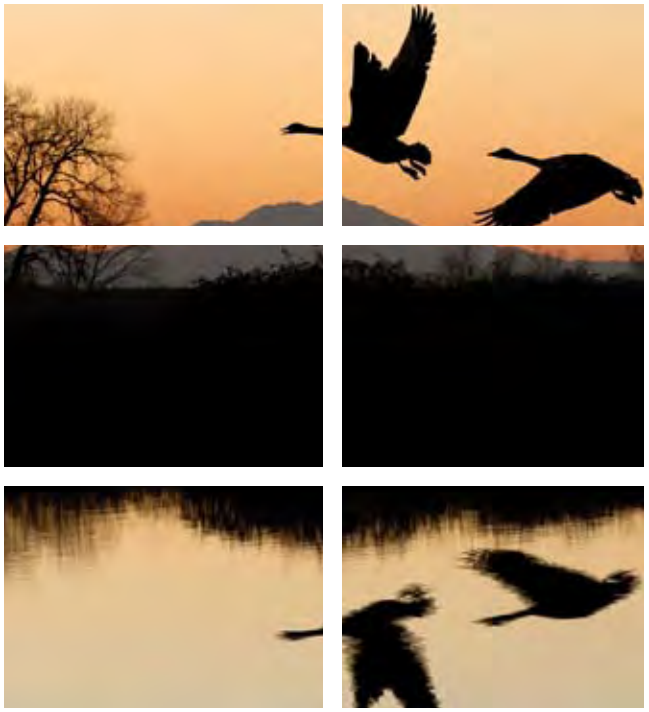


Clean Air Act Primer

2010

Delivering sustainable solutions in a more competitive world

ERM

Contents

Introduction

The Clean Air Act (CAA) requires an unprecedented level of effort from both industry and government in all phases of air quality management. In fact, the CAA Amendments of 1990 are widely regarded as being among the most significant pieces of environmental legislation ever enacted.

To appreciate the implications of the CAA fully, the reader must be familiar with some key air quality concepts that Congress has developed and the United States Environmental Protection Agency (USEPA) has been administering over the past 40 years.

Air quality legislation in the United States covers a wide range of air quality issues and regulates many different types of sources of pollution. For example, major portions of the CAA address automobile and other "mobile source" emissions. For this primer, however, we have focused on those portions of air quality legislation that are more important for readers involved in energy, manufacturing, or other industrial activities.

In this primer, we provide some background on the history of air quality legislation in the United States. We then review the key concepts of air quality management. These terms will form the basis of a clear understanding of the CAA and will introduce concepts that will allow the reader to appreciate the implications of the CAA for industry. At the end of this primer, there is a glossary of key terms common to air quality management.

History of Air Quality Legislation in the United States

Congress first approached air pollution issues in the mid-1950s with passage of the *Air Pollution Control-Research and Technical Assistance Act of 1955*. This was the first federal legislation to focus on the air pollution problem. There was no regulatory authority associated with this act beyond the authorization to explore air pollution issues and conduct air pollution research.

The first law to be known as the **Clean Air Act** was passed in 1963. In this law, Congress recognized that air pollution "resulted in mounting dangers to the public health and welfare, including injury to agricultural crops and livestock, damage to and the deterioration of property, and hazards to air and ground transportation." One of the most important features of this law was that it established that pollution prevention and control were primarily the responsibility of individual states, and the federal government's role should be focused on financial and technical support.

In the *Clean Air Act Amendments of 1965,* Congress divided regulation of air pollution into two titles, one to address pollution prevention in general, and one to address mobile sources. The *Air Quality Act of 1967* further refined air quality rules. This law was significant because it was Congress' first attempt to establish air quality standards and it mandated federal enforcement authority.

The first law to resemble air quality rules as we know them today was the *Clean Air Act Amendments of 1970*. These Amendments provided the framework for air quality regulation in the United States, which remains in effect today. The Amendments of 1970 differentiated areas of the country with relatively good air quality (areas meeting established standards), known as "attainment" areas, from those with relatively poor air quality, known as "nonattainment" areas, and created different rules to regulate air pollution in these different areas. The law also established schedules under which nonattainment areas would come into compliance with the established standards.

By the mid-1970s, it was generally recognized that many areas of the country would not be able to meet the established schedules for improving air quality. Congress passed the *Clean Air Act Amendments of 1977* to address this fact. These laws established new compliance schedules and introduced more stringent means to meet the schedules.

Even though the Amendments of 1977 contained stringent pollution measures, many areas of the country continued to experience difficulty in meeting established standards. Despite this fact, development of new air quality legislation on the federal level was stalled until November 15, 1990, when Congress finally passed the *Clean Air Act Amendments of 1990*.

Today, decades after the 1970 CAA was adopted, many areas of the country continue to experience difficulty in meeting established ambient air quality standards and the country is embarking on new programs to ensure that the air is clean.

Key Air Quality Concepts

Common Air Pollutants

Air pollution is considered to be the release of unwanted **particulate** (dusts and solid particles), **gaseous** (vapors or fumes), or **aerosol** (minute particles) compounds into the atmosphere by either "natural" or "human" sources. In most cases, pollution attributable to human activities, such as manufacturing and use of automobiles, far outweighs the contribution from natural sources, such as volcanoes, forest fires, and decay of organic matter.

Air Pollution Sources

In general (and throughout the rest of this primer), the air pollution issues we discuss relate to human sources, particularly **stationary** industrial sources. There are also **mobile** (transportation) sources of pollution; however, we do not address mobile source issues in this primer as they are not likely to impact most stationary sources as significantly as other portions of the Act. Keep in mind, however, that scientific evidence suggests that, in the United States, mobile sources emit at least as much, if not more, of certain air contaminants to the atmosphere as stationary sources. Emissions from mobile sources also contribute substantially to ozone smog pollution and to greenhouse gases (GHGs).

There are two types of stationary air pollution sources that are typically considered in air quality regulations: **point sources** and **non-point sources**. Examples of point sources include stacks, building ventilation, and vents on storage tanks. Examples of non-point sources, also referred to as **fugitive** or **secondary** emission sources, include releases of volatile organic compounds from wastewater treatment plants; leaks of organic compounds from valves, flanges, or pumps; and dust from coal piles.

Programs Regulating Ambient Air Quality

National Ambient Air Quality Standards

Since the early years of air quality management, air quality rules and regulations in the United States have been based on a set of air quality standards known as the **National Ambient Air Quality Standards (NAAQS)**. The NAAQS represent a maximum concentration or "threshold level" of a pollutant in the air above which humans or the environment may experience some adverse effects. The actual threshold levels are based on years of epidemiological, health, and environmental effects research conducted by the USEPA.

The USEPA has developed two types of NAAQS: **primary standards**, which are set at levels that are designed to protect the public health, and **secondary standards**, which are designed to protect the public welfare (such as vegetation, livestock, building materials, and other elements of the environment). The NAAQS differentiate between effects from short-term exposure and longer-term exposure to air pollutants. Thus, there are short-term NAAQS, based on 1-hour or 8-hour average concentrations, and long-term NAAQS, based on annual concentrations. Table 1 lists the current NAAQS.

NAAQS concentrations are expressed by USEPA in different units of measure—micrograms per cubic meter ($\mu g/m^3$), milligrams per cubic meter (mg/m^3), or parts per million (ppm)—depending on the pollutant and the standard.

Table 1. National Ambient Air Quality Standards (NAAQS)

	Primary Standards		Secondary Standards	
Pollutant	**Level** [1]	**Averaging Time**	**Level**	**Averaging Time**
CO (carbon monoxide)	9 ppm (10 mg/m^3)	8-hour	None	
	35 ppm (40 mg/m^3)	1-hour		
Lead	0.15 $\mu g/m^3$	Rolling 3-month average	Same as Primary	
	1.5 $\mu g/m^3$	Quarterly average	Same as Primary	
NO_2 (nitrogen dioxide)	0.053 ppm	Annual (arithmetic average)	Same as Primary	
	100 ppb	1-hour	None	
PM10 (particulate matter <10 microns)	150 $\mu g/m^3$	24-hour	Same as Primary	
PM2.5 (particulate matter <2.5 microns)	15.0 $\mu g/m^3$	Annual (arithmetic average)	Same as Primary	
	35 $\mu g/m^3$	24-hour	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour	Same as Primary	
	0.08 ppm (1997 std)	8-hour	Same as Primary	
	0.12 ppm	1-hour[2]	Same as Primary	
SO_2 (sulfur dioxide)	0.03 ppm	Annual (arithmetic average)[3]	0.5 ppm	3-hour
	0.14 ppm	24-hour[3]		

Source: USEPA, http://epa.gov/air/criteria.html.

[1] NAAQS concentrations are expressed by USEPA in different units of measure, depending on the pollutant and averaging period: micrograms per cubic meter ($\mu g/m^3$), milligrams per cubic meter (mg/m^3), parts per million (ppm), or parts per billion (ppb).

[2] USEPA revoked the 1-hour ozone standard in all areas of the country; some parts of the country have continuing "anti-backsliding" obligations.

[3] In December 2009, USEPA proposed to revoke both the 24-hour and annual average primary SO_2 standard and replace it with a new short-term standard of between 50-100 ppb on a 1-hour average basis.

The USEPA is required to review the NAAQS routinely and evaluate, based on health risk assessment studies, whether any existing standards need to be adjusted or new standards need to be established. For example, the USEPA lowered the standard for ozone in recent years several times as part of its routine review of the NAAQS. Based on its latest review of ozone, the USEPA proposed to strengthen the ozone standard even further in January 2010, and is considering lowering the 8-hour ozone standard from 0.075 ppm to 0.060 - 0.070 ppm.

In 1997, the USEPA established a new NAAQS for **particulate matter less than 2.5 microns (PM2.5)**, also known as "**fine particulate matter.**" The regulatory development process for PM2.5 has been lengthy and complex; in fact, initial regulations governing PM2.5 were finally promulgated by the USEPA in May 2008, more than 11 years after the NAAQS were established. There will be a number of critical new requirements that sources of PM2.5 will need to consider as PM2.5 regulations are rolled out in 2010 and beyond.

