, annual arithmetic mean (b) 365 $\mu g/m^3$, second highest 24-hr average per year	1300 $\mu g/m^3$, second highest 3-hour average per year
Carbon monoxide	10 mg/m^3, second highest 8-hour average per year	
Photochemical oxidants	160 $\mu g/m^3$, second highest 1-hour average per year	
Nitrogen dioxide	100 $\mu g/m^3$, annual arithmetic average	

*Although States may designate on the basis of air quality standards more stringent than the national ambient air quality standards, EPA itself will, should the occasion ever arise, only act to the extent necessary to insure attainment of the national standards.

FACTORS THAT AFFECT THE DECISION FOR AQMA BOUNDARIES

1. AQMA should include all of the territory which shares a common air envelope.

2. Areas previously designated by various agencies may be used.

3. Inclusion of large rural areas in an AQMA may not be desirable.

4. Common boundary lines for AQMA's and one or some combination of jurisdictional areas of implementing agencies may have merit from an operational point of view.

5. Long-range transport of pollutants is a matter of concern.

6. The influence of topography and geography on dispersion of pollutants and on overall community growth patterns should be considered.

7. Although the AQMA designation should be based on presently available land use, transportation, and other plans because of time constraints, it should be compatible with any future community planning activity.

AQMA DESIGNATIONS
ARE SUBJECT TO CHANGE

The May 1974 designation of boundaries of an AQMA will not preclude changes in such boundaries at the time that more detailed air quality analyses and abatement/maintenance plans are submitted in 1975.

Areas designated in May or August of 1974 may be "de-designated" if subsequent, more detailed analyses indicate that the standards will not be jeopardized in the ensuing 10-year period.

ASSUMPTIONS CONCERNING FUEL AVAILABILITY AND EMISSION AND AIR QUALITY BASELINES MUST BE MADE IN AQMA DESIGNATION.

SUMMARY OF AQMA DESIGNATIONS FOR STATE OF _____

Area*	Reason Not Designated**	Reason Designated**	Designation for				
			TSP	SO_2	CO	Ox	NO_2

*Must include at least all SMSA's within the state

**Reasons would be either "Initial Criteria" or "Actual Projection"

QUESTIONS

1. Identify the following statements as true or false.

   a. The first task in designation of AQMA's is to determine which areas are obvious problem areas and which are obvious non-problem areas.
   True _____ False _____

   b. SMSA's located in AQCR's where data for the past two years indicates the AQCR is below all NAAQS for particulates are obvious problem areas.
   True _____ False _____

   c. There are no automatic inclusion data to identify obvious problem areas for carbon monoxide.
   True_____ False _____

   d. Any areas for which a transportation control strategy is required for photochemical oxidants are obvious problem areas.
   True _____ False _____

2. Which of the following statements are reasons for always considering SMSA's for designation as AQMA's?

   _____a. SMSA's have higher growth rates of population than other areas.

   _____b. Projections of population and economic indicators are available for SMSA's.

   _____c. SMSA's include about 70 percent of the nation's population but only about 10 percent of total land areas.

   _____d. All of the above.

   _____e. a and c above

3. AQMA designations should be pollutant-specific and analysis should be done for only those pollutants specified.
   True_____ False_____

4. Which of the factors listed below is (are) <u>not</u> important in the designation of AQMA's?

   _____a. NAAQS for five pollutants

   _____b. Interstate cooperation

   _____c. Fuel availability and use

   _____d. Emission and air quality baselines

   _____e. None of the above

5. The five pollutants for which standards have been set that must be considered in the designation of AQMA's are:

_____a. particulates, carbon monoxide, photochemical oxidants, sulfur dioxide, and nitrogen dioxide

_____b. particulates, carbon monoxide, photochemical oxidants, sulfur dioxide, and hydrocarbons

_____c. particulates, carbon monoxide, photochemical oxidants, nitrogen dioxide, and hydrocarbons.

6. When an Air Quality Maintenance Area is designated by the names of existing areas (political or non-political),

a. is a detailed analysis of the <u>entire</u> AQMA required?
YES____ NO____

b. must the 10-year plan apply to the <u>entire</u> AQMA?
YES____ NO____

ANSWERS

1. a. True

   b. False

   c. True

   d. True

2. The answer is (d).

3. True

4. The answer is (e).

5. The answer is (a).

6. (a) NO

   (b) NO

TOPICS IN AIR POLLUTION CONTROL

Significant Deterioration of Air Quality

Office of Air and Waste Management
Office of Air Quality Planning and Standards
Control Programs Development Division
Air Pollution Training Institute

1974

This unit, "Significant Deterioration of Air Quality," is part of the course Topics in Air Pollution Control (SI 428) developed by the Instructional Development Section of the U.S. Environmental Protection Agency's Air Pollution Training Institute at Research Triangle Park, North Carolina.

