Environmental Compliance Guide

Guidance Manual For Department of Energy Compliance With The Clean Air Act: Nonattainment Areas

September 1982

U.S. Department of Energy
Assistant Secretary for Environmental Protection,
Safety, and Emergency Preparedness
Deputy Assistant Secretary for Environment, Safety and Health
Office of Environmental Compliance

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Preface

This guidance manual has been prepared to assist Department of Energy personnel in developing information and performing analyses commensurate with federal requirements for the permitting of stationary air pollution sources in nonattainment areas, pursuant to the provisions of the Clean Air Act (CAA) (Pub. L. 91-604), as amended (Pub. L. 95-95). The manual does not add new requirements nor does it alter existing requirements under the CAA permitting program and associated regulations. Rather, the manual is intended to be advisory and to present guidance and information which should assist DOE compliance efforts. Early contact and consultation with appropriate regulatory agencies is essential for adequate compliance with the CAA. Supplements to this guidance manual will be issued if regulations are significantly modified or if the CAA is amended.

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Acknowledgments

This document was prepared for the U.S. Department of Energy, Office of the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness, Deputy Assistant Secretary for Environment, Safety and Health, Office of Environmental Compliance by Donald B. Hunsaker, Jr., of the Energy Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee (operated by Union Carbide Corporation under contract W-7405-eng-26 with the Department of Energy). Personnel from various state and local air pollution control agencies and regional offices of the U.S. Environmental Protection Agency were helpful in providing information on the permitting process and available quidelines. Francis C. Kornegay of the Energy Division and Robert M. Reed of the Environmental Sciences Division, Oak Ridge National Laboratory, reviewed the manuscript. Robert M. Reed served as project manager.

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Abstract

The purpose of this manual is to identify information requirements associated with air quality permit applications in areas for which ambient pollutant levels currently exceed the national ambient air quality standards (nonattainment areas). The manual is to be used by project managers at the U.S. Department of Energy (DOE), in conjunction with the DOE Environmental Compliance Guide, to provide preliminary estimates of information required to obtain air quality permits for DOE projects. An analysis of nonattainment area permitting found that permitting of all sources in such areas is done on the state or local levels; the Environmental Protection Agency does not grant permits in nonattainment areas. As a result, Federal information requirements for permitting in nonattainment areas are somewhat vague. To provide a more realistic picture of nonattainment area permitting, selected state and local regulations were surveyed, and were found to contain more detail on the information required for permit approval. The most potentially demanding information requirements associated with nonattainment area permitting are the determination of Lowest Achievable Emission Rate, the negotiation of external emission offsets, and the consideration of the environmental impacts of project alternatives in ozone and carbon monoxide nonattainment areas. In any state, a few information requirements for nonattainment area permitting are likely to overlap with information requirements of other permitting processes, such as those in the Prevention of Significant Deterioration procedure. These requirements are emissions data and air quality modeling and its associated input data requirements (meteorology, topography, etc.).

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Glossary of Acronyms

CAA	-	Clean Air Act of 1977, as amended
CEM	-	Continuous Emission Monitoring
CFR	-	Code of Federal Regulations (as published July 1, 1981)
CO	-	Carbon Monoxide
CTG	-	Control Techniques Guidelines
DOE	-	Department of Energy
EPA	-	Environmental Protection Agency
LAER	-	Lowest Achievable Emission Rate (as defined in 40 CFR Part 51)
NAAQS	-	National Ambient Air Quality Standards
NESHAP	-	National Emission Standards for Hazardous Air Pollutants
NO_x	-	Nitrogen Oxides
NSPS	-	New Source Performance Standards
PM	-	Particulate Matter
PSD	-	Prevention of Significant Deterioration
RACT	-	Reasonably Available Control Technology
RFP	-	Reasonabe Further Progress
SIP	-	State Implementation Plan
SO_2	-	Sulfur Dioxide
TPY	-	Tons Per Year
VOC	-	Volatile Organic Compounds

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1. Introduction

State and local air pollution control agencies have the responsibility for issuing or denying permits to construct and operate stationary sources of air pollution in areas of the country that are violating ambient air quality standards (nonattainment areas). These permitting programs were developed in response to Part D of Title I of the Clean Air Act (CAA) and in response to regulations (40 CFR 51.18J) promulgated by the U.S. Environmental Protection Agency (EPA). The EPA has the responsiblity for establishing National Ambient Air Quality Standards (NAAQS) that are used to define nonattainment areas, for formally designating the nonattainment areas, and for publishing technical guidance that is used to meet the information requirements of the state and local permitting processes.

This manual provides general guidance on complying with Part D, Title I of the CAA. It is one of a series of documents developed by the Environmental Compliance Division of the U.S. Department of Energy (DOE) to provide DOE project managers with guidance on obtaining information for environmental permits. The manual augments and should be used in conjunction with the DOE Environmental Compliance Guide, which outlines the procedures that must be followed to secure approved environmental permits for DOE projects (DOE 1981a). The flowcharts in the Guide numbered Flow III-1 (a), (b), and (c) outline the steps in the permitting procedure for DOE compliance with the CAA. Flowchart III-1(a) in the Environmental Compliance Guide is concerned with information needed to prepare a permit application and thus will be referred to more in this manual than the other two flowcharts (which are concerned with agency review of the permit applications). A companion manual discusses the information requirements for permitting in attainment areas (DOE 1982). Note that attainment status is designated on a pollutant specific basis, and that both guidance manuals could be required for a given DOE project. These manuals and the compliance guide will help implement DOE Order 5480.1A, which is concerned with environmental protection, safety, and health protection programs for DOE operations (DOE 1981b).

The second section of this manual provides background information on the laws and regulations affecting permitting in nonattainment areas. Information requirements that DOE must meet to comply with the provisions of the CAA applicable to projects locating in nonattainment areas are discussed in Sect. 3. Section 4 summarizes major findings and presents some conclusions.

2. Background

The Clean Air Act (Pub. L. 91-604) as amended (Pub. L. 95-95) is the principal body of federal air pollution legislation in the United States. It is based on the premise that reductions in pollutant emissions will result in ambient pollutant levels that will not endanger public health and welfare. The primary means for achieving emission reductions is through regulations implemented and enforced via a permit system.

Two basic types of emission limitations are required by the CAA (hereafter referred to as the Act): those that depend on existing pollutant levels of a given area and those that depend on the type of source. Existing pollutant levels of a given area, when compared with ambient standards established by EPA, determine the attainment status of an area. An area is classified as attainment (pollutant levels are lower than standards) or nonattainment (pollutant levels are greater than the standards). This manual is concerned with the latter situation. National emission standards are established for specified types of industries in New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP). Compliance with the nonattainment area regulations, the NSPS, and the NESHAP is required to obtain approved permits for new sources in nonattaiment areas. Each of these will therefore be discussed in this manual.

The CAA directs EPA to develop National Ambient Air Quality Standards (NAAQS) that represent the maximum levels of air pollutants that can legally exist in the air to which the general public has access (ambient air). The NAAQS, which are found in 40 CFR Part 50, are summarized in Table 1. Pollutants for which NAAQS are established are termed criteria pollutants. Primary NAAQS protect public health and secondary NAAQS protect public welfare (e.g., crop damage, materials damage, visibility impairment,

Table 1. National Ambient Air Quality Standards

Pollutant	Primary Standard ($\mu g/m^3$)	Secondary Standard ($\mu g/m^3$)
Sulfur dioxide		
Annual arithmetic	80	None
24-Hour[a]	365	None
3-Hour[a]	None	1,300
Particulate matter		
Annual geometric	75	60[b]
24-Hour	260	150
Carbon monoxide		
8-Hour[a]	10,000	10,000
1-Hour[a]	40,000	40,000
Ozone		
1-Hour[c]	235	235
Nitrogen dioxide		
Annual arithmetic	100	100
Lead		
Calendar Quarter	1.5	1.5
Hydrocarbons		
3-Hour (6 to 9 a.m.)[d]	160	160

[a]Not to be exceeded more than once per year.
[b]The secondary standard of 60 $\mu g/m^3$ is a guide to be used in assessing implementaton plans to achieve the 24-hour standard.
[c]Standard attained when the expected number of days per calendar year with maximum hourly average concentrations above 235 $\mu g/m^3$ and 0.12 ppm is equal to one or less.
[d]Hydrocarbon 3-hour standard used only as a guide to develop plans for achieving ozone standard.
Source: 40 CFR Part 50.

etc.). Only for the pollutants particulate matter and sulfur dioxide are the secondary standards different from the primary. States may establish their own ambient standards, as long as they are at least as stringent as the federal NAAQS. The state ambient standards are typically used as part of state and local permitting programs.

2.1 Nonattainment Area Regulations

The CAA (Section 107) directs states to identify, and EPA to formally designate, those areas in which the NAAQS are being violated (nonattainment areas). These nonattainment areas, which are listed in 40 CFR 81.300 et seq., can be as large as an entire state or as small as a portion of a city or town. The list of attainment status in 40 CFR 81.300 et seq. is revised periodically as new data become available. Appendix A presents maps of recently designated nonattainment areas. It is important to note that attainment status designation is pollutant specific and is also made with respect to primary and secondary standards. As an example, a given area may have nonattainment status for the primary sulfur dioxide standard and attainment status for the ozone standard.

Section 110 of the CAA designates the primary responsibility of air pollution control at its source to state and local governments. States are directed to prepare State Implementation Plans (SIPs) for controlling air pollution in their jurisdictions. The immediate goal of the SIPs is attainment of the primary NAAQS; secondary NAAQS are to be attained within a reasonable time (no statutory deadline was established). In nonattainment areas, states must demonstrate reasonable further progress (RFP) towards attaining the NAAQS. Once a nonattainment area has been formally designated by the EPA under Section 107 of the CAA, the state must then either develop, as part of the SIP, a nonattainment area permitting program pursuant to 40 CFR 51.18J, or else face a construction ban imposed by EPA for the particular nonattainment area in question (46 FR 41496). State ambient standards may not be used as goals for the SIPs; all official attainment designations are made with respect to the NAAQS. Approval authority over the SIPs was given to EPA, which was also given authority to impose regulations if a state fails to develop a SIP or if a submitted SIP is not adequate. The deadline for submitting SIPs to EPA was July 1, 1979. To date the nonattainment area portions of most SIPs submitted to EPA have been approved; construction bans are being enforced in portions of at least four states.

The requirements for emission regulations and permitting programs in SIPs are contained in Sect. 120 of the 1970 Act. The basic problem in nonattainment areas at the time the 1970 Act was drafted was developing mechanisms to allow industrial growth in nonattainment areas without exacerbating an existing air quality problem. A strict interpretation of the 1970 Act essentially forbade all new source construction in nonattainment areas. On December 21, 1976, EPA issued its Emission Offset Interpretive Ruling (41 FR 55525) that specified how nonattainment areas could allow industrial growth while still making progress toward standard attainment. When Congress amended the CAA in 1977, they added the Interpretive Ruling to Sect. 129, thus creating Part D of Title I of the Act. On January 16, 1979, EPA revised the Interpretive Ruling (44 FR 3274) to make minor changes in definitions and requirements. The 1979 Ruling applied to all applications for construction permits filed before July 1, 1979, the date when all states with approved SIPs assumed responsiblity for review and approval of new sources in nonattainment areas. States must either develop a preconstruction review program for nonattainment areas (under 40 CFR 51.18J), or else face a construction ban under which no new sources would be allowed.

State and local regulations and permitting programs based on 40 CFR 51.18J are not the only emission limitations facing a new source in nonattainment areas. Two additional types of regulations, which are applicable in all areas of the country (attainment, nonattainment, or unclassified), could place additional limitations on a new source, depending upon the source type.

2.2 New Source Performance Standards

New Source Performance Standards (NSPS) are maximum allowable emission limitations on 28 categories of industrial sources. The legislative mandate for NSPS is found in Sect. 111 of the CAA, and the standards themselves, which are promulgated by EPA, are found in 40 CFR Part 60. Table 2 lists the NSPS for energy-related industries with which DOE is likely to become involved.

Table 2. New Source Performance Standards for energy projects

Source category[a]	Affected facilities	Pollutant	Emission limit[b]
Subpart D: Fossil-fuel-fired steam generators	Fossil fuel and wood-fired steam generating units capable of firing fuel at a heat input rate of more than 73 MW (250 MMBtu/hr)	TSP	43 ng/J heat input (0.1 lb/MMBtu)
		Opacity	6 min average not greater than 20%[c]
		SO_2	
		liquid fuel or liquid + wood	340 ng/J (0.8 lb/MMBtu)
		solid fuel or solid + wood	520 ng/J (1.2 lb/MMBtu)
		NO_x	
		gas or gas + wood	86 ng/J (0.2 lb/MMBtu)
		liquid or liquid + wood	130 ng/J (0.3 lb/MMBtu)
		solid or solid + wood[d]	300 ng/J (0.7 lb/MMBtu)
Subpart Da: Electric utility steam generating units	Electric steam generators capable of combusting more than 73 MW (250 MMBtu/hr) heat input of fossil fuel; electric utility combined cycle gas turbines capable of combusting more than 73 MW (250 MMBtu/hr) heat input of fossil fuel	TSP	
		gaseous fuel	13 ng/J (0.03 lb/MMBtu)
		liquid fuel	13 ng/J (0.03 lb/MMBtu) and 30% of potential combustion concentration
		solid fuel	13 ng/J (0.03 lb/MMBtu) and 1% of potential combustion concentration
		Opacity	6 min average not greater than 20%
		SO_2	
		solid or solid-derived fuel[e]	520 ng/J (1.2 lb/MMBtu) and 10% of potential combustion concentration or 30% of potential combustion concentration when emissions are less than 86 ng/J (10.2 lb/MMBtu)
		liquid or gaseous fuel	340 ng/J (0.8 lb/MMBtu) and 10% of potential combustion concentration or 100% of potential combustion concentration when emissions are less than 86 ng/J (10.2 lb/MMBtu)
		NO_x	
		gaseous fuel[f]	86 ng/J (0.20 lb/MMBtu) and 25% reduction of potential combustion concentration
		liquid fuel[g]	130 ng/J (0.50 lb/MMBtu) and 30% reduction of potential combustion concentration
		solid fuel[h]	260 ng/J (0.60 lb/MMBtu) and 65% reduction of potential combustion concentration