In another recent review of the NAAQS, the USEPA adopted a new and more stringent NAAQS for nitrogen dioxide (NO_2). For many years, there was only one form of the NO_2 NAAQS; the standard was 53 parts per billion (ppb) on an annual average. Effective January 2010, USEPA established an additional short-term standard for NO_2 at 100 ppb on a 1-hour average basis.

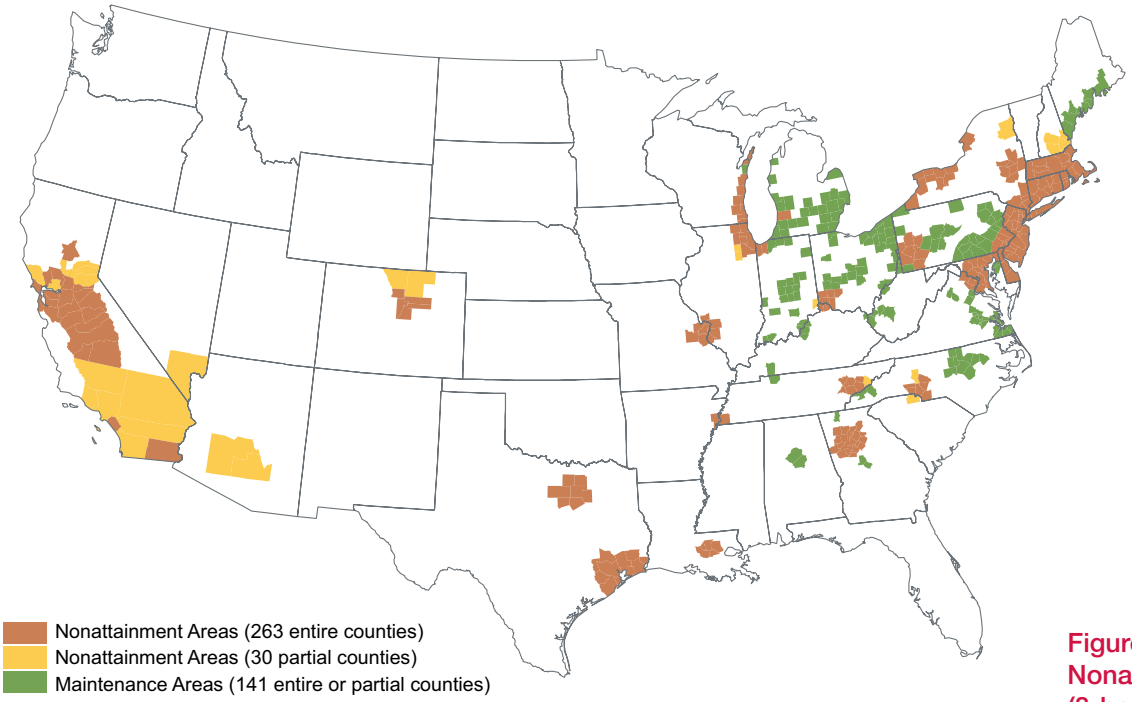
In December 2009, the USEPA also proposed to add a new short-term SO_2 standard, in addition to the existing annual SO_2 NAAQS.

Criteria Pollutants

Because the NAAQS represent numerical criteria, the reports in which the USEPA presents information on the development of a NAAQS are called criteria documents. The six pollutants in Table 1 for which the USEPA has developed standards are thus known as **criteria pollutants**.

Attainment and Nonattainment

The USEPA and state agencies routinely monitor concentrations of the criteria pollutants near ground-level at various locations across the United States. If monitoring indicates that the concentration of a pollutant exceeds the NAAQS in any area of the country, that area is designated a nonattainment area for that pollutant, meaning that the area is not meeting the ambient standard. For example, Figure 1 illustrates ozone nonattainment areas in the United States. Conversely, any area in which the concentration of a criteria pollutant is below the NAAQS is designated an attainment area, indicating that the NAAQS is being met.



Partial counties, those with part of the county designated nonattainment and part attainment, are shown as full counties on this map.

Figure 1. Ozone Nonattainment Areas (8-hour Ozone Standard) as of January 2010

The attainment/nonattainment designations are made on a pollutant-by-pollutant basis. Therefore, the air quality in an area of the country may be designated attainment for some pollutants and nonattainment for other pollutants at the same time. For example, many urban areas are designated nonattainment for ozone, but are in attainment for the other criteria pollutants.

There are two significant concepts to understand about the NAAQS provisions:

- Many of the air regulations that a facility is subject to, particularly permitting regulations, depend on whether it is located in an attainment or a nonattainment area.
- NAAQS represent a concentration (in quantities such as $\mu g/m^3$ or ppm) of a pollutant in the ambient air. The NAAQS do not relate directly to emissions (in quantities such as pounds per hour or tons per year) from individual sources.

It is, in fact, surprisingly difficult to relate emissions of a pollutant from a particular source directly to ambient concentrations in the air. The tools that are most commonly used to relate emission rates to ambient concentrations are computer **air quality dispersion models**. The USEPA has developed a series of these models for different situations. The models typically use information on emission rates, emission characteristics (point or non-point, exit gas velocity, exit gas temperature), meteorology (wind direction and wind speed), and terrain surrounding the emission source. This information is used in the models to simulate how pollutants are dispersed by the wind, to predict ambient concentrations of pollutants downwind of an emission point.

Programs Regulating Pollution Emission Rates

The NAAQS provide target levels of concentrations of pollutants in the atmosphere, but do not set emission limitations for individual sources. There are many state and federal regulations that address emissions from stationary sources; three of the most significant of the federal regulatory programs that govern emissions from individual sources are:

- New source or "pre-construction" permitting programs: **Prevention of Significant Deterioration**, **Nonattainment New Source Review,** and "Minor NSR" permitting;
- **New Source Performance Standards**; and
- **Maximum Achievable Control Technology** for **Hazardous Air Pollutants**.

Each program is described briefly below.

New and Modified Source Preconstruction Permitting

The USEPA has developed a complex set of regulations that govern construction of new sources and modifications or expansions of existing sources. Collectively, the regulations are referred to as "**New Source Review**" or **NSR**. NSR covers the construction, modification, or reconstruction of certain "major" stationary sources or "major" modifications of existing sources. In attainment areas, the NSR program is known as **Prevention of Significant Deterioration (PSD)**. In nonattainment areas, the NSR program is referred to as **Nonattainment New Source Review (NA-NSR)**. Construction and modification of "minor" sources are covered by "minor NSR" programs and the regulations covering these activities are generally established by state and local regulatory agencies.

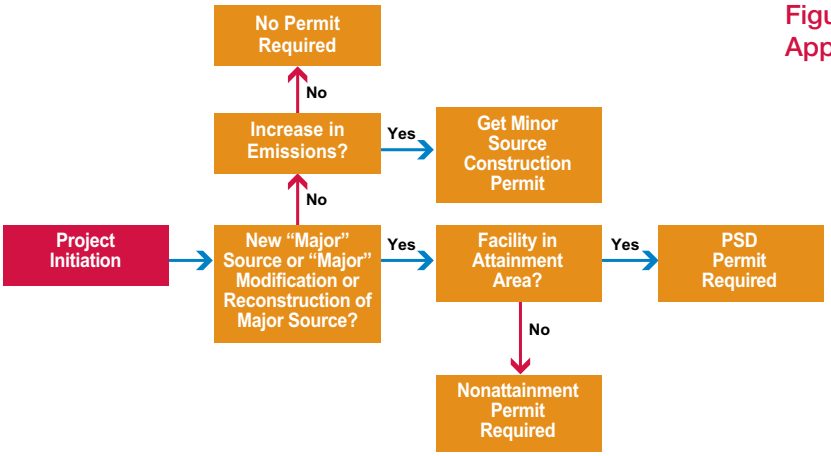


Figure 2. PSD/NA NSR Applicability Determination

Figure 2 is a simplified PSD/NA-NSR applicability determination flow diagram. The following sections review key provisions of PSD and NA-NSR.

Prevention of Significant Deterioration

The major federal rules that govern air quality in attainment areas are known as PSD. These rules are designed to ensure that air quality in "clean" areas (that is, attainment areas) will not degrade, but will remain clean, even as new sources of pollution are constructed. The PSD program applies to new major sources and major modifications to existing sources. Note that the term "major" has different definitions in different parts of the CAA. In the PSD program, a source is "major" if it is one of 28 listed categories of sources with the potential to emit 100 tons or more per year of any air pollutant regulated by the CAA, or if it is any other type of source with the potential to emit 250 tons per year or more (except for GHGs, which may soon be regulated at much greater emissions rates). The 28 listed sources are found in Table 2.

Any proposed new or modified source that is subject to the PSD rules must apply for and obtain a PSD permit before commencing construction on the project. The applicant for a PSD permit must prepare an extensive amount of information on the proposed project and must be able to demonstrate that impacts from the project are within PSD standards. To comply with PSD provisions, the applicant must demonstrate that the project will:

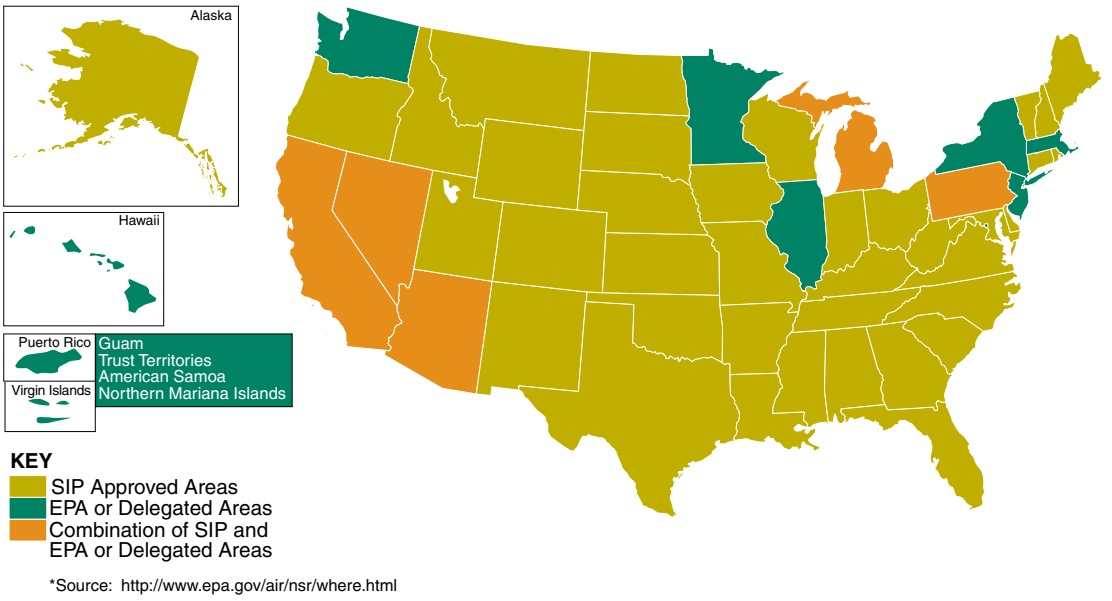
- Employ **Best Available Control Technology (BACT);**
- Not cause any violations of any NAAQS or other PSD threshold concentrations known as "increments"; and
- Not cause other adverse impacts to visibility, soils, or vegetation.