This unit, like the others consists of an audio cassette tape and this booklet. BOTH THE TAPE AND THIS BOOKLET MUST BE USED SIMULTANEOUSLY -- students are referred to appropriate sections of the booklet by the narrator of the recorded presentation.

SIGNIFICANT DETERIORATION OF AIR QUALITY

OBJECTIVES

After completing this unit you should be able to:

1. State that in its "Requirements for Preparation, Adoption, and Submittal of Implementation Plans" EPA stipulated that plans for regions with air quality better than the secondary standards must ensure that the air quality does not exceed those secondary standards.

2. State that the Sierra Club and other petitioners asked the U.S. District Court to invalidate the portion of EPA's regulations cited above and to prevent the EPA Administrator from approving implementation plans that did not contain adequate provisions for preventing significant deterioration of air quality.

3. State that the U.S. District Court issued the requested injunction and that the Court's decision was upheld by the U.S. Court of Appeals and the U.S. Supreme Court.

4. Briefly describe two of the arguments raised by EPA in support of its position that the Clean Air Act does not require States to prevent significant deterioration of air quality.

5. State that the significant deterioration issue was a question of interpretation of the intent of Congress as expressed in the Clean Air Act rather than a question to be resolved on the basis of factual issues. EPA and others believe that the matter of interpretation has not been completely resolved. Explain why.

6. Describe each of the four regulations proposed by EPA to prevent significant deterioration and discuss the advantages and disadvantages associated with each.

CHRONOLOGY OF SIGNIFICANT DETERIORATION LITIGATION AND EPA ACTIONS

May 24, 1972	"Sierra Club, et al. v. William D. Ruckelshaus" filed in U.S. District Court for the District of Columbia (Case No. 1031-72)
May 30, 1972	DECISION: Preliminary injunction requiring the EPA Administrator to review all State implementation plans, to disapprove all plans that fail to prevent the significant deterioration of air quality, and to promulgate regulations for the disapproved portions of State plans.
November 1, 1972	U.S. District Court decision upheld upon appeal by EPA by the U.S. Circuit Court of Appeals for the District of Columbia (Case No. 72-1520)
November 9, 1972 (37 FR 23836)	EPA disapproved all State implementation plans with respect to significant deterioration
December 4, 1972	EPA petitioned the U.S. Supreme Court for a writ of certiorari (call for the record of the lower court proceedings for the purpose of review). This was granted the following month, and EPA, the Sierra Club, and others presented arguments to the Supreme Court.
June 11, 1973	U.S. Supreme Court affirmed the lower court decision by a tie vote. Because of the tie vote, the Court did not issue an opinion. Thus, no specific guidance as to the precise meaning of "significant" deterioration was provided by the Court.
July 16, 1973 (38 FR 18986)	EPA proposed four alternative regulations for the prevention of significant deterioration.

PURPOSE OF THE 1967 AIR QUALITY ACT AND THE 1970 CLEAN AIR ACT

Section 110(b)

THE PURPOSES OF THIS TITLE ARE (1) TO PROTECT AND ENHANCE THE QUALITY OF THE NATION'S AIR RESOURCES SO AS TO PROMOTE THE PUBLIC HEALTH AND WELFARE AND THE PRODUCTIVE CAPACITY OF ITS POPULATION

EXAMPLES OF STATEMENTS CITED BY THE SIERRA CLUB IN SUPPORT OF ITS INTERPRETATION OF THE CLEAN AIR ACT

Senate Report No. 403, 90th Congress (1967)

The prime purpose of the proposed legislation [1967 Air Quality Act] is to strengthen the Clean Air Act [of 1963], to expedite a national program of air quality improvement, and to enhance the quality of the atmosphere against long-term hazards and immediate danger . . .

The Air Quality Act of 1967, therefore, serves notice that no one has the right to use the atmosphere as a garbage dump, and that there will be no haven for polluters anywhere in the country.

National Air Pollution Control Administration (NAPCA) Guidelines for the Development of Air Quality Standards (1969)

An explicit purpose of the [1967 Air Quality] Act is "to protect and enhance the quality of the Nation's air resources." Air quality standards which, even if fully implemented, would result in significant deterioration of air quality in any substantial portions of an air quality region clearly would conflict with this expressed purpose of the law.