Table 2. New Source Performance Standards for energy projects (continued)

Source category[a]	Affected facilities	Pollutant	Emission limit[b]
Subpart E: Incinerators	Incinerators with charging rates in excess of 45 MT/day (50 tons/day)	TSP	0.18 g/dscm (0.08 gr/dscf) corrected to 12% CO_2.
Subpart J: Petroleum refiners	Fluid catalytic cracking unit catalyst regenerators; fuel gas combustion devices; Claus sulfur recovery plants with capacity exceeding 20 long tons/day	TSP catalyst regenerator	1.0 kg/1000 kg (1.0 lb/1000 lb) of coke burnoff in catalyst regenerator
		fuel combustion	43 g/MJ (0.1 lb/MMBtu) above 1.0 kg/1000 kg due to fuel combustion in heat recovery device
		Opacity	30% (except for 1 6 min. avg. per hour)
		CO	0.050% by volume
		SO_2 fuel H_2S level	230 mg/dscm (0.10 gr/dscf)
		Claus plant	0.025% by volume of SO_2 and 0% O_2 on a dry basis 0.030% by volume of reduced sulfur compounds 0.0010% by volume of H_2S calculated as SO_2 at 0% O_2 on a dry basis
Subpart K: Storage vessels for petroleum liquids	Vessels with capacity in excess of 15,146 ℓ (40,000 gal)	VOC	Use of floating roof, fixed roof w/internal floating roof, vapor recovery system, or equivalent system capable of reducing VOC emissions 95% by weight
Subpart Y: Coal preparation plants	Plants with capacity in excess of 200 tons/day; thermal dryers, pneumatic coal-cleaning equipment, coal processing anc conveying equipment, coal storage systems, and coal transfer and loading systems	TSP thermal dryer	0.070 g/dscm (0.031 gr/dscf)
		pneumatic equipment	0.040 g/dscm (0.018 gr/dscf)
		Opacity thermal dryer	20%
		pneumatic equipment	10%

Table 2. New Source Performance Standards for energy projects
(continued)

Source category[a]	Affected facilities	Pollutant	Emission limit[b]
Subpart GG: Stationary gas turbines	Turbines with heat input at peak load equal to or greater than 10.7 gigajoules per hour based on lower heating value of fuel fired	NO_x	Computed according to formulae based on heat rate of turbine and fuel bound nitrogen
		SO_2	0.015% by volume at 15% O_2 on a dry basis; sulfur in fuel limited to 0.8% by weight

[a]As listed in 40 CFR Part 60.

[b]Emission limit cannot be exceeded; joule refers to heat input.

[c]One 6-minute period per hour of not more than 27% opacity is allowed.

[d]For fuel derived from lignite or lignite and wood, the emission limit is 260 ng/J (0.60 lb/MMBtu); for fuel derived from North Dakota, South Dakota, or Montana lignite and which is burned in a cyclone-fired unit, the emission limit is 340 ng/J (0.80 lb/MMBtu).

[e]For SRC-I coal the emission limit is 520 ng/J (1.20 lb/MMBtu) and 15% of original combustion concentration; for any facility that combusts 100% anthracite coal, or is a resource recovery facility, or is located in a noncontinental area, the emission limit is 520 ng/J (1.20 lb/MMBtu).

[f]For coal-derived gaseous fuels, the emission limit is 210 ng/J (0.50 lb/MMBtu).

[g]For coal-derived liquid fuels and shale oil the emission limit is 210 ng/J (0.50 lb/MMBtu).

[h]For coal-derived solid fuels the emission limit is 210 ng/J (0.50 lb/MMBtu); any fuel containing more than 25% by weight of coal refuse is exempt from the NO_x standards and NO_x monitoring requirements; for any fuel containing more than 25%, by weight, lignite if the lignite is mined in North Dakota, South Dakota, or Montana, and is combusted in a slag tap furnace the emission limit is 340 ng/J (0.80 lb/MMBtu); lignite not subject to the 340 ng/J heat input emission limit is subject to an emission limit of 260 ng/J (0.60 lb/MMBtu); subbituminous coal is subject to an emission limit of 210 ng/J (0.50 lb/MMBtu); bituminous and anthracite coal are subject to an emission limit of 260 ng/J (0.6 lb/MMBtu).

Unlike the Interpretive Ruling, state and local agencies do not have the option of developing their own, more stringent versions of NSPS based on the federal regulations. NSPS are national emission standards for sources that EPA feels contribute significantly to air pollution. NSPS affect only new sources, because Congress reasoned that these sources had the greatest flexibility to be designed to incorporate the latest and most effective emission control technology. The states may be delegated authority by EPA to implement the NSPS. If such delegation does not occur, then the EPA regional office implements the NSPS. At least thirty-eight states (Appendix B) presently (as of July 1, 1981) have authority to implement and enforce portions of the NSPS (40 CFR Part 60). At the request of Congress, EPA has published a prioritized list of 59 major source categories for future NSPS development, many of which may emit significant amounts of volatile organic compounds (VOC). The list, which is updated periodically and published in the Federal Register, is an advance notice of future NSPS development.

2.3 National Emission Standards for Hazardous Air Pollutants

The second type of emission standard that could apply to a new or existing source in a nonattainment area is the National Emission Standard for Hazardous Air Pollutants (NESHAP). Section 112 of the CAA requires EPA to list hazardous air pollutants for which it intends to establish national emissions standards. Within one year of listing a pollutant, EPA must promulgate a standard that provides an "ample margin of safety to protect public health" from the hazardous effects of the pollutant. A hazardous air pollutant is defined in Sect. 112 as an "air pollutant to which no ambient air quality standard is applicable and which in the judgment of EPA may cause, or contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness" (42 U.S.C. 7412).

Since 1970, EPA has listed seven chemicals as hazardous pollutants and has established emissions standards for four of those seven. Table 3 summarizes the four chemicals and their respective emissions standards; the three substances for which standards have not yet been established are benzene, arsenic, and radionuclides (NCAQ 1981). Other chemicals are being considered for regulation by EPA under Sect. 112, and future listings will be published in the Federal Register as they are developed. It is EPA's intent that states implement the NESHAP program as part of their programs for permitting new sources of air pollution. Over 30 states have been delegated authority by EPA to implement the NESHAP program (40 CFR 61.04); these are listed in Appendix C.

3. DOE Compliance

Figure 1 presents a simplified approach for obtaining an air quality permit in a nonattainment area. The permitting steps shown in Fig. 1 are those involving the exchange of information between DOE and the permitting agency. Procedural details are contained in the Environmental Compliance Guide (DOE 1981). Briefly, the permitting process begins with the project manager determining the designated attainment status of the area of interest for each criteria pollutant and preparing a forecast of the air emissions generated by the proposed project. The attainment status designation, together with preliminary emission estimates for the project, determine the pollutants for which a project will undergo review by the regulatory agency. Next, an informal meeting is held between DOE and the appropriate regulatory agency to review the details of a proposed project and to discuss regulations that could potentially affect the project. The appropriate information for the permit application is then gathered by DOE and the application is submitted to the regulatory agency. In general, the agency will grant a permit when it is satisfied that the project would not cause or contribute to a violation of any NAAQS. In a nonattainment area, the agency will grant a permit when it is satisfied that the source will not interfere with demonstrating RFP towards standard attainment.

A review of nonattainment area permitting programs found that from the date of initial submittal of an application to the granting of a permit, the median time for permit processing was from three to five months, depending on the size of the source (Dames and Moore 1981). If air quality modeling is required, or if an environmental impact statement is required before a permit can be issued, then considerably more time would be required for permit approval. For example, monitoring could add a minimum of one year to the time required for permit approval (ERT 1980).

Table 3. National Emission Standards for Hazardous Air Pollutants

Pollutant	Affected facilities	Standard[a]
Asbestos	Asbestos mills, roadway surfacing, manufacturing, demolition and renovation, spraying, fabricating, insulating, wastewater treatment	No visible emisions to the outside air
Beryllium	Extraction plants, ceramic plants, foundries, incinerators, propellant plants, machine shops processing beryllium alloy of more than 5% beryllium by weight	10 g emission per 24 hour period, or an ambient concentration of beryllium in the vicinity of a source of 0.01 $\mu g/m^3$ averaged over a 30-day period
	Rocket motor firing emissions to the atmosphere	Time weighted atmospheric beryllium concentrations of 75 µg minutes per m^3 of air within the limits of 10 to 60 minutes accumulated during any two consecutive weeks in any area to which an effect adverse to public health could occur
	collected emissions (in closed tank)	2 g/hour and a maximum of 10 g/day
Mercury	Mercury recovery from ore, chlor-alkali cells for chlorine gas and alkali metal hydroxide production	2300 g per 24 hour period
	Sludge incineration plants, sludge drying plants for processing wastewater treatment sludge	3200 g per 24 hour period
Vinyl chloride	Ethylene dichloride plants ethylene dichloride purification	10 ppm vinyl chloride, in exhaust gases
	oxychlorination reactor	0.2 g vinyl chloride/kg (0.0002 lb/lb) of 100% of the ethylene dichloride product
	Vinyl chloride plants	10 ppm vinyl chloride in exhaust gases
	Polyvinylchloride plants	10 ppm vinyl chloride in exhaust gases

[a]Standard is not to be exceeded.
Source: 40 CFR Part 61.

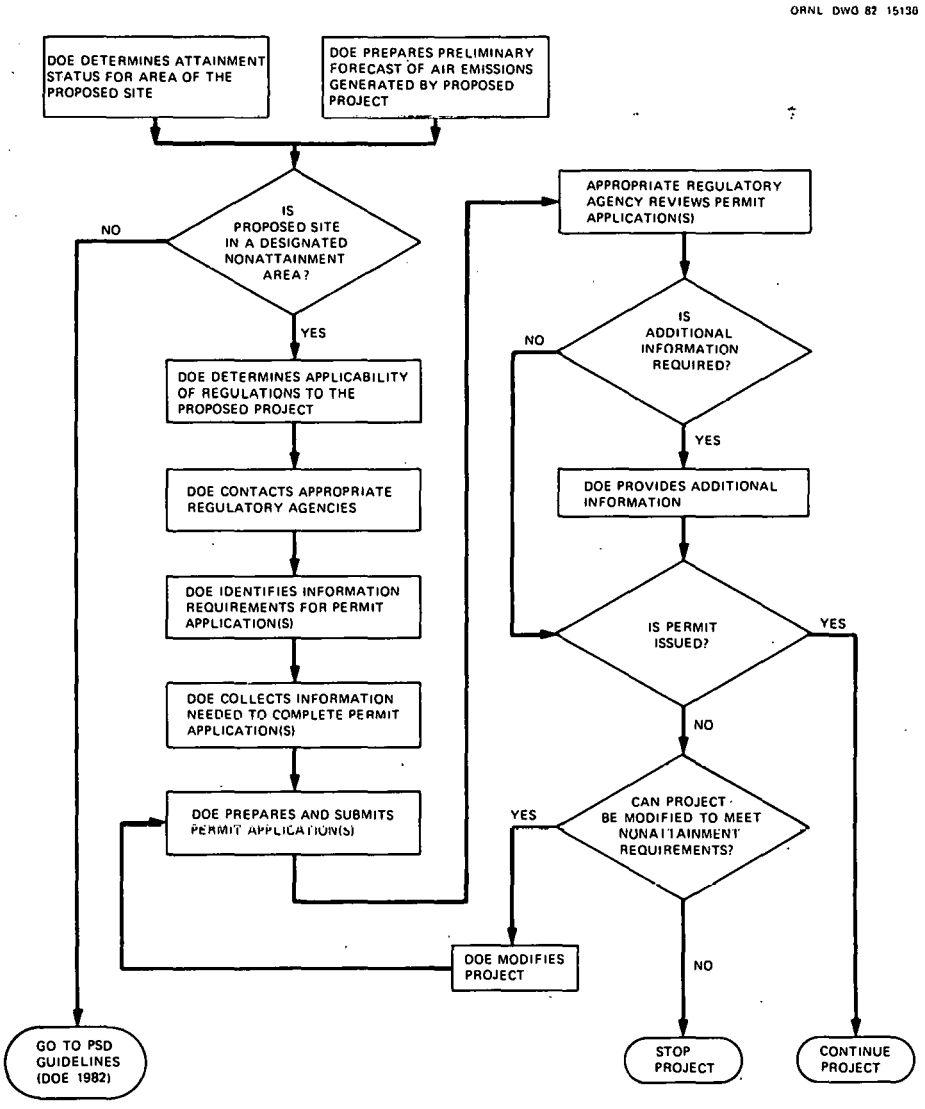

Figure 1. Basic steps for obtaining air permits in nonattainment areas.

This guidance manual is based on information required to comply with federal regulations. Air quality permitting in nonattainment areas is different from many environmental permitting procedures in that no federal agencies are responsible for issuing the permits; all such permitting is done by state or local pollution control agencies. To base the manual solely on federal requirements for nonattainment area permitting programs would not give a complete picture of the permitting process because under the CAA, any state or local agency may adopt regulations that are more stringent than federal requirements. Therefore, the approach taken in this manual is to discuss the federal requirements for nonattainment areas and then to supplement this discussion with examples from specific state or local permitting programs. A brief survey of state permitting programs in each of the ten EPA regions was conducted to locate information for the discussion; the survey was by no means exhaustive, and consequently, the state and local examples discussed in the manual may not represent the extremes of possible circumstances that a new source could encounter.

3.1 Determination of Attainment Status

Appendix A presents maps of recently designated nonattainment areas in the continental United States. In order to determine the officially designated attainment status of an area, DOE should consult 40 CFR 81.300 et seq. This section of the Code of Federal Regulations lists attainment status of various counties and parts of counties, by pollutant, for each state. The Federal Register should also be consulted to identify recent changes to an area's attainment status. Also, the DOE project manager should contact the appropriate Regional EPA office and state and local air pollution control agencies for information on the current attainment status of a particular site and any pending changes to the designated attainment status. These offices may also be able to define boundaries of sub-county nonattainment areas more precisely. The project manager should note the officially designated attainment status of the area of interest for each pollutant. The guidance in this manual applies to all pollutants for which the area is officially designated by the EPA as nonattainment; guidance in DOE (1982) should be followed for all pollutants for which the area is designated as attainment.