BACT is generally defined as *the most effective control technology available for a pollutant from a particular type of source, considering energy and economic requirements, and other environmental effects.* The technology does not have to be an add-on, "end-of-stack" pollution control device, such as a scrubber or a filter. BACT can be the use of an inherently less polluting raw material, such as a water-based paint instead of solvent-based paint, or can be use of good work practices, such as keeping the lids on solvent storage tanks when not in use.

An applicant for a PSD permit must make the BACT demonstration using USEPA's **top-down BACT** methodology. This approach requires an applicant to identify control technologies that could possibly be used on the source and rank them from most effective to least effective. The applicant is required to use the most effective technology available, or demonstrate why it cannot be used, and then use the next most effective available control technology, and so on until a technology is selected. As with most control technology programs,

Table 2. The 28 Listed PSD Sources with Lower (100 tons per year) Major Source Threshold

- Fossil fuel-fired steam electric plants of more than 250 British thermal units (Btu) per hour heat input
- Coal cleaning plants (with thermal dryers)
- Kraft pulp mills
- Portland cement plants
- Primary zinc smelters
- Iron and steel mill plants
- Primary aluminium ore reduction plants
- Primary copper smelters
- Municipal incinerators capable of charging more than 250 tons of refuse per day
- Hydrofluoric acid plants
- Sulfuric acid plants
- Nitric acid plants
- Petroleum refineries
- Lime plants
- Phosphate rock processing plants
- Coke oven batteries
- Sulfur recovery plants
- Carbon black plants (furnace process)
- Primary lead smelters
- Fuel conversion plants
- Sintering plants
- Secondary metal production plants
- Chemical process plants
- Fossil fuel boilers (or combinations thereof) totaling more than 250 million Btu per hour heat input
- Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels
- Taconite ore processing plants
- Glass fiber processing plants
- Charcoal production plants



*Source: http://www.epa.gov/air/nsr/where.html

Figure 3. PSD Program Status as of Late 2009

regulatory agencies evaluate BACT demonstrations on a case-by-case basis. The USEPA maintains a publicly available database, called the **RACT/BACT/LAER Clearinghouse (RBLC),** which contains information on different types of control technologies that have been selected as BACT on various sources across the United States. Access to the RBLC database is available through the USEPA's website at www.epa.gov/ttn/catc.

PSD regulations are among the most complex environmental regulations in the United States and, like most air quality regulations, important details of the regulations can vary from state to state. In most places, state and local air regulatory agencies have developed their own PSD regulations, based on federal PSD programs with some modification, and have incorporated them into **"State Implementation Plans" (SIPs)**. The USEPA reviews and approves the SIPs, and thus these locations are thus referred to as "**SIP-approved**" states for PSD purposes. In a few places, states implement the federal PSD regulations directly; these are known as "**delegated**" states in that the USEPA has delegated authority to these states to implement the federal PSD program. Figure 3 illustrates state PSD status as of late 2009.

Nonattainment New Source Review Provisions

The set of permitting rules and regulations that applies to new or modified emissions sources in nonattainment areas, areas of the country where NAAQS are not being met, are known as NA-NSR. Restrictions on emissions and control technology requirements under NA-NSR are more stringent than under PSD, because the goal of the NA-NSR rules is to improve the air quality until the NAAQS are met.

Of the six criteria pollutants regulated, ozone—which is one of the compounds that contributes to smog in and around cities—and fine particulate matter (PM2.5) have received the most attention in recent years. Many of the most significant changes in the CAA brought about by the Amendments of 1990 relate to ozone and PM2.5 nonattainment.

The goals of the NA-NSR provisions are to be achieved by requiring new and modified "major" sources to help improve air quality when considering new projects by:

- Demonstrating use of the most stringent level of pollution control, **Lowest Achievable Emission Rate** or **LAER;**
- Obtaining **emissions offsets** before operating the new source; and
- Investigating the possible use of alternate sites or technologies for the proposed project.

Prior to the Amendments of 1990, a "major" source in an ozone nonattainment area was defined as a source with the potential to emit 100 tons per year of volatile organic compounds (VOCs). With the Amendments of 1990, the definition of "major VOC source" is set on a sliding scale and depends on how poorly a particular area of the country is doing in meeting the ambient standard. For example, in "extreme" ozone nonattainment areas, sources with the potential to emit just 10 tons of VOCs per year are considered major. In "serious" nonattainment areas, or in the Northeast Ozone Transport Region, which includes the industrial states on the East Coast, a major source is one with the potential to emit 50 tons or more of VOCs per year. Therefore, even relatively small air emissions sources may be considered major in areas of the country with poor air quality.

In addition to lowering the major VOC source threshold, it was formally acknowledged for the first time in the Amendments of 1990 that nitrogen oxides (NO_x) emissions, as well as VOC emissions, contribute to ozone smog formation. NO_x is a common by-product of burning fossil fuels in heaters, boilers, and in cars and trucks. Similar to VOCs, the USEPA set the definition of a "major NO_x source" in an ozone nonattainment area on a sliding scale depending on ozone air quality in the area.

The USEPA established major NSR regulations for PM2.5 in 2009. Unlike many pollutants, PM2.5 is both emitted directly from sources, and is also formed in the atmosphere from "precursor pollutants" including sulfur dioxide (SO_2) and NO_x. This complex pollutant has equally complex regulatory requirements, and may draw many more facilities than ever before into major source permitting programs.

The first requirement of NA-NSR provisions for affected new or modified sources is the installation of state-of-the-art control systems referred to as LAER. Similar to BACT, the LAER demonstration is made on a case-by-case basis; however, LAER level of pollution control is more stringent than BACT. LAER represents the most stringent emissions limitation contained in any state's regulations, or the most stringent emission limitation achieved in practice anywhere, unless the applicant can demonstrate it is unachievable. Unlike BACT, in a LAER demonstration, the applicant generally cannot eliminate from consideration an effective pollution control system because of economic, energy, or other environmental impact reasons.

The emissions offset provisions under NA-NSR were established in keeping with the nonattainment provision's goal of improving air quality. In nonattainment areas, the offset provisions require new major sources that want to construct, and existing sources that want to expand, to reduce emissions of the pollutant of concern at another nearby source by at least as much as the new source will emit. Depending on the air quality levels, many sources are required to reduce emissions from other sources by more than the amount that the new source will emit. The reductions or offsets from "nearby" sources can come from shutting down or adding pollution control on other sources owned by the applicant, or sources owned by different companies. Offsets can be "banked" for future use and sold among and within companies. The governing rule of the offset provisions is that there be a "net air quality benefit" from new source construction. One of the most difficult issues facing sources in PM2.5 nonattainment areas, under the new NA-NSR regulations, is where and how to find PM2.5 and precursor offsets.

New Source Performance Standards

The **New Source Performance Standards** (**NSPS**) were established under the CAA Amendments of 1970, relatively early in the history of air quality regulation, in recognition of the fact that newly constructed sources should be able to operate more "cleanly" than existing, older sources. The NSPS establish the minimum level of control of certain pollutants that specific categories of sources constructed since 1971 must achieve. The emissions limits under NSPS are based on the best technological system of continuous emission reduction available, taking into account costs and other factors of applying the technology.

To date, the USEPA has promulgated NSPS for nearly 90 different types of sources (Appendix 1 lists the current NSPS). Examples of the types of sources covered by NSPS include vessels storing VOCs, fossil fuel-fired combustion units, incinerators, equipment leaks at synthetic organic chemical plants, and petroleum refinery wastewater systems. The NSPS for each category typically establish emissions limitations and contain specific monitoring, testing, recordkeeping, and notification requirements. The USEPA continues to develop new NSPS and update existing NSPS over time.

Maximum Achievable Control Technology for Hazardous Air Pollutants

As outlined previously, the foundation for many of the regulatory programs that fall out of the CAA are ambient air quality standards, the NAAQS. However, the USEPA has been able to establish NAAQS for only six criteria pollutants. With few exceptions until the Amendments of 1990, the USEPA had not been able to address the hundreds of individual toxic or hazardous substances routinely released into the atmosphere by industrial, commercial, and mobile sources.

Table 3. List of Original NESHAP Pollutants

- Arsenic
- Asbestos
- Benzene
- Beryllium
- Mercury
- Radionuclides
- Radon
- Vinyl Chloride

Prior to the Amendments of 1990, the USEPA was mandated to regulate airborne toxic pollutants under the **National Emission Standards for Hazardous Air Pollutants (NESHAP)** program. The goal of the original NESHAP program was to restrict concentrations of identified hazardous pollutants to levels that would prevent adverse health effects "with an ample margin of safety." The USEPA identified a few pollutants (listed in Table 3) suspected to be carcinogens for regulation under the program. The USEPA's position on carcinogens during the development of NESHAP regulations was that there is essentially no safe level of exposure to these potentially cancer-causing compounds.

For many reasons, including the fact that much of the work was based on the then-emerging science of risk assessment, the NESHAP program actually became too stringent and cumbersome to apply. The USEPA's efforts to operate the NESHAP program essentially halted in the mid-1980s when the USEPA was taken to court over application of the NESHAP "zero-risk" concept of regulation.