Statement of HEW Secretary Robert Finch to Subcommittees of the House of Representatives and the Senate (1970) Concerning the Proposed 1970 Clean Air Act

One of the express purposes of the Clean Air Act is "to protect and enhance the quality of the Nation's air resources." Accordingly, it has been and will continue to be our view that implementation plans that would permit significant deterioration of air quality in any area would be in conflict with this provision of the Act. We shall continue to expect States to maintain air of good quality where it now exists.

Testimony of HEW Under Secretary John G. Veneman Before the Senate Subcommittee on Air and Water Pollution (1970)

We do not intend to condone "backsliding". If an area has air quality which is better than the national standards, they would be required to stay there and not pollute the air even further, even though they may be below the national standards.

Senate Report No. 1196, 91st Congress (1970) Concerning Proposed 1970 Clean Air Act

In areas where current air pollution levels are already equal to, or better than, the air quality goals, the Secretary should not approve any implementation plan which does not provide, to the maximum extent practicable, for the continued maintenance of such ambient air quality. Once such national goals are established, deterioration of air quality should not be permitted except under circumstances where there is no available alternative. Given the various alternative means of preventing and controlling air pollution--including the use of the best available control technology, industrial processes, and operating practices--and care in the selection of sites for new sources, land use planning and traffic controls--deterioration need not occur.

EPA REGULATIONS INTERPRETED BY THE SIERRA CLUB TO BE POLICY STATEMENTS CONCERNING SIGNIFICANT DETERIORATION

Promulgation of National Ambient Air Quality Standards
April 30, 1971 (36 FR 8186)
40 CFR 50.2(c)

THE PROMULGATION OF NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS SHALL NOT BE CONSIDERED IN ANY MANNER TO ALLOW SIGNIFICANT DETERIORATION OF EXISTING AIR QUALITY IN ANY PORTION OF ANY STATE.

(The Sierra Club says this prohibits significant deterioration in any part of the country.)

Promulgation of Requirements for Preparation, Adoption, and Submittal of Implementation Plans
August 14, 1971 (36 FR 15486)
40 CFR 51.12(b)

IN ANY REGION WHERE MEASURED OR ESTIMATED AMBIENT LEVELS OF A POLLUTANT ARE BELOW THE LEVELS SPECIFIED BY AN APPLICABLE SECONDARY STANDARD, THE PLAN SHALL SET FORTH A CONTROL STRATEGY WHICH SHALL BE ADEQUATE TO PREVENT SUCH AMBIENT POLLUTION LEVELS FROM EXCEEDING SUCH SECONDARY STANDARD.

(The Sierra Club says (1) this allows significant deterioration in all areas of the country with clean air; (2) this contradicts earlier statements by EPA; (3) this violates the stated purpose of the Clean Air Act. Sierra Club asked the U.S. District Court to invalidate this portion of the regulation.)

EPA'S ARGUMENTS APPLEALING THE U.S. DISTRICT COURT'S DECISION TO THE U.S. SUPREME COURT

EPA POSITION

THE CLEAN AIR ACT AMENDMENTS OF 1970 REQUIRE THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY TO APPROVE STATE PLANS FOR THE IMPLEMENTATION OF NATIONAL AIR QUALITY STANDARDS WHICH ENFORCE THOSE STANDARDS WITHIN THE STATE, WHETHER OR NOT THEY PERMIT DETERIORATION OF EXISTING AIR QUALITY WHICH IS CLEANER THAN REQUIRED BY THE NATIONAL STANDARDS.

ISSUE

"The issue before this court is whether the Administrator must also require the State implementation plans to protect not only the public welfare as broadly defined in the Act, but also against unanticipated effects, or effects adverse not to the public welfare, but to some other interests."

ARGUMENTS

A. THE PLAIN LANGUAGE OF THE ACT REQUIRES THE ADMINISTRATOR TO APPROVE STATE PLANS WHICH MEET THE NATIONAL STANDARDS

Sections 109 (establishment of national primary and secondary ambient air quality standards), 110 (requirements for State implementation plans), and 111 (establishment of national standards of performance for certain major sources of air pollution) provide the means by which Congress intended to protect and enhance the Nation's air resources. Section 116 specifically reserves to the State the right to apply more stringent controls if they wish to achieve or maintain air quality better than the national standards require.

B. THE LEGISLATIVE HISTORY OF THE ACT CORROBORATES ITS PLAIN MEANING

The Act is concerned with air pollution which endangers the health and welfare. Implementation plans are required only for those air quality regions which must achieve standards established to protect the health (primary standards) and welfare (secondary standards). "Nothing in the Act or its history, therefore, indicates that Congress, by the 1970 Amendments, intended to require that state-wide plans should prevent the significant deterioration of existing air quality in any part of the State."