It should be noted that a project locating in a nonattainment area could be subject to Prevention of Significant Deterioration (PSD) regulations and associated information requirements if the proposed site is located near a Class I PSD area. Thus, DOE should identify and locate Class I areas near a proposed site and determine if any air quality impact analyses will be required. State and local air pollution control agencies will be helpful in this regard. If the source is close enough to a Class I area to warrant an analysis, then the project manager should refer to DOE (1982) for the information requirements for such an analysis.

3.2 Preliminary Estimates of Emissions

Preliminary estimates of emissions from the proposed DOE project should be obtained from project engineering staff. The rates of pollutant emissions from smokestacks, process vents, and leaks in valves and flanges should be estimated to the most quantitative extent possible. These emissions can sometimes be estimated from material balances, equipment design or operating data, and published emission factors (EPA 1981) that relate emissions to units of fuel burned or to units of product throughput (EPA 1978). Fugitive emissions, which are defined as "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening," must be included in the emission inventory calculations for 27 source categories (45 FR 52746-52748). The categories of the 27 that are of most relevance to DOE interests are coal cleaning plants (with thermal dryers), municipal incinerators capable of charging more than 250 tons of refuse per day, petroleum refineries, fuel conversion plants, chemical process plants, fossil fuel boilers (or combination thereof) totalling more than 264 GJ/hr (250 million Btu/hr) heat inputs, petroleum storage and transfer units with a total storage capacity exceeding 48,000 m^3 (300,000 bbls), fossil fuel-fired steam electric plants of more than 264 GJ/hr (250 million Btu/hr) heat input, and any other source which as of August 7, 1980 is regulated under Sect. 111 or Sect. 112 of the CAA (45 FR 52748), or any other future source.

The definition of the term pollutant requires some discussion at this point, to assist in estimating the proper emission rates. In general, attention should be focused at those pollutants subject to regulation under the CAA or those that could cause a

nuisance or adverse health effect (EPA 1978). Table 4 lists the 19 pollutants that are regulated under the CAA (i.e., those covered by NAAQS, NSPS, and NESHAP). State or local regulations may govern additional pollutants not listed in Table 1, but the list should cover most pollutants in most areas of the country. As an example, odorous pollutants, such as organic compounds from the processing of agricultural products (Faith 1977), may cause a community nuisance that requires regulation on the local level (Prokop 1978). Note that for nonattainment areas, only the following criteria pollutants are of concern: sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen dioxide, and lead. Areas are not designated attainment/ nonattainment for hydrocarbons because the hydrocarbon NAAQS is merely a guide to attaining the ozone standard.

Emissions should be estimated on a Mg/yr (tons per year) basis to determine compliance with nonattainment area regulations. Emissions profiles, which describe emissions on a short-term basis such as kg/day for a specified length of time (e.g., one year), are allowed in some states (Mayer 1982). Federal nonattainment area regulations require that emissions be calculated at the maximum production capacity of the source in question, under its physical and operational design (45 FR 52746).

3.3 Applicability of Regulations

The information discussed in the two preceding sections - designated attainment status and emission estimates - provides the DOE project manager with guidance on gathering information to determine if a given project will be subject to emission regulations. This section describes how to combine the information on attainment status and emissions to provide a preliminary estimate of the regulations affecting a project.

3.3.1 Preconstruction Review

Federal nonattainment area regulations contained in 40 CFR 51.18J apply to major new sources of air pollution and to major modifications of existing sources. Under the regulations, a major new source in nonattainment areas is one that emits, or has the potential to emit, 91 Mg/yr [100 tons per year (TPY)] or more of any air pollutant regulated under the CAA (45 FR 52746). "Potential to emit" refers to the maximum capacity of a stationary source to emit a pollutant under its physical and operational design, including the federally enforceable restrictions on the installation of air pollution control equipment, on production, and on hours of operation.

A major modification in nonattainment areas is any physical change in or change in the method of operation of an existing major stationary source that would produce a significant net increase in emissions of any regulated pollutant. Significant is defined as an emissions increase exceeding the following pollutant-specific values: carbon monoxide, 91 Mg/yr (100 TPY); nitrogen oxides, 36 Mg/yr (40 TPY); sulfur dioxide, 36 Mg/yr (40 TPY); particulate matter, 23 Mg/yr (25 TPY); ozone, 36 Mg/yr (40 TPY) of volatile organic compounds; and lead, 0.5 Mg/yr (0.6 TPY) (45 FR 52747).

In order to determine if a modification to an existing major stationary source would be classified as "major", DOE must do the following: (1) determine if the existing source is major [i.e., emissions exceed 91 Mg/yr (100 TPY)]; (2) add emissions increases and subtract emissions decreases occurring because of the modification; and (3) compute the net change in emissions after the modification is brought on line. This calculation procedure is termed emissions "netting".

The emissions increases and decreases used in the netting calculations must be both "contemperaneous" and "creditable" and must be based on actual emission data. To identify contemporaneous emissions, DOE must first establish a date on which it will commence construction on the modification. It must then identify all changes in actual emissions that have occurred at the source over the five years preceding this construction date. Then, DOE must establish a date on which the emission increases from the modification will occur (i.e., the date on which the modificaton will go on-line). Emission changes that occur before this date but after the five-year period (described above) will be contemporaneous (45 FR 52700).

Table 4. Air Pollutants Regulated Under the Clean Air Act

Asbestos	Fluorides	Ozone*
Beryllium	Hydrocarbons*	Particulate Matter*
Carbon Disulfide	Hydrogen Sulfide	Sulfuric Acid Mist
Carbonyl Disulfide	Lead*	Sulfur Dioxide*
Carbon Monoxide*	Mercury	Vinyl Chloride
Dimethyl Disulfide	Methyl Mercaptan	
Dimethyl Sulfide	Oxides of Nitrogen*	

*Denotes Criteria Pollutants.

SOURCE: National Ambient Air Quality Standards (40 CFR 50), New Source Performance Standards (40 CFR 60), and National Emissions Standards for Hazardous Air Pollutants (40 CFR 61).

All contemporaneous emissions that are creditable must be used in computing net emissions. Emission increases and decreases that had been previously analyzed for air quality impact (as part of an earlier regulatory review) may not be creditable for use in computing net emissions. Any emissions increase is creditable to the extent that the new level of actual emissions at the emissions unit in question exceeds the old actual level of emissions. Any contemporaneous emission decreases (in nonattainment areas) must meet four criteria before they can be considered as creditable for use in calculating net emissions. First, an emissions decrease resulting from shutting down or cleaning up an existing unit cannot exceed the actual emissions from that unit, even if the unit's allowable emissions are much higher than its actual emissions. Also, decreases obtained by bringing a unit into compliance with allowable emissions (those allowed under regulations) are not creditable. Second, all emission decreases must be federally enforceable as of the moment that actual construction begins on the modification in question. Third, an emission decrease is creditable to the extent that it has the same health and welfare significance as the emission increase in question. Fourth, a permitting agency may not credit a decrease to the extent that any permitting authority has already accepted the decrease in satisfying the offset requirements of the nonattainment regulations and consequently has issued a preconstruction permit to a source or modification (45 FR 52702). Emissions decreases used in demonstrating RFP cannot be credited to new sources. In other words, emission reductions may not be "double-counted". Note that some states do not allow netting.

Before October 14, 1981, new major sources and major modifications in nonattainment areas were subject to the dual service definition (46 CFR 50766). Under this definition a source is defined as both the entire plant and each piece of process equipment at the plant. Thus, a source could be subject to preconstruction review if the total emissions from the source exceeded the applicable threshold or if emissions from any piece of equipment at the source exceeded the appropriate threshold. The nonattainment definition affords fewer opportunities for a source to use plantwide emission reductions to avoid the need for a permit. On October 14, 1981, the EPA deleted the dual source definition and defined a source in nonattainment areas as an entire plant. However, on August 17, 1982, the D.C. Court of Appeals overturned the October 14 regulations and stated that the EPA must have a more stringent definition of source in nonattainment areas because, in these areas, the agency is attempting to improve poor air quality rather than maintain good air quality. The decision, which, has effectively reinstated the dual source definition, is expected to be appealed by EPA. The case (No. 81-2208) was filed by the Natural Resources Defense Council, Citizens for a Better Environment, and the Northwestern Ohio Lung Association.

Under the federal nonattainment area regulations, major new sources and major modifications to existing sources are subject to regulatory review (and thus the permitting process) for each pollutant emitted in major quantities and for which the area has been designated as nonattainment (45 FR 52711). Thus, a new source (or modification) that is major only for SO_2 locating in a nonattainment area for particulates and SO_2 would be reviewed only for SO_2. State and local regulations in nonattainment areas may have different, more stringent (i.e., lower) emission cutoff values for defining major sources and modifications. Some major source thresholds that were found in an informal survey of state and local regulations are summarized in Table 5. The states were selected by contacting each of the ten regional EPA offices and asking them for recommendations of exemplary permitting programs within their region. Each of the recommended state and local agencies was contacted and was asked to send copies of their regulations and permitting procedures. Some states were not included in Table 5 because their regulations did not lend themselves to the organization of the table. Note that some states have no threshold (i.e., their permitting procedure applies to all sources regardless of size). This approach is used by regulatory agencies to develop more accurate stationary source emission inventories. The information in Table 5 may not be the most current values of the emission thresholds. The information was obtained from copies of regulations requested from state agencies in late 1981 and early 1982, and from regulations published in the most recent version of Environment Reporter (BNA 1982). The threshold values listed in Table 5 are not intended to be exclusively representative of permitting programs in nonattainment areas.

Table 5. Major Source Thresholds Enforced by State and Local Air Pollutior Control Agencies

State/Local Agency	Thresholds [Tons per year (TPY) unless noted otherwise]	
	Major source	Majo~ modification
Wyoming	Zero[a]	Existing emissions[b]
Lake County, California	20 pounds per hour NO_x 150 pounds per hour or 1500 pounds per day CO 150 pounds per day organics or other pollutants	
Washington	100	Existing emissions (pollutants regulated by federal and state ambient standards)[b]
San Diego County, California	50[c] 1000 pounds/day 100 pounds/hour	Existing emissions[b]
Oregon	Significant emission rate[d]	Significant emissions[d]
Nevada	100 TPY[e]	Significant emissions
North Dakota	Zero[f]	Existing emissions[b]
New Mexico	Zero[a]	Existing emissions[b]
Kentucky	100 TPY	Significant emissions[d]
Virginia	100 TPY	Significant emissions[d]

[a]All sources, regardless of emission rate, are subject to the regulations.

[b]Any modification increasing emissions above current levels is subject to the regulations.

[c]Whichever is more restrictive; threshold is 100 TPY for carbon monoxide.

[d]Significant emissions are defined as rates equal to or exceeding the following: CO, 100 TPY; NO_x, 40 TPY; PM, 25 TPY; SO_2, 40 TPY; VOC, 40 TPY; Lead, 0.6 TPY; Mercury, 0.1 TPY; Beryllium 0.0004 TPY; Asbestos, 0.007 TPY; Vinyl chloride, 1 TPY; Fluorides, 3 TPY; Sulfuric acid mist, 7 TPY; H_2S, Total reduced sulfur, and reduced sulfur compounds, 10 TPY.

[e]For any stationary source listed in Sec. 169 (1) of the Clean Air Act; 250 TPY for other sources.

[f]For source types designated in state regulations.

3.3.2 New Source Performance Standards

The New Source Performance Standards (NSPS) apply to new sources of the types and sizes of industries specified in 40 CFR Part 60. Applicability of the NSPS does not depend on emissions, but rather it depends on the size or capacity of the source, as measured by fuel consumed, raw materials consumed, production rate, etc. The applicability of NSPS to source types of interest to DOE can be obtained from the second column of Table 2, which lists the sizes of sources subject to NSPS. Because the NSPS are national standards, there are no state or local thresholds that would be used to determine the applicability of the regulations.

3.3.3 National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) are applicable to new and existing sources of the types and sizes specified in 40 CFR Part 61. Applicability of the NESHAPs does not depend upon emissions, but rather on the size or capacity of the source. The applicability of the NESHAPs to DOE projects can be discerned by examining the second column of Table 3, which lists the facilities affected by the regulations. Because the NESHAPs are national standards, no state or local thresholds exist that would be used to determine the applicability of the regulations.

3.4 Regulatory Agency Contact

Initial contact, on an informal basis, with the regulatory agency having jurisdiction over the area of a project's proposed site will help identify the types of regulations that could affect the project and the information needs that could be associated with the permitting process. The DOE project manager can identify the appropriate regulatory agency by locating the appropriate state in Appendix D. If the state has delegated permitting authority to county or multicounty districts, then the state agency can refer the project manager to the appropriate local district. A supplementary source of information to Appendix D is the listing of federal, state, and local air pollution control agencies found in the annual directory of "Governmental Air Pollution Control Agencies" published by the Air Pollution Control Association (APCA 1982).

The DOE project manager should bring to the meeting the most current information on the project, including its industrial classification, its size, its estimated emissions, the location of the proposed site, the orientation of the buildings on the site, and regulations that the project manager thinks could apply to the project. The regulatory agency will review the necessary permit application forms with the DOE project manager, will identify applicable regulations, and will estimate the time required for granting of the permit. The agency will also inform the project manager of any permit data requirements that are particularly time-consuming. One of the major reasons for this initial meeting with the agency is to establish contacts for obtaining information and guidance during subsequent steps in the permitting process.

3.5 Identification of Environmental Information Requirements

This section identifies and discusses information required to comply with the three types of federal regulations with which DOE could encounter when constructing new sources or modifying existing sources in nonattainment areas: preconstruction review, NSPS, and NESHAP. Most state and local permitting procedures ensure compliance with these regulations by requiring both a permit to construct and a permit to operate for new sources and modifications, as directed by Congress in Sect. 172 (b)(6) of the CAA. Both preconstruction review and NESHAP are concerned with permits to construct and operate, whereas the NSPS primarily deal with the permit to operate (although they can be associated with obtaining a permit to construct). All construction permits are Federally enforceable, but only some operating permits are Federally enforceable (Mayer 1982).