Congress took its first attempt since establishing the original NESHAP program to regulate toxic air pollutants in the Amendments of 1990 under the new **Hazardous Air Pollutant** or **HAP** program. The HAP program regulates, in two phases, routine emissions of 187 specific toxic compounds (the list of HAPs is found in Appendix 2). The first phase takes a "technology-based" approach to regulating pollutants, rather than the risk-based approach used in the NESHAP program. This requires that "major" HAP sources install **Maximum Achievable Control Technology** or **MACT** level of pollution control.

MACT standards are defined by the USEPA and cover selected categories of industrial sources. To date, the USEPA has promulgated MACT standards for more than 125 different source categories (Appendix 3 lists the MACT standards that have been promulgated by USEPA). Examples of source categories include Synthetic Organic Chemical Manufacturing Industry facilities, wool fiberglass manufacturing, pharmaceutical manufacturing, degreasers using halogenated solvents, and petroleum refineries. Many MACT standards require affected sources to employ control technologies that are at least 95 percent effective in reducing HAPs. Unlike most NSP standards, MACT standards apply to both existing and new sources. New sources must be designed to meet MACT standards; existing sources generally have about 3 years to comply with new MACT standards as they are promulgated.

The second phase of the HAP program will require certain MACT source categories, to be identified by the USEPA, to determine the **residual risk** to the public health and the environment of the small amount of HAPs that may still be released into the atmosphere after MACT is applied. The goal of the residual risk part of the HAP program is the same as the goal of the original NESHAP program—to ensure public health from exposure to hazardous air pollutants with an "ample margin of safety." Congress acknowledged that this may be difficult and mandated that USEPA investigate and develop risk assessment techniques. As of early 2010, the USEPA has promulgated eight residual risk standards and has proposed standards for an additional 22 source categories.

Air Programs Regulating Facility Operations

There are a few air quality regulations that do not limit emissions from sources at a facility, but rather restrict operations of certain sources. Two of these programs that affect many industrial facilities are the **Ozone-Depleting Substances (ODS)** program and the **Risk Management Program (RMP)**.

Ozone-Depleting Substances Program

The ozone layer in the stratosphere (the upper atmosphere) protects the Earth's surface from excessive quantities of harmful ultraviolet (UVB) radiation. UVB radiation is linked to harmful effects, such as various types of skin cancer and cataracts, and damage to certain crops. It has long been recognized that many classes of man-made compounds, referred to as **ODS**, including many common refrigerants, foam blowing agents, and propellants, contribute to the depletion of stratospheric ozone.

ODS are widely used in many processes and products. Common types of ODS are **chlorofluorocarbons (CFCs)**, **hydrochlorofluorocarbons (HCFCs)**, and **hydrofluorocarbons (HFCs)**. The use and release to the atmosphere of CFCs and HCFCs is of concern because these chemicals have relatively high **ozone-depleting potential (ODP)**. ODP is a measure of a chemical's effect on the Earth's ozone layer. HFCs and some other CFC alternative chemicals have low ODP, which means that they have little or no effect on stratospheric ozone.

In recognition of the potential harmful impacts of ODS, in 1985, the *Vienna Convention on Protection of the Ozone Layer* was initiated, which eventually led to the *1987 Montreal Protocol on Substances that Deplete the Ozone Layer* and its subsequent amendments. The Montreal Protocol was developed to control and reduce consumption of harmful ODS and has now been ratified by 175 nations, including the United States. Table 4 lists common ODS covered by the Montreal Protocol.

To implement provisions of the Montreal Protocol in the United States, Congress passed Title VI of the CAA Amendments of 1990, known as "Protection of Stratospheric Ozone." The stratospheric ozone regulations outline a series of handling, management, training, and certification requirements for facilities that use equipment that contains regulated ODS compounds, including many CFCs, HCFCs, and their alternatives.

The stratospheric ozone regulations cover various types of ODS activities, including manufacturing of ODS, servicing of air conditioning systems in motor vehicles, so-called "nonessential uses" of banned ODS, and labeling of products using ODS. USEPA has established the Significant New Alternative Program to identify and encourage the use of alternatives to more harmful ODS.

The ODS provisions that commonly affect industrial facilities most significantly are those related to handling

Table 4. Common Substances Covered by the Montreal Protocol

Class I CFCs

- CFC-11
- CFC-12
- CFC-13
- CFC-111
- CFC-112
- CFC-114
- CFC-115

Class II HCFCs

- HCFC-22
- HCFC-123
- HCFC-124
- HCFC-141
- HCFC-142

Halons

- Halon-1202
- Halon-1211
- Halon-1301

Others

- Carbon Tetrachloride
- Methyl Chloroform
- Methyl Bromide

and recycling of regulated ODS in air conditioning systems, chillers, and other equipment. The program requires rigorous certification of ODS technicians and service personnel, and of ODS recovery and recycling equipment.

Risk Management Program

The CAA Amendments of 1990 required USEPA and the Occupational Safety and Health Administration (OSHA) to promulgate **accidental release prevention** regulations to minimize the consequences of accidental releases from industrial facilities. The OSHA standard is called the **Process Hazard Safety Standard**, and is focused on protecting workers inside a plant fenceline from accidental releases of harmful compounds. The USEPA standard—**Chemical Accident Prevention** provision—is designed to protect the community and the environment outside the plant fenceline from the effects of accidental releases of **extremely hazardous substances (EHS)**.

Facilities that use or handle EHS in quantities above threshold levels are required to prepare and implement an **RMP**. RMP efforts typically require facilities to conduct health risk assessments using dispersion modeling, develop rigorous process safety-related technical information and management systems, and prepare **Risk Management Plans** that are submitted to the USEPA, state and local emergency response organizations, and the public.

State and Local Air Quality Programs

The federal CAA and its Amendments of 1970, 1977, and 1990 form the basis for most air quality regulations in the United States. Although most air quality legislation originates at the Federal level, individual states hold the primary responsibility for administering Federal air quality programs. Under provisions of the CAA, each state must enact and enforce regulations that are at least as stringent as any Federal regulations.

The **State Implementation Plan (SIP)** is the document that outlines the regulations established by individual states to enforce federal air quality regulations. The states' goals, outlined in the SIPs, are to regulate pollutant emissions, keep attainment areas within the NAAQS, and improve air quality in nonattainment areas to bring these areas into compliance with established ambient standards.

State and local air pollution agencies develop SIPs using federal rules as a foundation. If, after a detailed review, the USEPA determines that a SIP, or portions of a SIP, are adequately protective of the air quality, the USEPA will approve the SIP, and the document becomes legally binding under state and federal law. The SIPs are continuously evaluated and amended to address changes in both air quality and local emission sources over time.

As discussed previously, federal programs focus primarily on new and expanding sources. Therefore, states generally use the federal PSD and NA-NSR permitting rules to regulate new sources. All states also maintain "minor source" preconstruction (or "construction") permitting programs.

However, because states are also responsible for improving air quality in nonattainment areas, the states must address

emissions from existing sources as well as from new sources. In nonattainment areas, this means that the states must require some existing sources to decrease emissions. One way that states can obtain emissions reductions is to require existing "major" sources to implement **Reasonably Available Control Technology (RACT)**. RACT is a control technology generally recognized to be technically and economically achievable for a majority of existing similar sources. As with the other control programs, RACT is not always an add-on pollution control device, but can in some cases be the use of an alternate product or work practice.

Each state conducts its own series of complex monitoring and air quality dispersion modeling studies to determine the amount of pollutant reductions that are necessary in the state to improve the air quality in nonattainment areas to meet the NAAQS. Based on these studies, the states establish the definition of a "major" source in nonattainment areas, and thus define the existing sources that must install RACT.

It is important to note that state air quality regulations and requirements can be more stringent and must be more comprehensive than federal requirements. In fact, it is the individual state's responsibility to identify state-specific air quality issues and develop air quality regulations to address them. Therefore, an awareness of state, and even local regulations, as well as federal rules, is important to maintain a complete understanding of air quality issues.

Title V Operating Permits

One of the most substantial changes resulting from the CAA Amendments of 1990 was the institution of the **Title V Operating Permit** program (named after Title V of the CAA). Title V is a comprehensive, facility-wide operating permit program affecting thousands of facilities across the United States.

Prior to the Amendments of 1990, there were no federal programs in place that required facilities to obtain air quality operating permits. There were federal programs, such as the PSD program, that required certain new and modified air emission units to obtain construction permits. Many states also had developed and implemented construction and operating permit programs for new and existing emissions units. However, for the first time under Title V, existing major sources and newly constructed major sources nationwide are required to obtain **federally enforceable** operating permits. Even those facilities and operations previously grandfathered from permitting requirements, or already subject to state operating permit programs, are required to obtain a Title V permit.

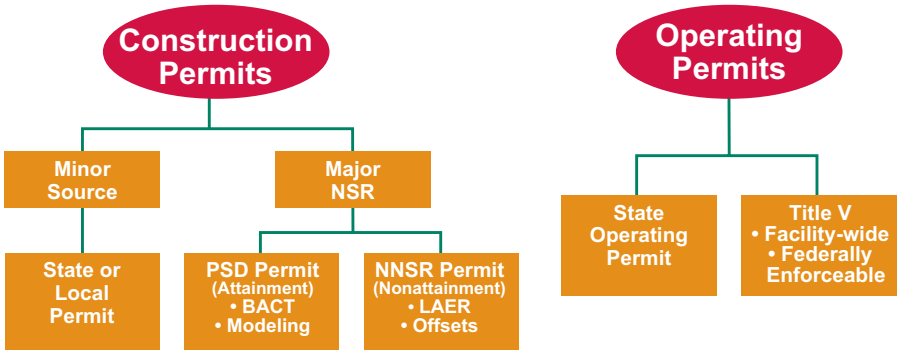
Title V was not intended to impose new emissions standards or operating requirements on existing facilities. Rather, it was meant to serve as the vehicle by which all requirements for a facility were rolled-up into one document, to ensure better compliance with air quality regulations.