C. THE DECISION [OF THE U.S. DISTRICT COURT] IS CONTRARY TO THE ADMINISTRATOR'S REGULATIONS

There is no inconsistency between 40 CFR 50.2(c) (statement in EPA's regulations promulgating national primary and secondary standards) and 40 CFR 51.12(b) (statement in EPA's "Requirements for Preparation, Adoption, and Submittal of Implementation Plans"). The first statement, interpreted by the Sierra Club as prohibiting significant deterioration, merely stipulated that promulgation of standards was not intended to preempt the State's right to establish more stringent standards. The second statement is the Administrator's interpretation of his authority and responsibility under the Clean Air Act.

D. THE INTERPRETATION ADOPTED BY THE [U.S. DISTRICT COURT] WOULD IMPAIR, RATHER THAN PROMOTE, ACHIEVEMENT OF THE ACT'S POLICY OBJECTIVES.

CLEAN AIR ACT EXCERPTS

CITED BY EPA AS "OPERATIVE PROVISIONS OF THE ACT PRESCRIBING THE ADMINISTRATOR'S RESPONSIBILITY WITH RESPECT TO STATE PLANS IMPLEMENTING THE NATIONAL PRIMARY AND SECONDARY STANDARDS"

Air Quality Standards

Sec. 109(b)(1) National primary ambient air quality standards . . . shall be ambient air quality standards 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 . . . (2) Any national secondary ambient air quality standard . . . shall specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator . . . is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air . . .

Sec. 302(h) All language referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.

Implementation Plans

Sec. 110(a)(1) Each State shall . . . adopt and submit to the Administrator . . . a plan which provides for implementation, maintenance, and enforcement of such primary standard in each air quality control region (or portion thereof) within such State. In addition, such State shall adopt and submit to the Administrator . . . a plan which provides for implementation, maintenance, and enforcement of such secondary standard in each air quality control region (or portion thereof) within such State . . .

Sec. 110(a)(2) . . . The Administrator shall approve such plan, or any portion thereof, if he determines that it was adopted after reasonable notice and hearing and that--

> (A)(i) in the case of a plan implementing a national primary ambient air quality standard, it provides for the attainment of such primary standard as expeditiously as practicable but . . . in no case later than three years from the date of approval of such plan . . . and (ii) in the case of a plan implementing a national secondary ambient air quality standard, it specifies a reasonable time at which such secondary standard will be attained;
>
> (B) it includes emission limitations, schedules, and timetables for compliance with such limitations, and such other measures as may be necessary to insure attainment and maintenance of such primary or secondary standard, including, but not limited to, land-use and transportation controls;
>
> [Other conditions for implementation plan approval are specified in Sec. 110(a)(2)(C) - 110(a)(2)(H)]

New Source Performance Standards

Sec. 111(a)(1) The term 'standard of performance' means a standard for emission of air pollutants which reflects the degree 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.

Sec. 111(b)(1)(A) The Administrator shall . . . publish . . . a list of categories of stationary sources. He shall include a category of sources in such list if he determines it may contribute to the endangerment of public health or welfare. (B) . . . the Administrator shall propose regulations, establishing Federal standards of performance for new sources within such category. The Administrator shall afford interested persons an opportunity for written comment on such proposed regulations. After considering such comments, he shall promulgate . . . such standards . . .

State Authority

Sec. 116 Except as otherwise provided in sections 209, 211(c)(4), and 233 (preempting certain State regulation of moving sources) nothing in this Act shall preclude or deny the right of any State or political subdivision thereof to adopt or enforce (1) any standard or limitation respecting emission of air pollutants or (2) any requirement respecting control or abatement of air pollution; except that if an emissions standard or limitation is in effect under an applicable implementation plan or under section 111 or 112 [hazardous pollutant emission standards], such State or political subdivision may not adopt or enforce any emission standard or limitation which is less stringent than the standard of limitation under such plan or section.

PROPOSED REGULATIONS FOR PREVENTION OF SIGNIFICANT DETERIORATION

Proposed July 16, 1973
(38 FR 18986)

GENERAL APPROACH

Economic growth need not be unduly limited.

Courts required a policy to prevent significant deterioration; they did not require a policy of non-deterioration.

CONSIDERATIONS

1. Definition of "significant" - a quantitative definition would fall between zero deterioration and deterioration up to the secondary standards.