3.5.1 Preconstruction Review

To receive a permit to construct in a nonattainment area under 40 CFR 51.18J, projects involving major new sources or modifications are required to:

- reduce emissions to the Lowest Achievable Emission Rate (LAER);
- demonstrate that all other sources owned by the applicant in the state are in compliance with all applicable emission regulations;
- offset any emissions remaining after attaining the LAER on a greater than one-for-one basis by controlling emissions from existing sources;
- prove the region will continue to demonstrate RFP after the source begins operation.

Complying with these four requirements is accomplished through the preconstruction review process. The remainder of this section discusses information required to comply with the four provisions of 40 CFR 51.18J. Where appropriate, specific examples from state regulations are discussed.

3.5.1.1 Information required to determine LAER

Lowest Achievable Emission Rate (LAER) is defined in 40 CFR 51.18J as:

> "(i) The most stringent emissions limitation which is contained in the implementation plan of any state for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or
>
> (ii)The most stringent emissions limitation which is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance."

Much research is required to determine LAER, according to a strict interpretation of the LAER definition. In practice, however, state and local permitting agencies have tended to specify LAER based on more readily available information on emission limitations (NCAQ 1981). The National Commission on Air Quality has determined that for source types for which NSPS, Control Techniques Guidelines (CTG), or other formal guidance exists, the permitting agencies tend to specify LAER as that defined by the formal guidance (NCAQ 1981).

NSPS are discussed in Sect. 2.2 of this report and are listed (for energy projects) in Table 3. CTG are recommended emission controls that represent Reasonably Available Control Technology (RACT) for existing stationary sources of volatile organic compounds (VOC). The ozone portion of the SIPs must contain regulations reflecting the application of RACT to those stationary source types for which CTG's have been published. For each source category, a CTG describes the source, identifies the VOC emission points, discusses the applicable control methods, analyzes costs required to implement the control methods, and recommends regulations for limiting VOC emissons from the source. Appendix E contains a listing of published CTG documents and their corresponding EPA report numbers.

A rule of thumb that can be used to obtain a rough estimate of the degree of control required for LAER is the emission limit established by the NSPS or CTG for the particular source category. A compilation of LAER determinations published by EPA for various source types (Wunderle 1980) may also be useful in gauging the level of emission control needed to comply with the regulations. The DOE project manager should maintain

close communication with the permitting agency regarding the determination of LAER for the project of interest.

If the dual source definition is maintained for nonattainment areas, DOE could be required to define LAER for each piece of process equipment exceeding the applicable threshold, in addition to defining LAER for the entire plant. Attaining the LAER is required only for those pollutants for which the increased allowable emissions (those calculated using the maximum rated capacity of the source and the most stringent of NSPS, NESHAP, SIP limit, or federally enforceable permit conditions) exceed 45 Mg/yr (50 TPY), 454 kg/d (1000 lbs/d, or 45 kg/hr (100 lbs/hr), although the reviewing authority may address other pollutants. The preceding hourly and daily rates apply only to pollutants for which a 24-hr (or shorter time period) NAAQS has been established.

3.5.1.2 Sources in compliance

A second condition that must be met to fulfill federal requirements for permitting in nonattainment areas is the certification by DOE that all other major sources under its jurisdiction (owned or operated by DOE) in the same state as the proposed source are in compliance with all applicable emission limitations and standards under the CAA, or are in compliance with an expeditious schedule that is federally enforceable or contained in a court decree. The state air pollution control agency would be the best source for this information.

3.5.1.3 Offsets

Pollutant emission rates after LAER is achieved must be offset on a greater than one-for-one basis by reducing emissions from existing sources in the area of the proposed project, or by using a growth allowance provided by the state (in which the state "gives" the offsets of the source). Emission offsets must involve the same criteria pollutant. For example, particulate emissions may not be offset by sulfur dioxide emissions. Reducing hydrocarbon emissions of low photochemical reactivity and increasing emissions of high reactivity is not allowed (see, for example, 42 FR 35314, 45 FR 32424, and 45 FR 48341).

Only surplus emissions may be used in offset arrangements (47 FR 15076). Surplus emissions are those not currently required by law, and are defined with respect to a baseline established by state air pollution control agencies. The DOE project manager should determine what the baseline emissions level is for the particular source type in question, and also what units are used to define the baseline (actual emissions or allowable emissions), by contacting the appropriate state or local regulatory agency.

Any emission reduction that is negotiatied as part of an offset arrangement must be both federally enforceable and permanent. To ensure enforceability, the DOE project manager, in conjunction with the state agency, should verify that any offset arrangement was conducted as a SIP revision, generic rule action, or permit requirement (47 FR 15076). Permanence is generally assured by requiring changes in source permits to reflect a reduced level of permissible emissions (47 FR 15076).

Offsets must also be quantifiable, in terms of measuring the amount of emission reductions and characterizing the reduction for future use. For preconstruction review of new sources, DOE would probably estimate emissions, and corresponding reductions, with emission factors (EPA 1981). Because all of the reductions involved in an offset arrangement must be quantified in the same manner (47 FR 15076), DOE would be required to estimate emissions from the source of offsets using emission factors also. For modifications to existing sources, emission reductions could be quantified by stack tests or continuous monitoring. The DOE project manager should refer to 40 CFR Parts 60 and 61 for approved procedures to be used in conducting stack tests and monitoring for various pollutants.

In general, emission offsets should be made on a kg/hr (lbs/hr) basis when all facilities involved in the emission offset arrangement are operating at their maximum expected or allowed production rate. Other averaging periods may be allowed by the reviewing agency in addition to pounds per hour. If Mg/yr (TPY) are used, the baseline emissions for existing sources providing the offsets should be calculated using the actual annual operating hours for the previous one or two year period (or other period if warranted by cyclical business conditions).

The location of the offsetting emissions is closely related to the air quality benefit that will result from the arrangement. Consequently, restrictions on the location of the offsets have been established. In general, all offsets should be obtained as close to the proposed source as possible; the farther away the offsets are located from the source, the greater should be the emission offsets required. In the case of emission offsets involving volatile organic compounds and nitrogen oxides in ozone nonattainment areas, the Emission Offset Intrepretive Ruling (40 CFR Part 51, Appendix S) requires that offsets be obtained anywhere in the "broad vicinity" of the proposed new source. Offsets will be acceptable if obtained from within the same AQCR as the new source or from other areas that may be contributing to the ozone problem at the location of the proposed new source. Offsets within a "broad vicinity" are acceptable because ozone and NO_2 nonattainment areas tend to be regional, rather than localized, problems that are not as dependent on specific VOC or NO_x source locations as they are on overall area emissions. On the other hand, the air quality impacts of sulfur dioxide (SO_2), particulate matter (PM), and carbon monoxide (CO) sources are site dependent, and simple area wide emission offsets are not appropriate. Thus, emission offsets for SO_2, PM, and CO sources should be obtained from an existing source on the same premises or in the immediate vicinity of the proposed new source such that a net air quality benefit (see next section), as confirmed with atmospheric dispersion modeling, occurs.

If demonstrating RFP for the region in question is based on actual emissions, then all offset arrangements must be based on actual emissions. If RFP is based on allowable emissions (those emission levels described by permits), then either actual or allowable emissions may be used in offset arrangements (Mayer 1982).

Examples of state and local permitting procedures illustrate the types of offset requirements that a DOE project manager could encounter. Table 6 summarizes offset ratios required by some state and local regulatory agencies. The wide variability in offset ratios is of interest. Ratios range from "greater than 1:1" to that computed with a formula expressing the ratio as a function of distance between sources. Several state regulations surveyed were found to contain no numerical offset ratio requirements; these states required only that emissions after the new source begins operation be less than those existing prior to the new source.

The reviewing authority may allow banking of emissions; that is, if a new source obtains emission reductions from existing sources that exceed those required for reasonable progress toward attainment, these emissions may be saved for use in future offset arrangements. The owner of an existing source may reduce emissions beyond those required by the SIP for use in providing future offsets. Banked offsets may be used in a preconstruction review program as long as the banked emissions are identified and accounted for in the SIP control strategy. The reviewing authority should identify and account for the banked emissions in a SIP revision or a permit, and establish rules for the use of banked emissions, in order to preserve the banked offsets. DOE should contact the appropriate agency to obtain information on the applicable banking rules.

If DOE creates an emission reduction for deposit in an emission bank, the project manager may be required to provide information to evaluate the proposed use of an emission reduction. This information could include the location of the source creating the reductions, its stack parameters, the temperature and velocity of its plume, particle size of emissions, the existence of any hazardous pollutant emissions, daily and seasonal emission rates, and any other data that might be necessary to evaluate future use of the emission credits (47 FR 15084). For example, the emissions bank in Jefferson County, Kentucky requires a variety of information for banking; DOE would need to complete all items denoted by an "X" in the form shown in Fig. 2 for each source of banked emissions. This ledger is then maintained by the Jefferson County Air Pollution Control District to track the emission reductions. The Banking Application Information form that is used by the Bay Area Air Quality Management District requires less information than the form in Fig. 2; the applicant only needs to provide the company name, contact, location of proposed reductions, and emission reductions (expressed as tons/year annual average) applied for (Phillips 1981).

If DOE wants to withdraw emission reductions from an existing bank, it may be required to submit information on the location of the source using the offsets, the purpose of the offsets, the pollutants being offset, and the effect of the use of the banked emissions on ambient air quality. In terms of information requirements, using a public emissions bank may be less demanding than using internal offsets or negotiating

Table 6. Example Emission Offset Ratios Required by Various State and Local Air Pollution Control Agencies

Control Agency	Offset Ratio
Michigan[a]	Must not be less than 1.2:1 for areas that are nonattainment for the primary standard. Must be greater than 1:1 for areas that are nonattainment for the secondary standard. Must not be less than 1.5:1 for trades involving fugitive emissions
San Diego County, California[a]	Must not be less than 1.2:1
Washington[a]	1.3:1
Missouri[a]	Must be greater than 1:1 if no growth increment is allowed 1:1 if growth increment is allowed
Colorado[a]	Must be greater than 1:1
Bay Area Air Quality Management District, San Francisco, California[b]	2:1 for offsets of organic compounds and nitrogen oxides within 30 miles of a new source, or for offsets of particulates, sulfur dioxide, or carbon monoxide within 10 miles of a new source, when emissions are expressed as an annual average 1.2:1 for offsets of organic compounds and nitrogen oxides within 15 miles of a new source or for offsets of particulates, sulfur dioxide, or carbon monoxide within 5 miles of a new source
San Diego County, California[c]	Ratio = a + b(x), where a = 1.2 for an offset not on property contiguous with the site of the new source or 1.0 if it is on property contiguous with the site of the new source; x is the distance in kilometers between the new source and the source of the offsets; b = 0 at distances less than 8 kilometers and 0.01 at distances greater than or equal to 8 kilometers.

[a]Source: State or local regulations.
[b]Source: Phillips, 1981.
[c]Source: Liroff, 1980.

Figure 2.

X: DOE PROVIDES

BANKED EMISSIONS LEDGER

JEFFERSON COUNTY AIR POLLUTION CONTROL DISTRICT

☐ ACTIVE

☐ CLOSED

X 1. **Pollutant Description** _____

2. Deposit Code ☐☐☐☐☐ - ☐☐☐

3.a. Date of Deposit _____ b. Closing Date _____

X 4.a. **Depositor of Banked Emissions** _____

X b. **Address** _____ c. Plant EIS _____

d. Company that generated emission reduction _____

e. Previous deposit codes for these emissions _____

X 5.a. **Description of process generating banked emissions and permit numbers**

_____

_____

_____

_____

_____

X b. **What caused emissions to be available for banking?**

_____

_____

X 6. **Banked emissions prior to discounting** _____ Tons/yr

7. Initial discount _____ Tons/yr

8. Balance (subtract Line 7 from Line 6) _____ Tons/yr

For further explanation see Note Nos. _____

First Withdrawal

9. Date _____ Buyer _____ Permit No. _____

10. Emissions from source requiring offsets (but before applying offset ratio) _____ Tons/yr

11. Offset ratio _____:1

12. Offset emissions (multiply line 10 by Line 11) _____ Tons/yr

13. Balance (subtract Line 12 from Line 8) _____ Tons/yr

For further explanation, see Note nos. _____

Second Withdrawal

14. Date _____ Buyer _____ Permit No. _____

15. Emissions from source requiring offsets (but before applying offset ratio) _____ Tons/yr

16. Offset ratio _____:1

17. Offset emissions (multiply Line 15 by Line 16 _____ Tons/yr

18. Balance (subtract Line 17 from Line 13) _____ Tons/yr

For further explanation, see Note nos. _____

Third Withdrawal

19. Date _____ Buyer _____ Permit No. _____

20. Emissions from source requiring offsets (but before applying offset ratio)

21. Offset ratio _____:1

22. Offset emissions (multiply Line 21 by Line 22) _____ Tons/yr

23. Balance (subtract Line 23 from Line 19)

Enter here and on Line 24, page 2 _____ Tons/yr

For further explanation, see Note nos. _____

Figure 2. (continued)
BANKED EMISSIONS LEDGER

24. Balance (from Line 23) _____ Tons/yr

Fourth Withdrawal

25. Date _____ Buyer _____ Permit No. _____
26. Emissions from source requiring offsets (but before applying offset ratio) _____ Tons/yr
27. Offset ratio _____:1
28. Offset emissions (multiply Line 26 by Line 27) _____ Tons/yr
29. Balance (subtract Line 28 from Line 24) _____ Tons/yr
    For further explanation, see Note nos. _____

Fifth Withdrawal

30. Date _____ Buyer _____ Permit No. _____
31. Emissions from source requiring offsets (but before applying offset ratio)
32. Offset ratio _____:1
33. Offset emissions (multiply Line 31 by Line 32) _____ Tons/yr
34. Balance (subtract Line 33 from Line 29) _____ Tons/yr
    For further explanation, see Note nos. _____

No.	NOTES

Figure 2. (continued)

EMISSIONS BANK DATA ENTRY*

Source Name _____ Page _____

Address _____ Completed by _____

Date _____

Affected Facility	Permit No.	Date of Reduction	Tons/yr, Reduction below baseline**						Note No.
			PART	SO_2	HC	NO_x	CO	Other	

*DOE provides all information on this form.
**See District Regulation 2.12, Note: SO_2 SIP attainment strategy is based on allowable emissions. SIP attainment for the other pollutants is based on actual emissions. The base year varies.
Source: Reproduced from form 266-B provided by the Jefferson County Air Pollution District, Louisville, KY.

external offsets because DOE would not need to submit information to the regulatory agency proving the legality of the emissions. Additional information on banking may be found in EPA (1980a).