However, Title V has meant changes for affected facilities. In fact, one of the most significant impacts of Title V is that facilities are now required to demonstrate that they are operating in "**continuous compliance**" with each permit term and condition. For many facilities, this has meant new (and sometimes cumbersome and costly) monitoring, recordkeeping, and reporting requirements. Facilities unable to prove they are operating in compliance with a regulation are considered to be out of compliance with the applicable standard.

This represents a dramatic shift from enforcement practices in most state air quality agencies prior to the Amendments of 1990. Under previous policies, to bring an enforcement action, most regulatory authorities were required to demonstrate that a facility operated out of compliance with an underlying standard. With Title V, it has become the facility's burden to prove routine compliance to prevent any enforcement action.

Most facilities subject to Title V submitted applications for their first operating permits in the mid-1990s, and received their initial Title V permits in the late 1990s-early 2000s. With a maximum five-year term, many facilities are now applying for their second or third Title V renewal permits. As part of the permit renewal process, USEPA requires certain larger sources to implement even more stringent monitoring and compliance demonstration measures through a program called **Compliance Assurance Monitoring** or **CAM**. Title V facilities address CAM issues as they go through the Title V permit renewal process.

The Two Types of Air Permits



Looking to the Future: Climate Change and Greenhouse Gases

The public debate on GHGs and climate change has escalated over the past decade as the science and global policy initiatives advance. Until 2009, the USEPA had not recognized the GHG carbon dioxide (CO_2) as a pollutant to be regulated under the CAA, and so there had been no regulation of GHGs at the federal level.

However, on October 30, 2009, USEPA published the first comprehensive national system for reporting emissions of CO_2 and other GHGs produced by major sources in the United States. This rule, known as the *Mandatory Reporting of Greenhouse Gases Rule*, is widely seen as the first step in the federal government's plans to regulate GHGs, either through a market-based "cap and trade" program or a "carbon tax" or some combination of approaches.

This new reporting rule was required by the Consolidated Appropriations Act of 2008. Under this rule, the first annual report for affected stationary source emissions must be submitted to USEPA by March 31, 2011 for calendar year 2010 data.

The new GHG reporting requirements apply to large direct emitters of GHGs with emissions greater than or equal to 25,000 metric tonnes **CO_2 equivalent (CO_2e)** emissions per year, suppliers of fossil fuel and industrial chemicals, and manufacturers of motor vehicles and engines. For reference, 25,000 metric tonnes of CO_2e equates to approximately 450,000 million British thermal units (MMBtu) of natural gas combustion, which means that a 50-MMBtu per hour natural gas-fired boiler or a 30-MMBtu per hour coal-fired boiler running year-round would trigger the reporting requirement. CO_2, methane, nitrous oxide (N_2O), sulfur hexafluoride (SF_6), HFCs, perfluorochemicals, and other fluorinated gases make up the list of GHGs covered by the new reporting rule.

The rule continues to evolve. As recently as March 2010, the USEPA proposed an amendment to the rule that expanded applicability of GHG reporting requirements to additional types of sources.

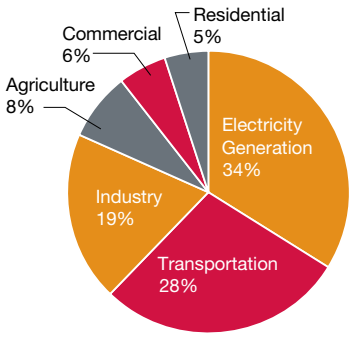
USEPA did not propose mandatory third-party verification for emissions reports filed under this rule. Ultimately, verification will be USEPA's responsibility. However, in this world of data transparency, all reports will be open to stakeholder scrutiny. A rigorous quality control and verification process will be necessary, whether it is mandatory or not.

As we learn more about our environment, we understand that new programs to ensure continued protection of, and improvements to, air quality will be developed. In fact, the USEPA is now working on several programs to manage a range of developing air quality issues, including those around climate change and fine particulates. These and other developing air issues—and new issues not yet on the horizon—represent challenges for the country that may prompt Congress to review the CAA again in the coming years.

GHG Emissions Sources

Sector/Source	2006 Emissions (Metric Tonnes CO_2e)
Electricity Generation	2,378
Transportation	1,970
Industry	1372
Agriculture	534
Commercial	395
Residential	345

Source: "Greenhouse Gas (GHG) Advanced Notice of Proposed Rulemaking (ANPR)," USEPA, Sept. 18, 2008



Total U.S. Emissions
Percent emissions by sector

Glossary

Air quality dispersion model — A common, USEPA-approved set of computer programs used to relate pollutant emissions from a source to ambient concentrations of pollutants in the air near the ground.

Attainment — The term that describes the air quality in areas of the country where pollution concentrations are lower than National Ambient Air Quality Standards. Major emission sources in attainment areas are subject to Prevention of Significant Deterioration rules.

Best Available Control Technology (BACT) — The control technology program required of major sources in attainment areas subject to Prevention of Significant Deterioration rules.

Carbon monoxide (CO) — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards.

Criteria pollutants — Compounds for which the USEPA has established National Ambient Air Quality Standards.

Emission offset — The term used to describe the requirement for new or expanding sources in nonattainment areas to obtain reductions in pollutants from neighboring sources before increasing pollutant emissions.

Fugitive emission source — See **Non-point source.**

Hazardous Air Pollutant (HAP) — Under the Clean Air Act Amendments of 1990, any one of 187 listed toxic pollutants routinely released into the atmosphere.

Lead — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards.

Lowest Achievable Emission Rate (LAER) — The control technology program required of major sources in nonattainment areas.

Major source — The term used to describe the size or type of emission source affected by a particular part of the Clean Air Act. The term "major" is defined differently in different parts of the act.

Maximum Achievable Control Technology (MACT) — The control technology program required of major sources affected by the Hazardous Air Pollutant program.

National Ambient Air Quality Standards (NAAQS) — A concentration of a pollutant in the air near the ground established by the USEPA through extensive research as being protective of the public health and welfare.

National Emission Standard for Hazardous Air Pollutants (NESHAP) — Until the Clean Air Act Amendments of 1990, the USEPA's program for regulating seven specific hazardous air pollutants (arsenic, asbestos, benzene, beryllium, mercury, radionuclides, and vinyl chloride) that uses a risk-based approach to limiting source emissions. Beginning with the Amendments of 1990, NESHAPs also include Maximum Achievable Control Technology standards for major sources of Hazardous Air Pollutants.

New Source Performance Standard (NSPS) — Rules established under the Clean Air Act Amendments of 1970 that set emission standards for specific classes of "new" sources (sources constructed after 1971).

Nitrogen dioxide (NO_2) — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards. NO_2 is one of several common nitrogen oxide compounds found in the atmosphere.

Nitrogen oxides (NO_x) — The term to describe the series of nitrogen oxide compounds in the atmosphere that contribute to the formation of smog and acid rain.

Non-point source — An operation, process, or piece of equipment characterized by the release of pollutants from something other than a single stack, vent, or opening. Non-point sources are also referred to as fugitive or secondary emission sources.

Nonattainment — The term that describes the air quality in areas of the country where pollution concentrations are greater than target National Ambient Air Quality Standards.

Nonattainment New Source Review (NA-NSR) — The complex set of rules that regulates major new and modified emission sources in nonattainment areas of the country. The control technology program associated with the program is Lowest Achievable Emission Rate.

Ozone — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards. Ground-level ozone is a major contributor to smog conditions found in urban areas.

Ozone-Depleting Substances (ODS) or Ozone-Depleting Compounds (ODC) — Classes of manmade compounds, including many common refrigerants, recognized as contributing to the depletion of stratospheric ozone.

Particulate Matter (PM) — The generic term for any type of particulate emissions. Other forms of PM include PM2.5 and PM10.

PM2.5 — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards. The particulates included in the definition of PM2.5 are those small enough (less than 2.5 microns in diameter) to be inhaled by humans.

PM10 — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards. The particulates included in the definition of PM10 are those small enough (less than 10 microns in diameter) to be inhaled by humans.

Point source — An operation, process, or piece of equipment characterized by the release of pollutants from a single stack, vent, or opening.

Prevention of Significant Deterioration (PSD) — The complex set of rules established under the Clean Air Act Amendments of 1970 that regulate major new and modified emission sources in "clean air" (attainment) areas of the country. The control technology system associated with PSD is Best Available Control Technology (BACT).

Primary National Ambient Air Quality Standards — The ambient pollutant standards established by the USEPA set at a level to protect the public health; see also National Ambient Air Quality Standards and National Ambient Air Quality Standards.

Reasonably Available Control Technology (RACT) — The state-level control technology program required of major sources in nonattainment areas.

Residual risk — The calculated level of risk to the public health that could result after a source applies the Maximum Available Control Technology under the Hazardous Air Pollutant provisions of the Clean Air Act Amendments of 1990.

Risk Management Program (RMP) — A health risk assessment plan required by facilities that use or handle extremely hazardous substances above threshold levels to minimize the consequences of accidental releases from industrial facilities. Provisions of the RMP include accidental releases inside as well as outside the plant fenceline.

Secondary emission source — See Non-point source.

Secondary National Ambient Air Quality Standards — The ambient pollutant standards established by the USEPA set at a level to protect the public welfare (plants, livestock, buildings, etc.); see also National Ambient Air Quality Standards and Primary National Ambient Air Quality Standards.

Sulfur dioxide (SO_2) — One of the six criteria pollutants for which the USEPA has established National Ambient Air Quality Standards. Emissions of SO_2 result from natural sources and from burning fossil fuels. SO_2 contributes to the formation of acid rain and PM2.5, and can cause respiratory problems.

Source — Any process, operation, piece of equipment, or activity that causes the release of pollutants into the air.

State Implementation Plan (SIP) — The set of regulations developed by each state that establishes the state's program for maintaining good air quality in attainment areas, and improving air quality in nonattainment areas.

Title V — The federally mandated, state-administered facility-wide air operating permit program established under Title V of the Clean Air Act Amendments of 1990. Title V is codified under Title 40 of the Code of Federal Regulations, Part 70.

Volatile organic compound (VOC) — A wide range of organic compounds, common to solvents and paints, that contributes to ozone and smog formation.

List of Common Acronyms

The list below contains some of the more commonly used acronyms you may come across in discussions of air quality and air quality regulation.