2. Pollutants - Each proposal requires best available control technology for control of SO_2, particulates, CO, HC, and NO_x. Review of sources to determine the impact on air quality or emissions is based on SO_2 and particulates only.

3. Balance between economic growth and prevention of significant deterioration - Philosophy for preventing significant deterioration should be enforced uniformly throughout the country (e.g., through application of best available control technology) even though the definition of significant deterioration could include regional variations.

4. Relationship of best available control technology to new source performance standards and significant deterioration - Usually compliance with NSPS = BACT. But a case-by-case analysis is required for fossil-fuel fired steam electric plants to determine if additional controls are needed for plants using low-sulfur fuel.

5. Baseline - 1972 selected.

SOURCES SUBJECT TO NEW SOURCE REVIEW PROCEDURES

- Fossil-fuel fired steam electric plants of more than 1,000 million B.t.u. per hour heat input
- Coal cleaning plants (thermal dryers)
- Kraft pulp mill recovery furnaces
- Portland cement plants
- Primary zinc smelters
- Iron and steel mill metallurgical furnaces
- Primary aluminum ore reduction plants
- Primary copper smelters
- Municipal incinerators capable of charging more than 250 tons of refuse per day
- Sulfuric acid plants
- Petroleum refineries
- Lime plants
- Phosphate rock processing plants
- By-product coke oven batteries
- Sulfur recovery plants
- Carbon black plants (furnace process)

+

- Any other source having a total annual potential emission rate on any premises equal to or greater than 4,000 tons for SO_2, particulates, NO_x, CO, HC.

BEST AVAILABLE CONTROL TECHNOLOGY CONSIDERATIONS

- Reasonably available control technology as defined in 40 CFR Part 51, Appendix B
- The process, fuels, and raw materials employed
- The engineering aspects of the applications of various types of control techniques
- Process and fuel changes
- Cost of the application of the control techniques, process changes, alternative fuels, etc.

I

AIR QUALITY INCREMENT PLAN

PHILOSOPHY — "Significant" deterioration can be defined as an incremental increase in pollution levels; such an increment is applicable to all sections of the country, provided that it does not result in violation of the secondary ambient air quality standards.

ALLOWABLE INCREMENTS

PARTICULATE MATTER	SULFUR DIOXIDE
10 $\mu g/m^3$, annual geometric mean	15 $\mu g/m^3$, annual arithmetic mean
30 $\mu g/m^3$, 24-hour maximum	100 $\mu g/m^3$, 24-hour maximum
	300 $\mu g/m^3$, 3-hour maximum

NEW SOURCE REVIEW: Source must meet emission limitations representing BACT and must not cause air pollution levels to increase more than the allowable increments. State determination to allow a source to construct is subject to approval by EPA.

ADVANTAGES:

Would not totally prevent economic development in clean areas of the country

Would force large sources to apply increasingly effective control techniques and thereby encourage sources to engage in research and development in the area of control technology

Would prevent construction of sources in areas with poor dispersion characteristics

Would prevent the clustering of large sources

DISADVANTAGES:

Application of a single definition of significant deterioration nationwide results in arbitrary treatment of all clean areas regardless of their use

Implementation of this plan could result in the clean areas remaining clean at the expense of already highly developed areas

II

EMISSION LIMITATION PLAN

PHILOSOPHY

By limiting emissions at the source and emission density, air quality can be controlled and significant deterioration prevented.

ESTABLISHMENT OF CEILING:

1. Baseline annual emissions of SO_2 and particulates to be calculated, averaged over an Air Quality Control Region (AQCR). NOTE: States may combine small AQCRs or subdivide large ones.

2. Ceiling = 20% over the baseline emissions or a level based on emission density, whichever is larger. Emission density factors are:

SO_2	10 tons/year/sq. mi.
Particulates	3 tons/year/sq. mi.

NEW SOURCE REVIEW: Source must meet emission limitations representing BACT and must not cause increased emissions in an area beyond allowable amounts. State determination to allow a source to construct is subject to approval by EPA.

ADVANTAGES:

Each Air Quality Control Region would be given considerable flexibility in the selection and location of new sources

State would have the authority to determine how emission density should be distributed

III

LOCAL DEFINITION PLAN

PHILOSOPHY

Since the definition of significant deterioration is subjective and dependent upon many factors which vary from region to region, the definition should be made by the State with public participation

REQUIREMENTS

1. Application of best available control technology to major sources

2. Proposed new sources must submit detailed information to the State describing projected emissions and the estimated impact of emissions on air quality

3. 30-day public comment period, full disclosure of source and State generated information about expected emissions and the impact on air quality

4. The State determines, after the public comment period, if the source would cause significant deterioration of air quality. After making this determination, detailed information must be submitted to EPA.