If no emission offsets are available through public emission banks, DOE should examine the feasibility of obtaining offsets at its own facilities. In formulating internal offsets, DOE should be certain that all sources used in the offset arrangement are in compliance with all applicable regulations and that any further reductions in emissions at the facilities were not already accounted for in the SIP by the state agency. Close communication with the air regulatory agency may be useful in this regard. DOE also needs to know the appropriate offset ratio, any restrictions on distance between a source and its emission offsets, and the baseline emissions for determined offsets. Lastly, if no public bank is available and no internal offsets are possible, DOE would need to negotiate external offsets. To do so, DOE would first need to locate potential sources of offsets within the distance restrictions established by the regulatory agency. Next, DOE would need to identify the pollutants emitted and the emission rates from the potential offset source. The baseline for emission offsets would need to be established by contact with the appropriate regulatory agency. DOE would then need to negotiate the offsets with the owner of the offset source, and any negotiated transactions would require approval by the regulatory agency.

It is important to note that offset arrangements could add considerable time to the permitting process because approval of the arrangement by a state agency could require a SIP revision. In lieu of revising the SIPs, states now have the option of adopting generic rules, in which the SIP is revised for one source type, and future sources need not go through the SIP revision process for approval of offset arrangements (47 FR 15076). Use of generic rules instead of SIP revisions would simplify the permitting process.

If DOE has a project in a state that uses growth allowances to offset emission increases from new sources, then the information needed to meet the offset requirement will be reduced because the state will "give" the offset to DOE. With growth allowances, the state knows the maximum increase in emissions that can occur in a nonattainment area while still demonstrating RFP, and it apportions these increases to new sources as permit applications are filed.

Net Air Quality Benefit. DOE must prove that any emissions offsets negotiated for a given project will result in a "positive net air quality benefit" in the affected area. In nonattainment areas, use of offsets cannot create a new violation of an ambient standard or prevent the planned removal of an existing violation. For offsets involving VOC or NO_x, whose impacts occur across broad geographic areas, kilogram-for-kilogram reductions and increases in emissions can be assumed to be equal in ambient effect, and a net air quality benefit does not need to be demonstrated. Ambient considerations are critical for offsets involving SO_2, particulates, or carbon monoxide, whose air quality impact may vary with location of the source of emissions.

Offset transactions must demonstrate ambient progress (i.e., progress towards attainment of the ambient standards). This demonstration is typically made through mathematical dispersion modeling that predicts the ambient impact of emissions. A three tier approach to modeling is being authorized by EPA in which the degree of modeling required is linked to the likely ambient impact of the proposed offset arrangement. The more complex modeling exercises will require more information on the part of DOE. Thus it is to DOE's advantage to perform no more sophisticated modeling than is required. The three tier approach can be summarized as follows (47 FR 15076):

Level I: No modeling is needed if the proposed TSP, SO_2, or CO trade does not result in a net increase in applicable baseline emissions, if the emission sources are located in the same immedicate vicinity, and if no increase in emissions occurs at a lower effective plume height.

Level II: Limited modeling involving the specific emission sources in the trade is needed for trades not included in Level I if there is no net increase in applicable baseline emissions and if emissions after the trade will not cause a significant air quality impact at the receptor of maximum predicted impact. States may us the following pollutant levels to judge a significant impact: 10 $\mu g/m3$ for the 24 hour TSP standard; 13 $\mu g/m3$ for the 24 hour SO_2 standard; and 575 $\mu g/m3$ for the 8-hour CO standard.

Level III: Full dispersion modeling, considering all sources in the area of impact, is required if net applicable emissions will increase as a result of the trade (which can't legally occur under the federal offset arrangements) or if the trade will have a significant impact on air quality at the receptor showing the maximum ambient impact.

In general, dispersion modeling will require the selection of a model and the gathering of local and regional emissions data, background pollutant levels, meteorological data, and topographical information for the general area of a proposed site. Model selection should be done with the assistance of the applicable state or local regulatory agency; EPA guidelines on air quality models (EPA 1980b) may be useful in this regard. Local and regional emissions data should be available from the state or local regulatory agency; these data could also be found in the nonattainment area plan for the area of interest. Background pollutant levels are available from state and local monitoring programs carried out by the regulatory agencies; many of these data are also published by EPA. Meteorological data collected at National Weather Service Stations are available in hard copy or computer magnetic tape format from the National Climatic Center in Asheville, North Carolina. Limited meteorological data are also available from airports. Topographical information can be obtained from quadrangle maps published by the United States Geological Survey.

Demonstrating that a net air quality benefit will result from offset arrangement is required only for those pollutants for which the increased allowable emissions exceed 45 Mg/yr (50 TPY), 454 kg/d (1000 lbs/d), or 45 kg/hr (100 lbs/hr), although the reviewing authority may address other pollutant emissions if deemed necessary. The preceding rates apply only to those pollutants for which a 24 hr or less NAAQS has been established (see Table 1).

3.5.2 New Source Performance Standards

Compliance with New Source Performance Standards (NSPS) is generally required before a new source is issued a permit to operate. It is important to note that a source receiving a permit in a nonattainment area most likely will already have complied with the NSPS emission limit because in theory meeting the LAER requirements means that emissions from the source are at least as stringent as the NSPS limitations. The information required to comply with the NSPS usually consists of preliminary notification requirements, emission measurements (stack tests or continuous monitoring), reporting of emission data to the appropriate regulatory agency, and recordkeeping of the data. Typically, the emission measurements to determine compliance with NSPS are made after the shakedown period of a new source.

Notification requirements for complying with the NSPS are contained in 40 CFR 60.7 and are summarized in Table 7. Requirements for emission measurements vary according to the NSPS and the pollutant. Table 8 summarizes the monitoring requirements for the NSPS that are likely to be of most interest to DOE project managers (see Table 2). In general, two types of emission measurements are made. Performance tests are stack measurements conducted not later than 180 days after startup but wihin 60 days after achieving the maximum production rate. The pollutant measurements made during the stack tests are used to determine compliance with the NSPS. Continuous emission monitoring (CEM) is required for certain pollutant emissions and from specified source types. The data collected by the CEM meet the performance test requirements and thus are used to determine NSPS compliance. Details of the performance tests and the CEM procedures are too detailed to list here, and the reader is referred to the appropriate NSPS in 40 CFR Part 60 for more information.

Once emission data have been collected, various data reporting requirements must be met to comply with the NSPS. Most of the recordkeeping requirements pertain to the facility after it has received a permit and has begun operation. Records should be maintained by DOE of the occurrence and duration of any startups, shutdowns, or malfunctions in operation of the facility, air pollution control equipment, or continuous emission monitoring system. Quarterly progress reports on excess emissions (defined separately for each NSPS), as recorded by monitoring devices, should also be submitted by DOE. DOE should also maintain a file of all emissions measurements, including CEM data and monitoring device performance test data, for a period of two years.

Table 7. Notification Requirements for NSPS Compliance

Information Required in Written Notification	Deadline
Date that construction of an affected facility* is commenced	No later than 30 days after such date
Anticipated date of initial startup of an affected facility	No more than 60 days nor less than 30 days prior to such date
Actual date of initial startup of affected facility	Within 15 days after such date
Physical or operational change to existing facility that may increase emission rate of any pollutant	60 days or as soon as practicable before the change is made
Date upon which demonstration of performance of continuous monitoring system commences	Not less than 30 days prior to such date.

*See column 2 of Table 2 for affected facilities for energy related projects.

Table 8. Monitoring Requirements Associated with New Source Performance Standards for Energy-Related Projects

NSPS	Pollutant	Monitoring Requirement
Subpart D: Fossil-fuel fired steam generators	TSP	Performance test[a]
	Opacity	Continuous[b]
	SO_2	Continuous[b,c]
	NO_x	Continuous
Subpart Da: Electric steam generators and electric utility combined cycle gas turbines	TSP	Performance test
	Opacity	Continuous
	SO_2	Continuous[c]
	NO_x	Continuous
Subpart E: Incinerators	TSP	Performance Test
Subpart J: Petroleum refiners	TSP (Opacity)	Continuous
	CO	Continuous
	SO_2	Continuous
	H_2S	Continuous
Subpart K: Storage vessels for petroleum liquids	VOC	Performance test
Subpart Y: Coal preparation plants	TSP	Performance test
	Opacity	Continuous
Subpart GG: Stationary gas turbines	NO_x	Performance test
	SO_2	Performance test

[a]Performance test criteria are published for each NSPS in the appropriate Subpart of 40 CFR Part 60.
[b]Not required for gaseous fuel combustion.
[c]Continuous monitoring not required if no FGD device is present and if the owner/operator monitors SO_2 by fuel sampling and analysis.

3.5.3 National Emission Standards for Hazardous Air Pollutants

As part of the application for a permit to construct, DOE must submit information to comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP). Under 40 CFR 61.07 the owner or operator of any new source or modification subject to the NESHAP (see column 2 of Table 3) must submit to EPA an application for construction or modification; in general, this application shall include the following information:

- The name and address of the applicant.
- The location or proposed location of the source.
- Technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including a description of any equipment to be used for control of emissions.

Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of such calculations. The above information must be submitted prior to the date on which the construction or modification is planned to commence, or within 30 days after the effective date (date at which a NESHAP becomes effective) in the case of a new source that has begun construction or modification, but that has not yet begun operation. If a DOE source is expected to begin operation after the effective date of a NESHAP, then DOE must inform the appropriate regulatory agency of the anticipated startup of the source not more than 60 days nor less than 30 days prior to the startup, and of the actual date of initial startup within 15 days after such date.

If a DOE project involves an existing source that is subject to the NESHAP, or a new source that began operation before the effective date of a NESHAP, then DOE must submit the following information to the appropriate regulatory agency within 90 days of the date the NESHAP becomes effective:

- Name and address of the owner or operator.
- The location of the source.
- The type of hazardous pollutants emitted by the stationary source.
- A brief description of the nature, size, design, and method of operation of the stationary source including the operating design capacity of such source. Identification of each point of emission for each hazardous pollutant.
- The average weight per month of the hazardous materials being processed by the source, over the last 12 months preceding the date of the report.
- A description of the existing control equipment for each emission point.
  - (•) Primary control device(s) for each hazardous pollutant.
  - (•) Secondary control device(s) for each hazardous pollutant.
  - (•) Estimated control efficiency (percent) for each control device.
- A statement by the owner or operator of the source as to whether he can comply with the standards prescribed in this part within 90 days of the effective date.

A waiver of compliance with a NESHAP may be requested (in writing) by DOE if the project is unable to comply with the standard within the 90 day period. The waiver may be allowed for a period not exceeding two years from the effective date of the standard. The written request should include the following information:

- A description of the controls to be installed to comply with the standard.
- A compliance schedule, including the date each step toward compliance will be reached. Such list shall include as a minimum the following dates:
  - (•) Date by which contracts for emission control systems or process modifications will be awarded, or date by which orders will be issued for the purchase of component parts to accomplish emission control or process modification;
  - (•) Date of initiation of onsite construction or installation of emission control equipment or process change;
  - (•) Date by which onsite construction or installation of emission control equipment or process modification is to be completed; and
  - (•) Date by which final compliance is to be achieved.
- A description of interim emission control steps which will be taken during the waiver period.

3.6 Permit Applications

The discussion to this point has focused on federal requirements for compliance with regulations applicable to DOE projects locating in nonattainment areas. Because these regulations are implemented on the state or local level, other information needs may exist that have been added into the state or local permitting system to address various local concerns not specifically required in Part D, Title I of the CAA. A discussion of all of the state permitting programs and their unique information requirements is clearly beyond the scope of this document. To completely ignore the specifics of local permitting programs, however, does not provide an adequate picture of information requirements associated with air quality permitting. This section will, therefore, discuss selected state and local permit requirements and will provide some idea of the types of information that could be required to secure an approved permit.

Many state and local agencies have permit applications that vary with the type of source. As an example, Fig. 3 presents a "general" type of permit application that is used for fuel burning equipment (although not necessarily exclusively in nonattainment areas) (EPA 1978). As can be seen by inspection of Fig. 3, most of the information needs are straightforward and should be readily obtainable from a project engineer.

To provide information on the types of information that could be required in a permit application, state and local regulations were surveyed. Table 9 presents a summary of broad types of information that could be required in the context of permitting programs. The summary is not intended to represent requirements unique to nonattainment area permitting, nor is it intended to present an exhaustive survey of regulations. Rather, the purpose of the table is to illustrate the types of requirements that are not explicitly stated in Title I Part D of the CAA but can and do appear in permitting programs. Some of the more unique requirements include: the method of process and air pollution control equipment waste disposal, as required by Michigan, Missouri, and Lake County, California; a plan for reducing emissions during air pollution episodes or emergencies, as required by Michigan and Alaska; and information necessary for the preparation of environmental assessment documents, as required by Michigan and New Mexico.

3.7 Exemptions from Regulatory Review

Under EPA's recent Emissions Trading Policy Statement (47 FR 15076) DOE could reduce the information required for compliance with the CAA by exempting projects from regulatory review. This exemption is achieved by reducing emissions below the appropriate threshold (see Sect. 3.3) for new sources and modifications. The technique of netting, in which plant-wide emissions from a modification are reduced to an insignificant total (see Sect. 3.3), may be used to exempt a modification of an existing plant from preconstruction review permits and associated requirements, including monitoring, modeling, installation of control technology to meet the LAER, and the

FUEL BURNING EQUIPMENT

(Boilers, Heaters, and Steam Generators)

1. Manufacturer _____ Model No. _____

2. Your identification _____ Year installed _____

3. Input capacities (10^6 BTU/hr): Rated _____ Max. _____ Normal _____
   Output capacities (lb–steam/hr): Rated _____ Max. _____ Normal _____
   Note: Indicate units if different from above.