AQCR	Air Quality Control Region
BACT	Best Available Control Technology
BART	Best Available Retrofit Technology
CAM	Compliance Assurance Monitoring
CAA	Clean Air Act
CFC	Chlorofluorocarbons
CO	Carbon monoxide
CO_2	Carbon dioxide
CTGs	Control Technique Guidelines
FESOP	Federally Enforceable State Operating Permit
FIP	Federal Implementation Program
GEP	Good engineering practice
GHG	Greenhouse gas
HAP	Hazardous air pollutant
HCFC	Hydrochlorofluorocarbons
HC	Hydrocarbon
HFC	Hydrofluorocarbons
LAER	Lowest Achievable Emission Rate
LDAR	Leak Detection and Repair
MACT	Maximum Achievable Control Technology
NA-NSR	Nonattainment New Source Review
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
NSPS	New Source Performance Standard
NSR	New Source Review
ODC	Ozone-depleting compound
ODS	Ozone-depleting substance
PM	Particulate matter
PM10	Particulate matter less than 10 microns
PM2.5	Particulate matter less than 2.5 microns
PSD	Prevention of Significant Deterioration
RACT	Reasonably Available Control Technology
ROG	Reactive organic gas
SO_2	Sulfur dioxide
SIP	State Implementation Plan
TSP	Total suspended particulate
VOC	Volatile organic compound
VOS	Volatile organic substance

Appendix 1

List of New Source Performance Standards (NSPS) through April 2010

40 CFR 60	NSPS
Subpart Cb	Emission Guidelines And Compliance Times For Large Municipal Waste Combustors That Are Constructed On Or Before September 20, 1994
Subpart Cc	Emission Guidelines And Compliance Times For Municipal Solid Waste Landfills
Subpart Cd	Emissions Guidelines And Compliance Times For Sulfuric Acid Production Units
Subpart Ce	Emission Guidelines And Compliance Times For Hospital/Medical/Infectious Waste Incinerators
Subpart D	Standards Of Performance For Fossil Fuel Fired Steam Generators For Which Construction Is Commenced After August 17, 1971
Subpart Da	Standards Of Performance For Electric Utility Steam Generating Units For Which Construction Is Commenced After September 18, 1978
Subpart Db	Standards Of Performance For Industrial/Commercial/Institutional Steam Generating Units
Subpart Dc	Standards Of Performance For Small Industrial/Commercial/Institutional Steam Generating Units
Subpart E	Standards Of Performance For Incinerators
Subpart Ea	Standards Of Performance For Municipal Waste Combustors For Which Construction Is Commenced After December 20, 1989 And On Or Before September 20, 1994
Subpart Eb	Standards Of Performance For Large Municipal Waste Combustors For Which Construction Is Commenced After September 20, 1994 Or For Which Modification Or Reconstruction Is Commenced After June 19, 1996
Subpart Ec	Standards Of Performance For Hospital/Medical/Infectious Waste Incinerators For Which Construction Is Commenced After June 20, 1996
Subpart F	Standards Of Performance For Portland Cement Plants
Subpart G	Standards Of Performance For Nitric Acid Plants
Subpart H	Standards Of Performance For Sulfuric Acid Plants
Subpart I	Standards Of Performance For Asphalt Concrete Plants
Subpart J	Standards Of Performance For Petroleum Refineries
Subpart Ja	Standards Of Performance For Petroleum Refineries For Which Construction, Reconstruction, Or Modification Commenced After May 14, 2007
Subpart K	Standards Of Performance For Storage Vessels For Petroleum Liquids For Which Construction, Reconstruction, Or Modification Commenced After June 11, 1973, And Prior To May 19, 1978
Subpart Ka	Standards Of Performance For Storage Vessels For Petroleum Liquids For Which Construction, Reconstruction, Or Modification Commenced After May 18, 1978, And Prior To July 23, 1984
Subpart Kb	Standards Of Performance For Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) For Which Construction, Reconstruction, Or Modification Commenced After July 23, 1984
Subpart L	Standards Of Performance For Secondary Lead Smelters
Subpart M	Standards Of Performance For Secondary Brass And Bronze Production Plants
Subpart N	Standards Of Performance For Primary Emissions From Basic Oxygen Process Furnaces For Which Construction Is Commenced After June 11, 1973
Subpart Na	Standards Of Performance For Secondary Emissions From Basic Oxygen Process Steelmaking Facilities For Which Construction Is Commenced After January 20, 1983
Subpart O	Standards Of Performance For Sewage Treatment Plants
Subpart P	Standards Of Performance For Primary Copper Smelters
Subpart Q	Standards Of Performance For Primary Zinc Smelters
Subpart R	Standards Of Performance For Primary Lead Smelters
Subpart S	Standards Of Performance For Primary Aluminum Reduction Plants
Subpart T	Standards Of Performance For The Phosphate Fertilizer Industry: Wet-Process Phosphoric Acid Plants
Subpart U	Standards Of Performance For The Phosphate Fertilizer Industry: Superphosphoric Acid Plants
Subpart V	Standards Of Performance For The Phosphate Fertilizer Industry: Diammonium Phosphate Plants
Subpart W	Standards Of Performance For The Phosphate Fertilizer Industry: Triple Superphosphate Plants
Subpart X	Standards Of Performance For The Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities
Subpart Y	Standards Of Performance For Coal Preparation Plants
Subpart Z	Standards Of Performance For Ferroalloy Production Facilities
Subpart AA	Standards Of Performance For Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974 And On Or Before August 17, 1983
Subpart AAa	Standards Of Performance For Steel Plants: Electric Arc Furnaces And Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

Appendix 1 (cont'd.)

List of New Source Performance Standards through April 2010

40 CFR 60	NSPS
Subpart BB	Standards Of Performance For Kraft Pulp Mills
Subpart CC	Standards Of Performance For Glass Manufacturing Plants
Subpart DD	Standards Of Performance For Grain Elevators
Subpart EE	Standards Of Performance For Surface Coating Of Metal Furniture
Subpart FF	[Reserved]
Subpart GG	Standards Of Performance For Stationary Gas Turbines
Subpart HH	Standards Of Performance For Lime Manufacturing Plants
Subpart KK	Standards Of Performance For Lead Acid Battery Manufacturing Plants
Subpart LL	Standards Of Performance For Metallic Mineral Processing Plants
Subpart MM	Standards Of Performance For Automobile And Light Duty Truck Surface Coating Operations
Subpart NN	Standards Of Performance For Phosphate Rock Plants
Subpart PP	Standards Of Performance For Ammonium Sulfate Manufacture
Subpart QQ	Standards Of Performance For The Graphic Arts Industry: Publication Rotogravure Printing
Subpart RR	Standards Of Performance For Pressure Sensitive Tape And Label Surface Coating Operations
Subpart SS	Standards Of Performance For Industrial Surface Coating: Large Appliances
Subpart TT	Standards Of Performance For Metal Coil Surface Coating
Subpart UU	Standards Of Performance For Asphalt Processing And Asphalt Roofing Manufacture
Subpart VV	Standards Of Performance For Equipment Leaks Of VOC In The Synthetic Organic Chemicals Manufacturing Industry For Which Construction, Reconstruction, Or Modification Commenced After January 5, 1981, And On Or Before November 7, 2006
Subpart VVa	Standards Of Performance For Equipment Leaks Of VOC In The Synthetic Organic Chemicals Manufacturing Industry For Which Construction, Reconstruction, Or Modification Commenced After November 7, 2006
Subpart WW	Standards Of Performance For The Beverage Can Surface Coating Industry
Subpart XX	Standards Of Performance For Bulk Gasoline Terminals
Subpart AAA	Standards Of Performance For New Residential Wood Heaters
Subpart BBB	Standards Of Performance For The Rubber Tire Manufacturing Industry
Subpart CCC	[Reserved]
Subpart DDD	Standards Of Performance For Volatile Organic Compound (VOC) Emissions From The Polymer Manufacturing industry
Subpart EEE	[Reserved]
Subpart FFF	Standards Of Performance For Flexible Vinyl And Urethane Coating And Printing
Subpart GGG	Standards Of Performance For Equipment Leaks Of VOC In Petroleum Refineries For Which Construction, Reconstruction, Or Modifications Commenced After January 4, 1983 And On Or Before November 7, 2006
Subpart GGGa	Standards Of Performance For Equipment Leaks Of VOC In Petroleum Refineries For Which Construction, Reconstruction, Or Modifications Commenced After November 7, 2006
Subpart HHH	Standards Of Performance For Synthetic Fiber Production Facilities
Subpart III	Standards Of Performance For Volatile Organic Compound (VOC) Emissions From The Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes
Subpart JJJ	Standards Of Performance For Petroleum Dry Cleaners
Subpart KKK	Standards Of Performance For Equipment Leaks Of VOC From Onshore Natural Gas Processing Plants
Subpart LLL	Standards Of Performance For Onshore Natural Gas Processing; SO2 Emissions
Subpart MMM	[Reserved]
Subpart NNN	Standards Of Performance For Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations
Subpart OOO	Standards Of Performance For Nonmetallic Mineral Processing Plants
Subpart PPP	Standard Of Performance For Wool Fiberglass Insulation Manufacturing Plants
Subpart QQQ	Standards Of Performance For VOC Emissions From Petroleum Refinery Wastewater Systems

Appendix 1 (cont'd.)