NEW SOURCE REVIEW:

The State's determination of what constitutes significant deterioration is final. EPA may not overrule the State's decision to permit construction of a source but reserves the right to disapprove the State's determination of what constitutes best available control technology and to disapprove procedures by which the determination of significant deterioration was made.

ADVANTAGES

The local government and citizens most affected by decisions concerning prevention of significant deterioration would make the decisions, ensuring that local requirements and preferences are considered.

Economic growth is not arbitrarily restricted because of decisions made at the national level.

DISADVANTAGES

State and local agencies and citizens could be subject to industry pressures.

Current air quality is essentially the baseline against which significant deterioration is measured - because sources are reviewed and significant deterioration defined on a case-by-case basis.

Since the long-range impact of deterioration is not necessarily confined to a local area, emissions from a growth-oriented area could interfere with air quality in neighboring areas.

IV

AREA CLASSIFICATION PLAN

PHILOSOPHY — Attempts to combine the feature of a national definition of significant deterioration (as in the Air Quality Increment Plan) with flexibility for State determination of priorities and preferences as to economic growth and land use (as in the Local Definition Plan)

ALLOWABLE AIR QUALITY INCREMENTS

PARTICULATES	ZONE I	ZONE II
Annual geometric mean	5 $\mu g/m^3$	10 $\mu g/m^3$
24-hour maximum	10 $\mu g/m^3$	30 $\mu g/m^3$
SULFUR DIOXIDE		
Annual arithmetic mean	2 $\mu g/m^3$	15 $\mu g/m^3$
24-hour maximum	5 $\mu g/m^3$	100 $\mu g/m^3$
3-hour maximum	25 $\mu g/m^3$	300 $\mu g/m^3$

REQUIREMENTS

1. All areas of the country would be designated Zone II as of the effective date of the regulations. Within 6 months the State would hold public hearings and determine which areas should be designated Zone I. The determinations would be submitted to EPA. EPA would not be able to overrule zoning classifications made by the State but could disapprove procedures followed in making these determinations.

2. Exceptions to the allowable increments could be made under certain circumstances. Decisions would have to be made on a case-by-case basis with public hearings held in the affected areas. Specific EPA approval for such exceptions would be required.

3. New source review procedures would be the same as for the Air Quality Increment Plan as would the requirements for sources to submit information to the State, to install monitoring equipment, and to report measurement data to the State on a semiannual basis.

NEW SOURCE REVIEW: Source must meet emission limitations representative of BACT. State determination to allow a new source to construct is subject to EPA approval.

ADVANTAGES

- Emphasis is placed on long-range planning
- Provides the State with flexibility to meet long-range growth goals

DISADVANTAGES

- The plan would force the States to make difficult long-range planning decisions in a very short time frame (6 months)
- There could be boundary problems between Zone I and Zone II areas.

PROBLEMS COMMON TO ALL FOUR PROPOSED REGULATIONS

JURISDICTIONAL AMBIGUITIES	A source permitted to locate in one State could deteriorate the air quality in a neighboring State.
DE FACTO LAND USE DECISIONS	Without State legislation describing the amount and type of developmental growth that should be allowed, the allowable deterioration increment or ceiling could be used up quickly on a first come, first served basis.
IMPACT OF URBAN SPRAWL	If the pattern of urban sprawl into relatively clean surrounding areas continues, the associated residential heating and many small emission sources will gradually deteriorate air quality in these areas and use up a substantial portion of the allowable deterioration increment.
IMPACT OF FUEL SWITCHING	The supply of low-sulfur fuel is generally sufficient for the attainment and maintenance of air quality standards but is not sufficient to satisfy the needs of all potential users. Thus, sources in clean areas are likely to be required to use higher-sulfur fuel, at least on a temporary basis, to make the fuel supply available to sources in areas where air quality could have an adverse effect on health.
RIGHT OF REGIONAL SELF-SUFFICIENCY	Power plants increasingly are locating in suburban or other non-urban areas and providing power to large urban areas. Significant deterioration regulations could restrict location of power plants in many areas to the extent that these areas could not supply their own energy needs.

COMMENTS RECEIVED IN RESPONSE TO PROPOSED REGULATIONS

GENERAL

Congress should be asked to clarify the language of the Clean Air Act before EPA takes any action. Particularly, Congress should confine the Federal role to attainment and maintenance of national ambient air quality standards.