4. Percent used for: Space heat _____% Process _____% Power _____%

5. Normal Operating schedule: _____ hr/day, _____ day/wk, _____ wk/yr

6. Type of fuel fired: ☐ Coal ☐ Oil ☐ Natural gas
   ☐ Wood ☐ LPG ☐ Other, specify _____

7. Type of draft: ☐ Natural ☐ Induced ☐ Forced

8. Combustion monitoring: ☐ Fuel/air ratio ☐ O_2 ☐ Smoke
   ☐ Other, specify _____

COAL-FIRED UNITS

9. Type of firing: ☐ Hand-fired ☐ Underfeed stoker ☐ Traveling grate
   ☐ Chain grate ☐ Spreader stoker ☐ Cyclones
   ☐ Pulverized, dry bottom ☐ Vibrating grates
   ☐ Pulverized, wet bottom
   ☐ Other, specify _____

10. Fly ash reinjection: ☐ Yes ☐ No

OIL-FIRED UNITS

11. Type of oil: ☐ No. 2 ☐ No. 6 ☐ Other, specify _____

12. Atomization: ☐ Oil pressure ☐ Steam pressure ☐ Compressed air
    ☐ Rotary cup ☐ Other, specify _____

13. Oil preheater: ☐ Yes, temp. _____°F ☐ No

Figure 3. Example permit application form for fuel burning equipment

SOURCE: EPA 1978

FUEL DATA

14. Complete the following tables for each type of fuel:*

Type of fuel	Heat content (BTU/unit)	Percent		Quantity of fuel used		
		Ash	Sulfur	Per year	Normal/hr	Maximum/hr
Coal	BTU/lb			ton	lb	lb
Oil	BTU/gal			gal	gal	gal
Gas	BTU/cu ft			cu ft	cu ft	cu ft
Wood	BTU/lb			ton	lb	lb
LPG	BTU/gal			gal	gal	gal
Other						

Type of fuel	Percent annual use			
	Winter	Spring	Summer	Fall
Coal				
Oil				
Gas				
Wood				
LPG				
Other				

*Obtain fuel analysis from vendor(s) and report on an as-received basis. Use weighted annual averages.

CONTROL EQUIPMENT

Control equipment code:

(A) Settling chamber
(B) Cyclone
(C) Multiple cyclone
(D) Electrostatic precipitator
(E) Fabric collector (baghouse)
(F) Spray chamber
(G) Cyclonic scrubber
(H) Packed tower
(I) Venturi
(J) Other _____

15. Control equipment data:

Item	Primary collector	Secondary collector
(a) Type (see above code)		
(b) Manufacturer		
(c) Model No.		
(d) Year installed		
(e) Your identification		
(f) Pollutant controlled		
(g) Controlled pollutant emission rate (if known)		
(h) Pressure drop		
(i) Design efficiency		
(j) Operating efficiency		

Figure 3. (cont.) Example permit application form for fuel burning equipment

SOURCE: EPA 1978

EMISSION POINT DATA

16. Your emission point identification _____

17. Are other sources vented to this stack? ☐ Yes ☐ No
    If yes, identify sources _____

18. Type: ☐ Round, top inside diameter dimension _____
    ☐ Rectangular, top inside dimensions (L)_____ x (W)_____

19. Height: Above roof _____ ft, above ground _____ ft

20. Exit gas: Temp. ____°F, Volume _____ acfm, Velocity _____ ft/min

21. Continuous monitoring equipment: ☐ Yes ☐ No
    If yes, indicate type _____, Manufacturer_____
    Make or model _____, Pollutant(s) monitored_____

22. Emission data: Emissions from this source have been determined and such data are included with this appendix: ☐ Yes ☐ No
    If yes, check method: ☐ Emission test ☐ Emission factor

Completed by _____, Date _____

Figure 3. (cont.) Example permit application form for fuel burning equipment

SOURCE: EPA 1978

Table 9. Information Requirements Associated With Air Quality Permitting Procedures in Selected States

State	Information Requirement*								
	Identification of Pollutants Emitted and Physical and Chemical Properties	Expected Emission Rate of Each Air Pollutant	Description of Process and Air Pollution Control Measures and Air Cleaning Devices	Location and Elevation of Emission Point (Maps, Aerial Photos)	Method of Disposal of Wastes Resulting from Operation of Process Equipment or Air Cleaning Device	Plan for Reducing Emissions During Air Pollution Alerts or Episodes	Information Necessary to Perform Environmental Assessments	Data Describing the Effects of Air Emissions on Human Health and the Environment	Detailed Description of Proposed Construction Schedule
Michigan	X	X	X	X	X	X	X	X	-
Missouri	X	X	X	X	X	-	-	X	-
Virginia	X	X	X	X	-	-	-	X	-
New Mexico	X	X	X	X	-	-	X	X	-
Colorado	X	X	X	X	-	-	-	X	-
Lake County, Calif.	X	X	X	X	X	-	-	X	-
Wyoming	X	X	X	X	-	-	-	X	X
San Diego, Calif.	X	X	X	X	-	-	-	X	-
Oregon	X	X	X	X	-	-	-	X	X
Alaska	X	X	X	X	-	X	-	X	X

*An "X" in the box indicates that the state listed has an information requirement identical or similar to that listed in the column; a dash indicates that no such requirement was found in the regulations.
Source: State regulations and BNA, 1982.

obtaining of emission offsets (47 FR 15077). The new facility must still meet applicable emission limits established by NSPS and NESHAP. The rules governing netting in nonattainment areas, which were discussed in Sect. 3.3.1 of this manual, in the context of calculating significant net increases in emissions from major modifications, are published in 45 FR 52676 and 46 FR 50766. The DOE project manager should attempt to use netting wherever possible to reduce the information requirements associated with CAA compliance. To do so, the project manager should be aware of emission thresholds that are applicable to a given project. Close communication between the project manager and the project engineer should facilitate design of emission rates that do not exceed the threshold.

Some DOE projects may be exempt from all or part of the Federal offset ruling requirements because of the nature of the project. Fuel conversions are exempt from the requirements of the entire offset policy if the conversion is done by reason of an order under the 1974 Energy Supply and Environmental Coordination Act (ESECA) or by a natural gas curtailment plan, if the source could accommodate the alternative fuel prior to December 21, 1976, or if the conversion uses refuse derived fuel generated from municipal solid waste. Temporary emission sources (e.g., pilot plants), portable facilities that will be relocated away from the nonattainment area after a short time, construction projects, and new resource recovery facilities using municipal solid waste are exempt from obtaining offsets and from demonstrating that a net air quality benefit will occur. Secondary emissions are exempt from the requirement to meet the Lowest Achievable Emission Rate (LAER) and the requirement to demonstrate that all sources in the state are in compliance with all applicable standards and regulations (Fisher and Little 1982).

3.8 Consideration of Alternatives

The preparation of an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) requires the consideration of alternatives. The Clean Air Act also requires the consideration of alternatives for new sources locating in nonattainment areas of ozone and carbon monoxide. Section 172 of the CAA, as modified by the 1977 Amendments, directs, in part (b) (11), nonattainment area pollution control agencies to do the following in nonattainment area plans:

> "(a) establish a program which requires, prior to issuance of any permit for construction or modificatoin of a major emitting facility, an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source which demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification."

These directions apply only to those areas that have received an extension from EPA to meet the ozone and CO standards by December 31, 1982.

Consequently, the manager of a DOE project locating in a nonattainment area for ozone or carbon monoxide that has received an EPA extension can expect to be required to analyze alternatives to the project as required above. An general survey of state regulations found that most states have incorporated this language into their permitting procedures. The DOE project manager should contact the appropriate state or local regulatory agency to determine the level of analysis required for the consideration of alternatives.

3.9 Post Permitting Requirements

Once DOE has secured a permit to construct and a permit to operate for a given project, it could still be faced with additional information requirements for CAA compliance. Three such postpermitting situations in which additional information could be required are in the response to citizen complaints against a facility, annual compliance tests and reinspection, and the renewal of air quality permits. Figure 4(A) presents basic steps that DOE could be required to complete in order to respond to a community complaint (EPA 1978). In general, responding to citizen complaints primarily entails process adjustments (which could include control equipment installation) to

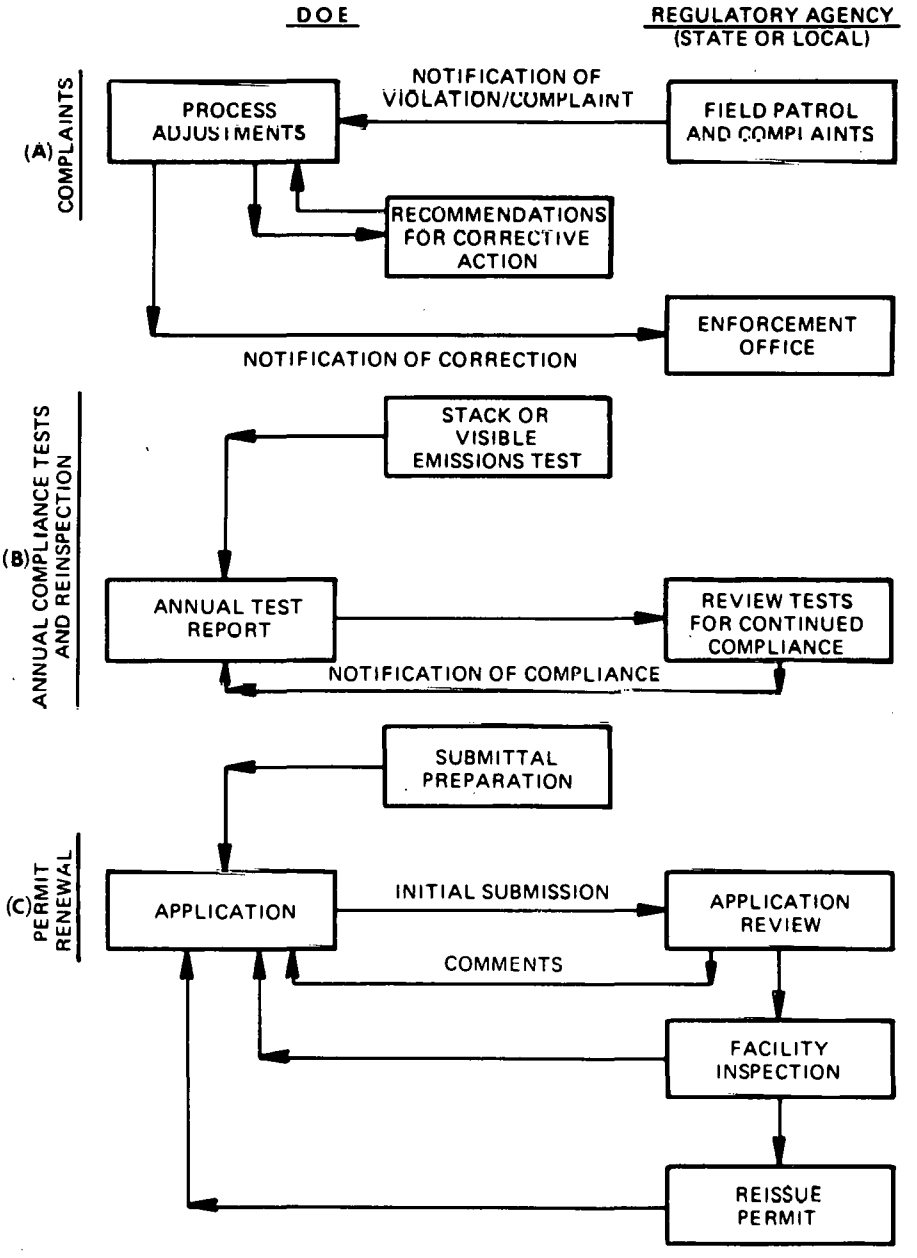

Figure 4. Continuation of Permit System

SOURCE: EPA 1978

reduce emissions below the level contributing to or causing community annoyance. Annual compliance tests [Fig. 4(B)] primarily involve visual or stack tests of emissions from a facility and the preparation of an annual report describing the emission testing. Permit renewal, outlined in Fig. 4(C), is basically a reiteration of the permit process, and should involve no new information other than updated changes to processes, physical plant characteristics, and emissions. In addition to state and local post permitting requirements, DOE facilities must comply with DOE Order 5484.2, which outlines a system for report to DOE Headquarters "unusual occurrences" (e.g., excessive air emissions) that could adversely or potentially affect the "performance, reliability, or safety of a facility" (DOE 1981c).

4. Summary and Conclusions

Information requirements for air quality permitting in nonattainment areas are not spelled out in detail in federal laws and regulations, primarily because there are no federal nonattainment area permits issued. Aspects of the federal regulations that potentially require the most information are the determination of Lowest Achievable Emission Rate (LAER), the negotiation of emission offsets, and the consideration of project alternatives in ozone and carbon monoxide nonattainment areas. State regulations developed in response to the federal regulations generally specify in greater detail the information needed to obtain a permit. On the state or local levels, two permits are typically required: one for construction of a facility, and one for the operation of the facility. Applications for permit to construct require emissions data, meteorological and topographical data, and results of air quality dispersion modeling. Permits to operate require compliance with pollutant-specific emission limitations on the state, local, and federal levels; determining compliance with these standards usually requires intermittent testing and sampling, and could in addition require continuous emission monitoring and associated data reporting requirements.

The Clean Air Act is expected to be amended in 1982 or 1983 in connection with periodic reauthorizations of the Act. It is difficult at this time to pinpoint possible changes in the CAA that could affect the permitting process in nonattainment areas. Unless sweeping changes are made to the Act, it is unlikely that any amendments would have a significant effect on nonattainment area permitting because such permitting is done on the local level. If the provisions of the CAA affecting nonattainment area permitting are weakened (made less stringent), states would not be required to change their permitting procedures because any state or local air pollution control regulation can be more stringent than that required by federal law or regulations.

The principal area in which nonattaiment permitting information requirements overlap with information requirements of other regulations is in the providing of emissions data and the use of air quality disperson modeling. These two features of nonattainment area permitting are also required by federal Prevention of Significant Deterioration (PSD) permitting procedures. In the rare event that ambient air quality monitoring would be required as part of a permit application for a source in a nonattainment area, the PSD monitoring guidelines (EPA 1980c) would probably be used, thus creating another area of information overlap.