List of New Source Performance Standards through April 2010

40 CFR 60	NSPS
Subpart RRR	Standards Of Performance For Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes
Subpart SSS	Standards Of Performance For Magnetic Tape Coating Facilities
Subpart TTT	Standards Of Performance For Industrial Surface Coating: Surface Coating Of Plastic Parts For Business Machines
Subpart UUU	Standards Of Performance For Calciners And Dryers In Mineral Industries
Subpart VVV	Standards Of Performance For Polymeric Coating Of Supporting Substrates Facilities
Subpart WWW	Standards Of Performance For Municipal Solid Waste Landfills
Subpart AAAA	Standards Of Performance For Small Municipal Waste Combustion Units For Which Construction Is Commenced After August 30, 1999 Or For Which Modification Or Reconstruction Is Commenced After June 6, 2001
Subpart BBBB	Emission Guidelines And Compliance Times For Small Municipal Waste Combustion Units Constructed On Or Before August 30, 1999
Subpart CCCC	Standards Of Performance For Commercial And Industrial Solid Waste Incineration Units For Which Construction Is Commenced After November 30, 1999 Or For Which Modification Or Reconstruction Is Commenced On Or After June 1, 2001
Subpart DDDD	Emissions Guidelines And Compliance Times For Commercial And Industrial Solid Waste Incineration Units That Commenced Construction On Or Before November 30, 1999
Subpart EEEE	Standards Of Performance For Other Solid Waste Incineration Units For Which Construction Is Commenced After December 9, 2004, Or For Which Modification Or Reconstruction Is Commenced On Or After June 16, 2006
Subpart FFFF	Emission Guidelines and Compliance Times for Other Solid Waste Incineration Units That Commenced Construction On or Before December 9, 2004
Subpart GGGG	[Reserved]
Subpart HHHH	Emission Guidelines And Compliance Times For Coal-Fired Electric Steam Generating Units Hg Budget Trading Program General Provisions
Subpart IIII	Standards Of Performance For Stationary Compression Ignition Internal Combustion Engines
Subpart JJJJ	Standards Of Performance For Stationary Spark Ignition Internal Combustion Engines
Subpart KKKK	Standards Of Performance For Stationary Combustion Turbines

Appendix 2

List of Regulated Hazardous Air Pollutants

From 40 CFR Part 63 as of April 2010

CAS No.	Regulated Hazardous Air Pollutants (HAP)
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
107131	Acrylonitrile
107051	Allyl chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene (including benzene from gasoline)
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl)phthalate (DEHP)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium cyanamide
133062	Captan
63252	Carbaryl
75150	Carbon disulfide
56235	Carbon tetrachloride
463581	Carbonyl sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene
1319773	Cresols/Cresylic acid (isomers and mixture)
95487	o-Cresol
108394	m-Cresol

CAS No.	Regulated Hazardous Air Pollutants (HAP)
106445	p-Cresol
98828	Cumene
94757	2,4-D, salts and esters
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-chloropropane
84742	Dibutylphthalate
106467	1,4-Dichlorobenzene(p)
91941	3,3-Dichlorobenzidene
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)
542756	1,3-Dichloropropene
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Diethyl aniline (N,N-Dimethylaniline)
64675	Diethyl sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl aminoazobenzene
119937	3,3'-Dimethyl benzidine
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	1,1-Dimethyl hydrazine
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	4,6-Dinitro-o-cresol, and salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin (l-Chloro-2,3-epoxypropane)
106887	1,2-Epoxybutane
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Aziridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde

Appendix 2 (cont'd.)

List of Regulated Hazardous Air Pollutants

From 40 CFR Part 63 as of April 2010

CAS No.	Regulated Hazardous Air Pollutants (HAP)
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
58899	Lindane (all isomers)
108316	Maleic anhydride
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	4,4-Methylene bis(2-chloroaniline)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocyanate (MDI)
101779	4,4¬-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine

CAS No.	Regulated Hazardous Air Pollutants (HAP)
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Aroclors)
1120714	1,3-Propane sultone
57578	beta-Propiolactone
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2-Dichloropropane)
75569	Propylene oxide
75558	1,2-Propylenimine (2-Methyl aziridine)
91225	Quinoline
106514	Quinone
100425	Styrene
96093	Styrene oxide
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium tetrachloride
108883	Toluene
95807	2,4-Toluene diamine
584849	2,4-Toluene diisocyanate
95534	o-Toluidine
8001352	Toxaphene (chlorinated camphene)
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethylene
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl acetate
593602	Vinyl bromide
75014	Vinyl chloride
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (isomers and mixture)
95476	o-Xylenes
108383	m-Xylenes
106423	p-Xylenes
--	Antimony Compounds
--	Arsenic Compounds (inorganic including arsine)

Appendix 2 (cont'd.)

List of Regulated Hazardous Air Pollutants

From 40 CFR Part 63 as of April 2010

CAS No.	Regulated Hazardous Air Pollutants (HAP)
--	Beryllium Compounds
--	Cadmium Compounds
--	Chromium Compounds
--	Cobalt Compounds
--	Coke Oven Emissions
--	Cyanide Compounds 1
--	Glycol ethers 2
--	Lead Compounds

CAS No.	Regulated Hazardous Air Pollutants (HAP)
--	Manganese Compounds
--	Mercury Compounds
--	Fine mineral fibers 3
--	Nickel Compounds
--	Polycylic Organic Matter 4
--	Radionuclides (including radon) 5
--	Selenium Compounds

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including "any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure."

1 X'CN where X = H' or any other group where a formal dissociation may occur. For example, KCN or $Ca(CN)_2$

2 Glycol ethers include mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH_2CH_2)n-OR'. Where:

n = 1, 2, or 3
R = alkyl C7 or less
R = phenyl or alkyl substituted phenyl
R' = H or alkyl C7 or less
OR' consisting of carboxlyic acid ester, sulfate, phosphate, nitrate, or sulfonate

3 Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.

4 Includes organic compounds with more than one benzene ring, and that have a boiling point greater than or equal to 100ºC.

5 A type of atom that spontaneously undergoes radioactive decay.

Appendix 3

List of Maximum Achievable Control Technology (MACT) Standards

From 40 CFR Part 63 as of April 2010

40 CFR 63	MACT Standard
Subpart F	National Emission Standards For Organic Hazardous Air Pollutants From The Synthetic Organic Chemical Manufacturing Industry
Subpart G	National Emission Standards For Organic Hazardous Air Pollutants From The Synthetic Organic Chemical Manufacturing Industry For Process Vents, Storage Vessels, Transfer Operations, And Wastewater
Subpart H	National Emission Standards For Organic Hazardous Air Pollutants For Equipment Leaks
Subpart I	National Emission Standards For Organic Hazardous Air Pollutants For Certain Processes Subject To The Negotiated Regulation For Equipment Leaks
Subpart J	National Emission Standards For Hazardous Air Pollutants For Polyvinyl Chloride And Copolymers Production
Subpart L	National Emission Standards For Coke Oven Batteries
Subpart M	National Perchloroethylene Air Emission Standards For Dry Cleaning Facilities
Subpart N	National Emission Standards For Chromium Emissions From Hard And Decorative Chromium Electroplating And Chromium Anodizing Tanks
Subpart O	Ethylene Oxide Emissions Standards For Sterilization Facilities
Subpart Q	National Emission Standards For Hazardous Air Pollutants For Industrial Process Cooling Towers
Subpart R	National Emission Standards For Gasoline Distribution Facilities (Bulk Gasoline Terminals & Pipeline Breakout Stations)
Subpart S	National Emission Standards For Hazardous Air Pollutants From The Pulp And Paper Industry
Subpart T	National Emission Standards For Halogenated Solvent Cleaning
Subpart U	National Emission Standards For Hazardous Air Pollutant Emissions: Group I Polymers And Resins
Subpart W	National Emission Standards For Hazardous Air Pollutants For Epoxy Resins Production And Non-Nylon Polyamides Production
Subpart X	National Emission Standards For Hazardous Air Pollutants From Secondary Lead Smelting
Subpart Y	National Emission Standards For Marine Tank Vessel Loading Operations
Subpart AA	National Emission Standards For Hazardous Air Pollutants From Phosphoric Acid Manufacturing Plants
Subpart BB	National Emission Standards For Hazardous Air Pollutants From Phosphate Fertilizers Production Plants
Subpart CC	National Emission Standards For Hazardous Air Pollutants From Petroleum Refineries
Subpart DD	National Emission Standards For Hazardous Air Pollutants From Off-Site Waste And Recovery Operations
Subpart EE	National Emission Standards For Magnetic Tape Manufacturing Operations
Subpart GG	National Emission Standards For Aerospace Manufacturing And Rework Facilities
Subpart HH	National Emission Standards For Hazardous Air Pollutants From Oil And Natural Gas Production Facilities
Subpart II	National Emission Standards For Shipbuilding And Ship Repair (Surface Coating)
Subpart JJ	National Emission Standards For Wood Furniture Manufacturing Operations
Subpart KK	National Emission Standards For The Printing And Publishing Industry
Subpart LL	National Emission Standards For Hazardous Air Pollutants For Primary Aluminum Reduction Plants
Subpart MM	National Emission Standards For Hazardous Air Pollutants For Chemical Recovery Combustion Sources At Kraft, Soda, Sulfite, & Stand-Alone Semi-chemical Pulp Mills
Subpart OO	National Emission Standards For Tanks Level 1
Subpart PP	National Emission Standards For Containers
Subpart QQ	National Emission Standards For Surface Impoundments
Subpart RR	National Emission Standards For Individual Drain Systems
Subpart SS	National Emission Standards For Closed Vent Systems, Control Devices, Recovery Devices And Routing To A Fuel Gas System Or A Process
Subpart TT	National Emission Standards For Equipment Leaks Control Level 1
Subpart UU	National Emission Standards For Equipment Leaks Control Level 2 Standards
Subpart VV	National Emission Standards For Oil-Water Separators And Organic Water Separators
Subpart WW	National Emission Standards For Storage Vessels (Tanks)Control Level 2
Subpart XX	National Emission Standards For Ethylene Manufacturing Process Units: Heat Exchange Systems And Waste Operations
Subpart YY	National Emission Standards For Hazardous Air Pollutants For Source Categories: Generic Maximum Achievable Control Technology Standards
Subpart CCC	National Emission Standards For Hazardous Air Pollutants For Steel Pickling HCl Process Facilities And Hydrochloric Acid Regeneration Plants
Subpart DDD	National Emission Standards For Hazardous Air Pollutants For Mineral Wool Production
Subpart EEE	National Emission Standards For Hazardous Air Pollutants From Hazardous Waste Combustors
Subpart GGG	National Emission Standards For Pharmaceuticals Production

Appendix 3 (cont'd.)