BEST AVAILABLE CONTROL TECHNOLOGY

The power plant industry objected to the provision that power plants might be required to apply more controls than the new source performance standards require.

Economic considerations should be more of a factor in determination of best available control technology.

Best available control technology is sufficient to prevent significant deterioration.

The definition of best available control technology is not stringent enough.

REGULATIONS

The regulations would not enhance the "productive capacity" of the nation. Growth would be restricted to metropolitan areas. Clean areas would be at an economic disadvantage.

The petroleum industry argued that restrictions on growth in non-park clean areas could worsen the fuel supply problem because the majority of fuel supplies and other resources are located in these areas.

Industry argued that compliance with secondary air quality standards would be sufficient to prevent significant deterioration, especially since States are free to set more stringent requirements if they wish.

Environmentalists expressed concern that significant adverse effects could occur at levels below the secondary standards.

The regulations as proposed would put EPA in the land use planning business, which is not within its jurisdiction.

Air quality should not be the only determinant of land use.

EPA should provide better guidelines on land use planning.

COMMENTS (CONTD.)

SOURCES AND POLLUTANTS COVERED BY THE REGULATIONS

Mobile sources and indirect sources should be considered for review as well as the specified stationary sources. Thus carbon monoxide, hydrocarbons, and oxides of nitrogen ceilings should be established.

The 4,000 tons/year emissions classification for sources subject to review prior to construction does not account for different degrees of individual pollutant effects and is therefore arbitrary.

BASELINE

The 1972 baseline is inappropriate because of the problems with data availability and with modeling techniques. Environmentalists favored an earlier baseline.

The 6 months lead time for setting zones under the Area Classification Plan is too short.

SUMMARY OF RESPONDENTS' ENDORSEMENTS OF PLANS

	PLANS				
	I	II	III	IV	No Endorsement
Industry		8	45*	3	78
Government Agencies	8		27	10	3
Private Citizens	5	10	3	3	44
Environmental Groups	8		1	9	42
Miscellaneous	2		2		16
TOTAL	23	18	78	25	183

*Although 45 respondents indicated preference for this plan, only 5 actually endorsed it.

STATUS OF SIGNIFICANT DETERIORATION REGULATIONS

Four regulations were proposed on July 16, 1973.

EPA has studied the comments received and is now in the process of developing final regulations in light of the comments. These regulations are expected to be promulgated (or proposed, if solicitation of public comment is considered appropriate), in the near future.

Congress may review the issue of significant deterioration. The Clean Air Act may be amended to specifically allow deterioration to the level of secondary standards; it may be amended to more specifically define significant deterioration.

When regulations are promulgated, they will take the form of revisions to 40 CFR 52 ("Approval and Promulgation of Implementation Plans"). Subsequently guidelines will be published as 40 CFR 51 ("Requirements for Preparation, Adoption, and Submittal of Implementation Plans") to assist the States in revising their implementation plans to include provisions to prevent significant deterioration.

QUESTIONS

1. Which of the following portions of EPA's regulations did the Sierra Club petition the Court to invalidate?

   ____a. 40 CFR 50.2(c): "The promulgation of national primary and secondary ambient air quality standards shall not be considered in any manner to allow significant deterioration of existing air quality in any portion of any State."

   ____b. 40 CFR 51.12(b): "In any region where measured or estimated ambient levels of a pollutant are below the levels specified by an applicable secondary standard, the plan shall set forth a control strategy which shall be adequate to prevent such ambient pollution levels from exceeding such secondary standard."

   Explain why.

2. Select the statement or statements which accurately describe the ruling of the U.S. District Court in "Sierra Club et al. v. William D. Ruckelshaus."

   ____a. Ordered EPA to require States to develop strategies for preventing any deterioration of 1972 air quality levels.

   ____b. Ordered EPA to review State Implementation Plans and to disapprove any portion of a State plan that does not effectively prevent significant deterioration of existing air quality in any portion of the State.

   ____c. Ordered EPA to propose and promulgate regulations to prevent significant deterioration for any State whose plan permits deterioration.

   ____d. Ordered EPA to disapprove all State Implementation Plans.

   ____e. All of the above.

3. EPA appealed the U.S. District Court's significant deterioration decision to the U.S. Court of Appeals and to the U.S. Supreme Court. Both higher courts upheld the District Court's ruling. TRUE _____ FALSE _____

4. EPA's case against the Sierra Club's position on significant deterioration included which of the following arguments:

____a. The Clean Air Act requires EPA to approve and promulgate State implementation plans designed to achieve and maintain primary and secondary air quality standards. It does not authorize EPA to require States to maintain air quality that is better than the secondary standards.