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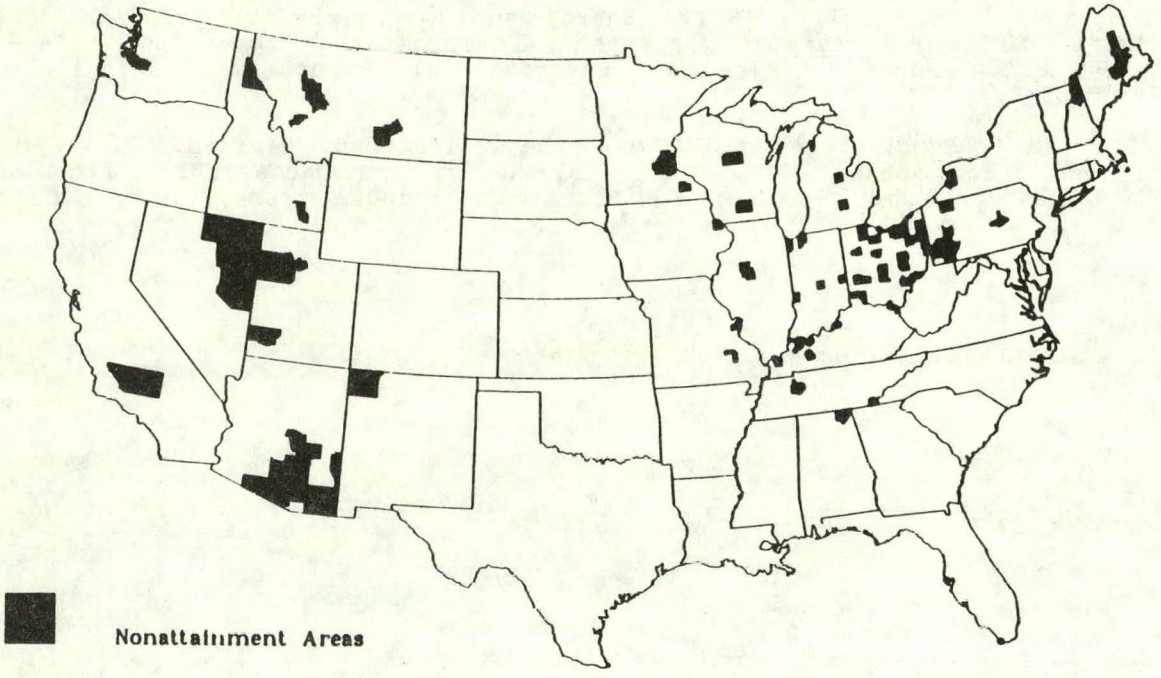
Appendix A

Maps of Areas in the U.S. Recently Designated as Nonattainment for the Primary National Ambient Air Quality Standards

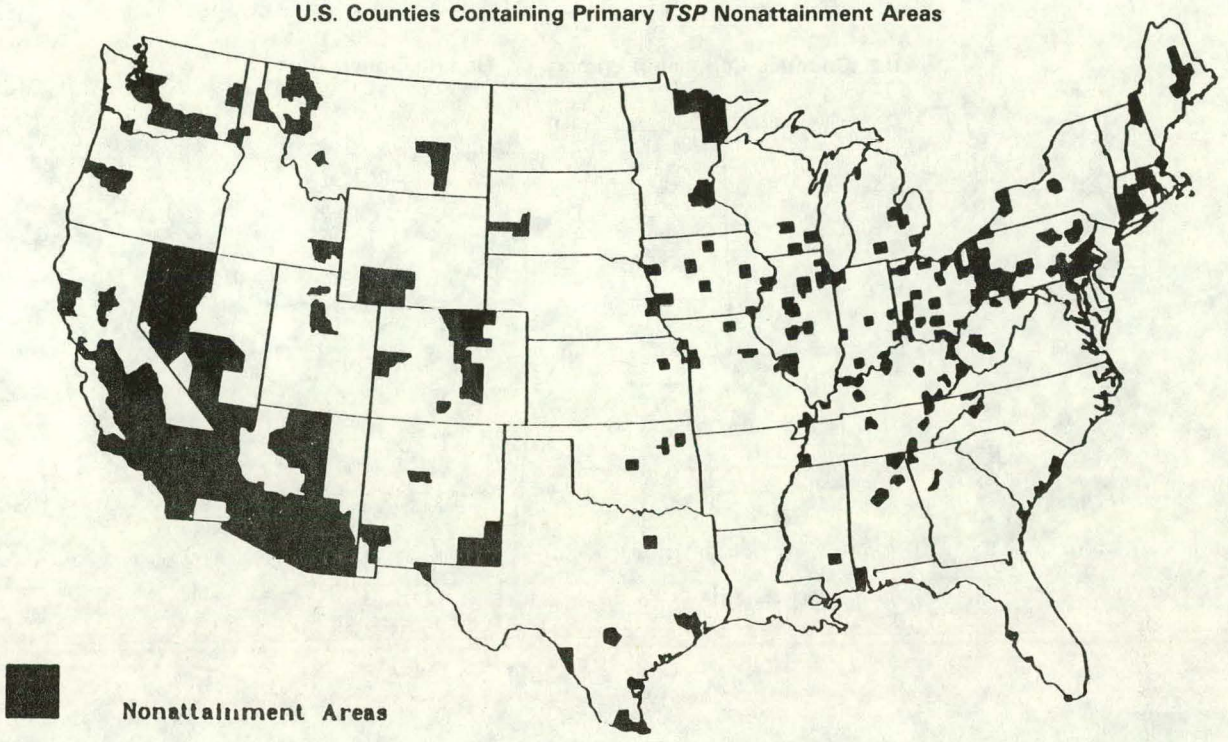
The geographical information presented in this Appendix allows the DOE project manager to approximate the locations of nonattainment areas in the United States. The project manager should consult 40 CFR 81.300 et seq. and the Federal Register for current and official designations of the attainment status of a particular area.

U.S. Counties Containing Primary SO_2 Nonattainment Areas



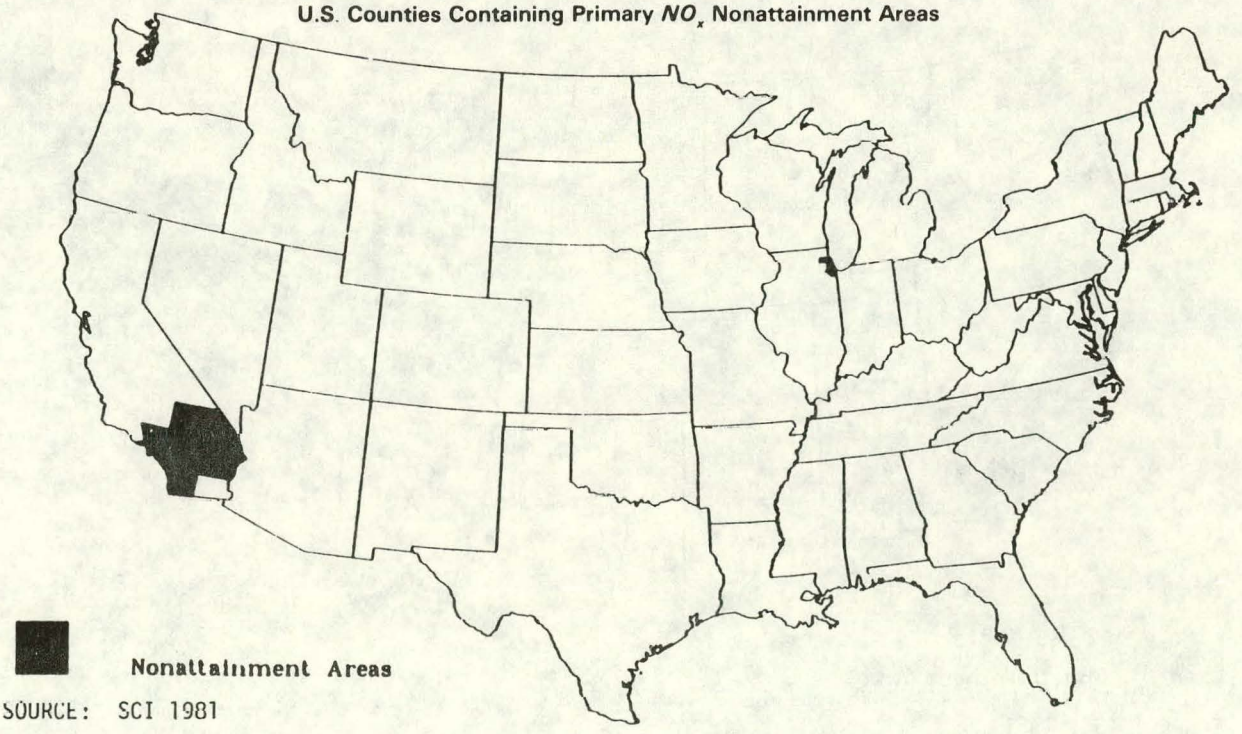
SOURCE: U.S. Department of Energy, Office of Technology Impacts, "In Pursuit of Clean Air: A Data Book of Problems and Strategies at the State Level," ANL/EES-TM-90, Vol. 1, February 1980. As reproduced in SCI 1981.

U.S. Counties Containing Primary *TSP* Nonattainment Areas



Nonattainment Areas

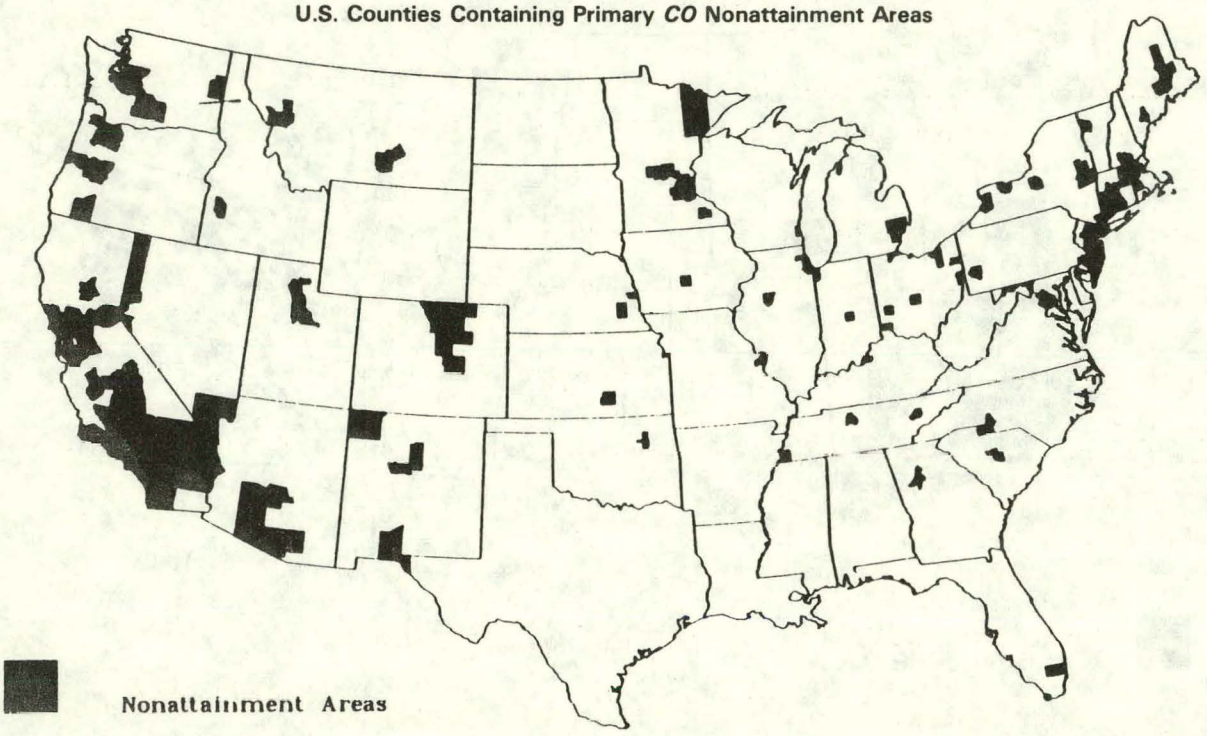
U.S. Counties Containing Primary NO_x Nonattainment Areas



Nonattainment Areas

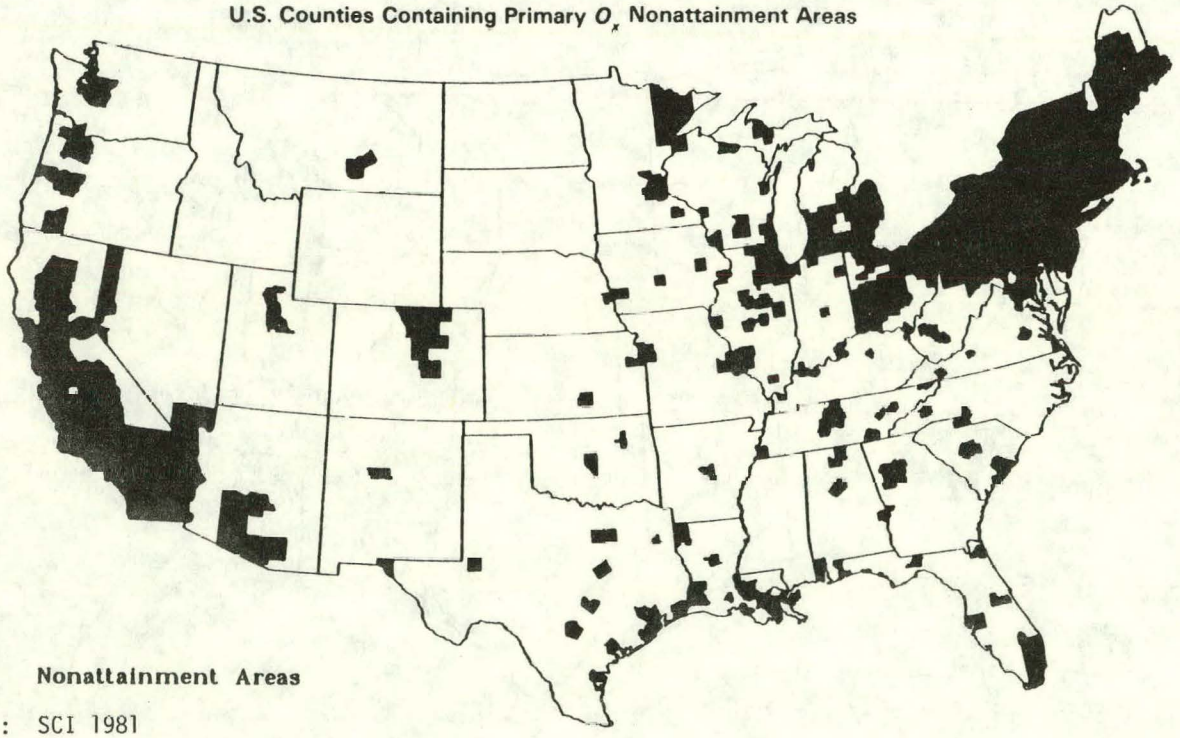
SOURCE: SCI 1981

U.S. Counties Containing Primary *CO* Nonattainment Areas



Nonattainment Areas

U.S. Counties Containing Primary O_x Nonattainment Areas



Nonattainment Areas

SOURCE: SCI 1981

Appendix B

List of States with Authority to Implement New Source Performance Standards*

Alabama	Kentucky	New Hampshire	South Dakota
Arizona	Maine	New Jersey	Tennessee
California	Maryland	New York	Texas
Colorado	Massachusetts	North Carolina	Utah
Connecticut	Michigan	North Dakota	Vermont
Delaware	Minnesota	Ohio	Virginia
Georgia	Mississippi	Oregon	Washington
Idaho	Montana	Pennsylvania	Wisconsin
Indiana	Nebraska	Rhode Island	Wyoming
Iowa	Nevada	South Carolina	

*As of July 1, 1981. Refer to Appendix D for names and addresses, and telephone numbers of specific state agencies with regulatory authority. Note that the states listed may not have assumed authority to implement all NSPS; in most cases, states elect to implement only portions of the NSPS.