List of Maximum Achievable Control Technology Standards

From 40 CFR Part 63 as of April 2010

40 CFR 63	MACT Standard
Subpart HHH	National Emission Standards For Hazardous Air Pollutants From Natural Gas Transmission And Storage Facilities
Subpart III	National Emission Standards For Hazardous Air Pollutants For Flexible Polyurethane Foam Production
Subpart JJJ	National Emission Standards For Hazardous Air Pollutant Emissions: Group IV Polymers And Resins
Subpart LLL	National Emission Standards For Hazardous Air Pollutants From The Portland Cement Manufacturing Industry
Subpart MMM	National Emission Standards For Hazardous Air Pollutants For Pesticide Active Ingredient Production
Subpart NNN	National Emission Standards For Hazardous Air Pollutants For Wool Fiberglass Manufacturing
Subpart OOO	National Emission Standards For Hazardous Air Pollutant Emissions: Manufacture Of Amino/Phenolic Resins
Subpart PPP	National Emission Standards For Hazardous Air Pollutant Emissions For Polyether Polyols Production
Subpart QQQ	National Emission Standards For Hazardous Air Pollutants For Primary Copper Smelting
Subpart RRR	National Emission Standards For Hazardous Air Pollutants For Secondary Aluminum Production
Subpart TTT	National Emission Standards For Hazardous Air Pollutants For Primary Lead Smelting
Subpart UUU	National Emission Standards For Hazardous Air Pollutants For Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, And Sulfur Recovery Units
Subpart VVV	National Emission Standards For Hazardous Air Pollutants: Publicly Owned Treatment Works
Subpart XXX	National Emission Standards For Hazardous Air Pollutants For Ferroalloys Production: Ferromanganese & Silicomanganese
Subpart AAAA	National Emission Standards For Hazardous Air Pollutants: Municipal Solid Waste Landfills
Subpart CCCC	National Emission Standards For Hazardous Air Pollutants: Manufacturing Of Nutritional Yeast
Subpart DDDD	National Emission Standards For Hazardous Air Pollutants: Plywood And Composite Wood Products
Subpart EEEE	National Emission Standards For Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Subpart FFFF	National Emission Standards For Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing
Subpart GGGG	National Emission Standards For Hazardous Air Pollutants: Solvent Extraction For Vegetable Oil Production
Subpart HHHH	National Emission Standards For Hazardous Air Pollutants For Wet-Formed Fiberglass Mat Production
Subpart IIII	National Emission Standards For Hazardous Air Pollutants: Surface Coating Of Automobiles And Light-Duty Trucks
Subpart JJJJ	National Emission Standards For Hazardous Air Pollutants: Paper And Other Web Coating
Subpart KKKK	National Emission Standards For Hazardous Air Pollutants: Surface Coating Of Metal Cans
Subpart MMMM	National Emission Standards For Hazardous Air Pollutants For Surface Coating Of Miscellaneous Metal Parts & Products
Subpart NNNN	National Emission Standards For Hazardous Air Pollutants: Surface Coating Of Large Appliances
Subpart OOOO	National Emission Standards For Hazardous Air Pollutants: Printing, Coating, And Dyeing Of Fabrics And Other Textiles
Subpart PPPP	National Emission Standards For Hazardous Air Pollutants For Surface Coating Of Plastic Parts And Products
Subpart QQQQ	National Emission Standards For Hazardous Air Pollutants: Surface Coating Of Wood Building Products
Subpart RRRR	National Emission Standards For Hazardous Air Pollutants: Surface Coating Of Metal Furniture
Subpart SSSS	National Emission Standards For Hazardous Air Pollutants: Surface Coating Of Metal Coil
Subpart TTTT	National Emission Standards For Hazardous Air Pollutants For Leather Finishing Operations
Subpart UUUU	National Emission Standards For Hazardous Air Pollutants For Cellulose Products Manufacturing
Subpart VVVV	National Emission Standards For Hazardous Air Pollutants For Boat Manufacturing
Subpart WWWW	National Emissions Standards For Hazardous Air Pollutants: Reinforced Plastic Composites Production
Subpart XXXX	National Emission Standards For Hazardous Air Pollutants: Rubber Tire Manufacturing
Subpart YYYY	National Emission Standards for Hazardous Air Pollutants For Stationary Combustion Turbines
Subpart ZZZZ	National Emission Standards For Hazardous Air Pollutants For Stationary Reciprocating Internal Combustion Engines
Subpart AAAAA	National Emission Standards For Hazardous Air Pollutants For Lime Manufacturing Plants
Subpart BBBBB	National Emission Standards For Hazardous Air Pollutants For Semiconductor Manufacturing
Subpart CCCCC	National Emission Standards For Hazardous Air Pollutants For Coke Ovens: Pushing, Quenching, And Battery Stacks
Subpart DDDDD	National Emission Standards For Hazardous Air Pollutants For Industrial, Commercial, And Institutional Boilers & Process Heaters
Subpart EEEEE	National Emission Standards For Hazardous Air Pollutants For Iron And Steel Foundries
Subpart FFFFF	National Emission Standards For Hazardous Air Pollutants For Integrated Iron And Steel Manufacturing Facilities
Subpart GGGGG	National Emission Standards For Hazardous Air Pollutants: Site Remediation

Appendix 3 (cont'd.)

List of Maximum Achievable Control Technology Standards

From 40 CFR Part 63 as of April 2010

40 CFR 63	MACT Standard
Subpart HHHHH	National Emission Standards For Hazardous Air Pollutants: Miscellaneous Coating Manufacturing
Subpart IIIII	National Emission Standards For Hazardous Air Pollutants: Mercury Emissions From Mercury Cell Chlor-Alkali Plants
Subpart JJJJJ	National Emission Standards For Hazardous Air Pollutants For Brick And Structural Clay Products Manufacturing
Subpart KKKKK	National Emission Standards For Hazardous Air Pollutants For Clay Ceramics Manufacturing
Subpart LLLLL	National Emission Standards For Hazardous Air Pollutants: Asphalt Processing And Asphalt Roofing Manufacturing
Subpart MMMMM	National Emission Standards For Hazardous Air Pollutants: Flexible Polyurethane Foam Fabrication Operations
Subpart NNNNN	National Emission Standards For Hazardous Air Pollutants: Hydrochloric Acid Production
Subpart PPPPP	National Emission Standards For Hazardous Air Pollutants For Engine Test Cells/Stands
Subpart QQQQQ	National Emission Standards For Hazardous Air Pollutants For Friction Materials Manufacturing Facilities
Subpart RRRRR	National Emission Standards For Hazardous Air Pollutants: Taconite Iron Ore Processing
Subpart SSSSS	National Emission Standards For Hazardous Air Pollutants For Refractory Products Manufacturing
Subpart TTTTT	National Emissions Standards For Hazardous Air Pollutants For Primary Magnesium Refining
Subpart WWWWW	National Emission Standards For Hospital Ethylene Oxide Sterilizers
Subpart YYYYY	National Emission Standards For Hazardous Air Pollutants For Area Sources: Electric Arc Furnace Steelmaking Facilities
Subpart ZZZZZ	National Emission Standards For Hazardous Air Pollutants For Iron And Steel Foundries Area Sources
Subpart BBBBBB	National Emission Standards For Hazardous Air Pollutants For Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, And Pipeline Facilities
Subpart CCCCCC	National Emission Standards For Hazardous Air Pollutants For Source Category: Gasoline Dispensing Facilities
Subpart DDDDDD	National Emission Standards For Hazardous Air Pollutants For Polyvinyl Chloride And Copolymers Production Area Sources
Subpart EEEEEE	National Emission Standards For Hazardous Air Pollutants For Primary Copper Smelting Area Sources
Subpart FFFFFF	National Emission Standards For Hazardous Air Pollutants For Secondary Copper Smelting Area Sources
Subpart GGGGGG	National Emission Standards For Hazardous Air Pollutants For Primary Nonferrous Metals Area Sources--Zinc, Cadmium, And Beryllium
Subpart HHHHHH	National Emission Standards For Hazardous Air Pollutants: Paint Stripping And Miscellaneous Surface Coating Operations At Area Sources
Subpart LLLLLL	National Emission Standards For Hazardous Air Pollutants For Acrylic And Modacrylic Fibers Production Area Sources
Subpart MMMMMM	National Emission Standards For Hazardous Air Pollutants For Carbon Black Production Area Sources
Subpart NNNNNN	National Emission Standards For Hazardous Air Pollutants For Chemical Manufacturing Area Sources: Chromium Compounds
Subpart OOOOOO	National Emission Standards For Hazardous Air Pollutants For Flexible Polyurethane Foam Production And Fabrication Area Sources
Subpart PPPPPP	National Emission Standards For Hazardous Air Pollutants For Lead Acid Battery Manufacturing Area Sources
Subpart QQQQQQ	National Emission Standards For Hazardous Air Pollutants For Wood Preserving Area Sources
Subpart RRRRRR	National Emission Standards For Hazardous Air Pollutants For Clay Ceramics Manufacturing Area Sources
Subpart SSSSSS	National Emission Standards For Hazardous Air Pollutants For Glass Manufacturing Area Sources
Subpart TTTTTT	National Emission Standards For Hazardous Air Pollutants For Secondary Nonferrous M etals Processing Area Sources
Subpart VVVVVV	National Emission Standards For Hazardous Air Pollutants For Chemical Manufacturing Area Sources
Subpart WWWWWW	National Emission Standards For Hazardous Air Pollutants: Area Source Standards For Plating And Polishing Operations
Subpart XXXXXX	National Emission Standards For Hazardous Air Pollutants Area Source Standards For Nine Metal Fabrication And Finishing Source Categories
Subpart YYYYYY	National Emission Standards For Hazardous Air Pollutants For Area Sources: Ferroalloys Production Facilities
Subpart ZZZZZZ:	National Emission Standards For Hazardous Air Pollutants Area Source Standards For Aluminum, Copper, And Other Nonferrous Foundries
Subpart AAAAAAA	National Emission Standards For Hazardous Air Pollutants For Area Sources: Asphalt Processing And Asphalt Roofing Manufacturing
Subpart BBBBBBB	National Emission Standards For Hazardous Air Pollutants For Area Sources: Chemical Preparations Industry
Subpart CCCCCCC	National Emission Standards For Hazardous Air Pollutants For Area Sources: Paints And Allied Products Manufacturing
Subpart DDDDDDD	National Emission Standards For Hazardous Air Pollutants: Area Source Standards For Prepared Feeds Manufacturing

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