____b. New source performance standards will prevent major industries from locating in clean areas and significantly deteriorating air quality in those areas.

____c. A prohibition against significant deterioration in clean areas of the country will delay achievement of primary and secondary standards in heavily polluted urban areas.

____d. All of the above.

5. The court decided the issue of significant deterioration on the basis of facts, such as that deterioration up to the level of the secondary standards would allow an increase of pollutants in clean areas that could be harmful to health or vegetation, or that deterioration would impose an economic burden on clean areas. TRUE _____ FALSE _____

6. Each of the four proposed regulations pertaining to significant deterioration includes which of the following requirements:

____a. Imposition of one ceiling on allowable deterioration, defined as a percentage increase in ambient pollution levels over the 1972 levels.

____b. Application of the best available control technology to major new stationary sources of pollution.

____c. State review of major new stationary sources prior to construction to prevent construction if emissions from the source would cause significant deterioration of air quality in the area in which it would be located.

____d. Review of large new parking lots, shopping centers, airports, sports stadiums, etc., prior to construction to determine if the automobile traffic attracted by these sources would cause levels of carbon monoxide, hydrocarbons, and oxides of nitrogen to increase enough to exceed significant deterioration ceilings established for these pollutants.

____e. Opportunity for public comment prior to decisions to allow major new sources to construct.

____f. EPA approval of the State decisions to allow major new stationary sources to locate within the State.

____g. None of the above.

For each of the following features of the four proposed regulations, indicate the proposed plan it is associated with by writing

a for Air Quality Increment Plan
b for Emission Limitation Plan
c for Local Definition Plan
d for Area Classification Plan

7. Significant deterioration is defined for all areas of the country as more than 120% of the 1972 emissions of sulfur dioxide and particulates, averaged over an Air Quality Control Region (or combination or subdivision thereof). _____

8. The baseline year against which significant deterioration is measured is not defined by EPA. _____

9. Significant deterioration is defined for all areas of the country as an increase in ambient concentrations of sulfur dioxide and particulates over 1972 levels in excess of the following limits:

Sulfur dioxide	15 $\mu g/m^3$ (annual average) 100 $\mu g/m^3$ (24-hour average) 300 $\mu g/m^3$ (3-hour average)
Particulates	10 $\mu g/m^3$ (annual average) 30 $\mu g/m^3$ (24-hour average)

_____

10. Emphasizes long-range land use planning on the part of the States. _____

11. The State analyzes the projected emissions from proposed new sources and determines, after soliciting public comments, whether or not the source would cause significant deterioration of air quality. A significant deterioration ceiling is not imposed, but the deterioration of air quality may not exceed the levels specified by the national secondary standards. _____

12. Allows maximum flexibility for the State to balance economic growth needs and significant deterioration restrictions. _____

13. Would prevent clustering of large sources of pollution. _____

14. EPA establishes air quality deterioration limits for two types of zones as follows:

	ZONE I	ZONE II
Sulfur dioxide		
Annual average	2 $\mu g/m^3$	15 $\mu g/m^3$
24-hour average	5 $\mu g/m^3$	100 $\mu g/m^3$
3-hour average	25 $\mu g/m^3$	300 $\mu g/m^3$
Particulates		
Annual average	5 $\mu g/m^3$	10 $\mu g/m^3$
24-hour average	10 $\mu g/m^3$	30 $\mu g/m^3$

All areas of the country are designated Zone II by EPA, but States have the option of deciding which areas are to be designated Zone I after holding public hearings in those areas. _____

15. Would result in arbitrary equal treatment of all clean areas. _____

16. Would prevent some types of deterioration not limited by ambient air quality standards alone. _____

ANSWERS

1. b. The Sierra Club argued that this represented a policy of allowing significant deterioration of air quality better than the secondary standards.

2. b, c. Answer a is incorrect because the Court did not require non-deterioration but rather a policy of no significant deterioration. Also, the Court did not specify a baseline year. Answer d is incorrect because the Court ordered EPA to review implementation plans and disapprove those not adequately providing for no significant deterioration. The Court did not review the plans and order EPA to disapprove them.

3. True

4. d.

5. False. At issue was the interpretation of the intent of Congress, as expressed in the Act, with respect to significant deterioration, not whether or not significant deterioration was good or bad.

6. b, c, e.

7. b.

8. c.

9. a.

10. d.

11. c.

12. c.

13. a.

14. d.

15. a.

16. b.