Appendix C

List of States with Authority to Implement
National Emission Standards for Hazardous Air Pollutants*

Alabama	Massachusetts	Ohio
Arizona	Michigan	Oregon
California	Minnesota	Pennsylvania
Colorado	Mississippi	Rhode Island
Connecticut	Montana	South Carolina
Delaware	Nevada	Tennessee
Georgia	New Hampshire	Texas
Indiana	New Jersey	Vermont
Kentucky	New York	Virginia
Maine	North Carolina	Washington
Maryland	North Dakota	Wisconsin

*As of July 1, 1981. Refer to Appendix D for names, addresses, and telephone numbers of specific state agencies with regulatory authority.

Appendix D.

List of State Air Pollution Control Agencies

State	Agency Title	Agency Address	Telephone Number	Contact
Alabama	Alabama Air Pollution Control Commission	645 S. McDonough Street Montgomery, Alabama 36130	(205) 834-6570	James W. Cooper
Alaska	State of Alaska, Department of Environmental Conservation	Pouch 'O' Juneau, AK 99811	(907) 465-2600	Ernst W. Mueller
Arizona	Arizona Department of Health Services	1740 W. Adams Street Phoenix, AZ 85007	(602) 255-1140	Arthur A. Aymar
Arkansas*	Arkansas Department of Pollution Control and Ecology	8001 National Dr. Little Rock, AR 72219	(501) 371-1701	Wilson L. Tolefree
California	State Air Resources Board	1102 Q Street Sacramento, CA 95814	(916) 322-2895	James D. Boyd
Colorado	Air Pollution Control Division Colorado Department of Health	4210 E. 11th Avenue Denver, CO 80220	(303) 320-4180	Earnie E. Vickrey
Connecticut	Department of Environmental Protection Air Compliance Unit	165 Capitol Ave., Room 144 Hartford, CT 06115	(203) 566-4030	Leonard Bruckham
Delaware*	Delaware Department of Natural Resources and Environmental Control	P.O. Box 1401 Dover, DE 19901	(302) 736-4764	Robert R. French
District of Columbia*	District of Columbia Department of Environmental Services, Bureau of Air and Water Quality	5010 Overlook Ave., SW. Washington, DC 20032	(202) 767-7370	Venkataraman Ramadass
Florida	Department of Environmental Regulation	Twin Towers Office Building 2600 Blair Stone Rd Tallahassee, FL 32301	(904) 488-1344	Steve Smallwood
Georgia	Environmental Protection Division Department of Natural Resources	270 Washington St., SW Atlanta, GA 30334	(404) 656-4713	R. H. Collom, Jr.
Hawaii*	Environmental Protection and Health Services Services Division, Hawaii State Department of Health	1250 Punchbowl Street Honolulu, HI 96813	(808) 548-6455	Melvin K. Koizumi
Idaho*	Idaho Department of Health and Welfare Division of Environment	450 W. State, 5th Floor Boise, ID 83720	(208) 344-6875	Lee W. Stokes
Illinois	Illinois Environmental Protection Agency Division of Air Pollution Control	2200 Churchill Road. Springfield, IL 62706	(217) 782-7326	Daniel J. Goodwin

Appendix D.

List of State Air Pollution Control Agencies (continued)

State	Agency Title	Agency Address	Telephone Number	Contact
Indiana	Indiana State Board of Health	1330 W. Michigan Street Indianapolis, IN 46206	(317) 633-0600	Harry D. Williams
Iowa	Iowa Department of Environmental Quality Air and Land Quality Division	900 East Grand Avenue Henry A. Wallace Building Des Moines, IA 50319	(515) 281-8853	Charles C. Miller
Kansas	Kansas Department of Health and Environment	Forbes Field Topeka, KS 66620	(913) 862-9360	Howard F. Saiger
Kentucky	Division of Air Pollution Control Department for Natural Resources and Environmental Protection	Fort Boone Plaza 18 Reilly Road Frankfort, KY 40601	(502) 564-3382	Norman E. Schell
Louisiana*	Department of Natural Resources Office of Environmental Affairs, Air Quality Division	625 North Fourth Street Baton Rouge, LA 70804	(504) 342-1206	Gus Von Bodungen
Maine*	Department of Environmental Protection Bureau of Air Quality Control	State House Augusta, ME 04333	(207) 289-2437	David E. Tudor
Maryland	Air Management Administration Office of Environmental Programs	201 W. Preston Street Baltimore, MD 21201	(301) 383-2775	George P. Ferreri
Massachusetts	Division of Air Quality Control	One Winter Street Boston, MA 02100	(617) 292-5593	Kenneth Hagg
Michigan	Air Quality Division Michigan Department of Natural Resources	P.O. Box 30028 Lansing, MI 48909	(517) 322-1330	Robert P. Miller
Minnesota	Minnesota Pollution Control Agency	1935 W. County Road, B-2 Roseville, MN 55113	(612) 296-7301	J. Michael Valentine
Mississippi*	Mississippi Department of Natural Resources Bureau of Pollution Control	2380 Highway 80 West Jackson, MS 39209	(601) 961-5171 or 961-5099	Dwight K. Wylie
Missouri	Missouri Department of Natural Resources Division of Environmental Quality Air Pollution Control Program	1101 Rear Southwest Boulevard Jefferson City, MO 65101	(314) 751-4817	Robert J. Schreiber, Jr
Montana	Montana State Department of Health and Environmental Sciences, Air Quality Bureau	Cogswell Building Helena, MT 59620	(406) 449-3454	Harold W. Robbins

Appendix D.

List of State Air Pollution Control Agencies (continued)

State	Agency Title	Agency Address	Telephone Number	Contact
Nebraska	Department of Environmental Control	301 Centennial Mall South P.O. Box 94877 Lincoln, NE 68509	(402) 471-2186	Gene Robinson
Nevada	Division of Environmental Protection	201 South Fall Street Carson City, NV 89710	(702) 885-4670	Dick Serdoz
New Hampshire*	New Hampshire Air Resources Agency	Hazen Drive Concord, NH 03301	(603) 271-4582	Dennis R. Lunderville
New Jersey	New Jersey Bureau of Air Pollution Control Division of Environmental Quality Department of Environmental Protection	CN027 Trenton, NJ 08625	(609) 292-5450	Herbert I. Wortreich
New Mexico	Environmental Improvement Division Health and Environment Department	P.O. Box 968 Santa Fe, NM 87503	(505) 827-5271	Lee D. Lockie
New York	New York Department of Environmental Conservation, Division of Air	50 Wolf Road Albany, NY 12223	(518) 457-7230	T. Allen
North Carolina	Division of Environmental Management	P.O. Box 27687 Raleigh, NC 27611	(919) 733-7015	Marshall Rackley
North Dakota*	North Dakota State Department of Health	1200 Missouri Avenue Bismarck, ND 58505	(701) 224-2348	Dana K. Mount
Ohio	Ohio Environmental Protection Agency	361 East Broad Street Columbus, OH 43215	(614) 466-6116	Charles M. Taylor
Oklahoma	Air Quality Service, Environmental Health Services, Oklahoma State Department of Health	1000 Northeast 10th Street P.O. Box 53551 Oklahoma City, OK 73152	(405) 271-5220	John W. Gallion
Oregon	State of Oregon, Department of Environmental Quality	522 SW Fifth Avenue Portland, OR 97204	(503) 229-5696	E. Jack Weathersbee
Pennsylvania	Bureau of Air Quality Control	200 N. Third Street P.O. Box 2063 Harrisburg, PA 17120	(717) 787-9702	Jame K. Hambright
Rhode Island	Rhode Island Division of Air and Hazardous Materials	204 Cannon Building Davis Street Providence, RI 02908	(401) 277-2808	Thomas E. Wright

Appendix D.

List of State Air Pollution Control Agencies (continued)

State	Agency Title	Agency Address	Telephone Number	Contact
South Carolina	South Carolina Department of Health and Environmental Control Bureau of Air Quality Control	2600 Bull Street Columbia, SC 29201	(803) 758-5406	W. G. Crosby
South Dakota*	Department of Water and Natural Resources Office of Air Quality and Solid Waste	Joe Foss Building Pierre, SD 57501	(605) 773-3329	Joel C. Smith
Tennessee	Tennessee Divison of Air Pollution Control	TERRA Building 150 Ninth Ave., North Nashville, TN 32103	(615) 741-3931 or 741-2220	Harold E. Hodges
Texas	Texas Air Control Board	6330 Highway 290 East Austin, TX 78723	(512) 451-5711	Roger Wallis
Utah*	Utah Department of Health Division of Environment Bureau of Air Quality	150 W. North Temple Salt Lake City, UT 84110	(801) 533-6108	Alvin E. Rickers
Vermont*	Agency of Environmental Conservation Air Pollution Control	State Office Building Montpelier, VT 05602	(802) 828-3395	Richard A. Valentinetti
Virginia	State Air Pollution Control Board	Room 803, Ninth Street Office Building Richmond, VA 23219	(804) 786-2378	William R. Meyer
Washington	Washington State Department of Energy	M.S., PV-11 Olympia, WA 98504	(206) 459-6253	Peter W. Hildebrandt
West Virginia	West Virginia Air Pollution Control Commission	1558 Washington Street, East Charleston, WV 25311	(304) 348-3286	Carl G. Beard, II
Wisconsin	Wisconsin Department of Natural Resources Bureau of Air Management	Box 7921 Madison, WI 53707	(608) 266-7718	Donald Theiler
Wyoming*	Air Quality Division Department of Environmental Quality	401 W. 19th Street Cheyenne, WY 82002	(307) 777-7391	Randolph Wood

*Denotes states with no local pollution control agencies; i.e., the state is the only permit-granting authority.

Appendix E.

Control Techniques Guidelines Published by the U.S. Environmental Protection Agency

GROUP I (Issued Prior to January 1978)

Surface Coating of Cans, Coils, Paper, Fabric, Automobiles, and Light Duty Trucks (EPA-450/2-77-008).

Surface Coating of Metal Furniture (EPA-450/2-77-032).

Surface Coating of Insulation of Magnetic Wire (EPA-450/2-77-033).

Surface Coating of Large Appliances (EPA-450/2-77-034).

Storage of Petroleum Liquids in Fixed Roof Tanks (EPA-450/2-77-036).

Bulk Gasoline Plants (EPA-450/2-77-035).

Solvent Metal Cleaning (EPA-450/2-77-022).

Use of Cutback Asphalt (EPA-450/2-77-037).

Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds (EPA-450/2-77-025).

Hydrocarbons from Tank Gasoline Loading Terminals (EPA-450/2-77-026).

Design Criteria for Stage I Vapor Control Systems, Gasoline Service Stations, U.S. EPA, OAQPS, November 1975. Unpublished.

GROUP II (Issued in 1978)

Leaks from Petroleum Refinery Equipment (EPA-450/2-78-036).

Surface Coating of Miscellaneous Metal Parts and Products (EPA-450/2-78-015).

Manufacture of Vegetable Oil (EPA-450/2-78-035).

Surface Coating of Flat Wood Paneling (EPA-450/2-78-032).

Manufacture of Synthesized Pharmaceutical Products (EPA-450/2-78-029).

Manufacture of Pneumatic Rubber Tires (EPA-450/2-78-030).

Graphic Arts - Rotogravure and Flexography (EPA-450/2-78-033).

Petroleum Liquid Storage in External Floating Roof Tanks (EPA-450/2-78-047).

Perchloroethylene Dry Cleaning Systems (EPA-450/2-78-050).

Leaks from Gasoline Tank Trucks and Vapor Collection Systems (EPA-450/2-78-051).

GROUP III (None yet published in final form)

Volatile Organic Liquid Loading into Railcars.

Volatile Organic Liquid Storage.

Petroleum Solvent Dry Cleaning.[a]

Fugitive VOC, Natural Gas and Natural Gasoline Processing Plants.[a]

Polymers and Resins Manufacturing.

Fugitive VOC, Synthetic Organic Chemical Manufacturing Industry (SOCMI).[a]

Air Oxidation, Synthetic Organic Chemical Manufacturing Industry (SOCMI).

[a]Draft versions currently under review.

SOURCE: EPA 1980d.

*U.S. GOVERNMENT PRINTING OFFICE: 1982 361-060/4072 1-3

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