

**CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC HEALTH  
AIR MANAGEMENT SERVICES (AMS)  
REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) STATE  
IMPLEMENTATION PLAN (SIP) REVISION UNDER THE 8-HOUR  
OZONE NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS)**

**1. INTRODUCTION**

**Notice:**

Proposed revision to the State Implementation Plan (SIP) identifying Reasonably Available Control Technology (RACT) Under the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS).

**Statutory Authority:**

25 Pennsylvania Code Subpart C Article III  
Philadelphia Air Management Code 3-301 of the Philadelphia Code

**Background and Requirements:**

The federal Clean Air Act (CAA) of 1990 gives the states primary responsibility for achieving the National Ambient Air Quality Standards (NAAQS). The NAAQSs are established by the U.S. Environmental Protection Agency (EPA) as the maximum concentrations in the atmosphere for specific air contaminants to protect public health and welfare. The principal mechanism at the state and local level for complying with the CAA is the State Implementation Plan (SIP). A SIP outlines the programs, actions, and commitments a state will carry out to implement its responsibilities under the CAA. Once approved by the EPA, a SIP is a legally binding document under both state and federal law.

Ground level ozone, one of the principal components of “smog,” is a serious air pollutant that harms human health and the environment. High levels of ozone can damage the respiratory system and cause breathing problems, throat irritation, coughing, chest pains, and greater susceptibility to respiratory infection. High levels of ozone also cause serious damage to forests and agricultural crops, resulting in economic losses to logging and farming operations. In June 2004, EPA designated 126 areas of the country as “non-attainment” under the 8-hour ozone NAAQS. Among those non-attainment areas is the Philadelphia-Wilmington-Atlantic City Moderate Non-Attainment Area (NAA) that includes three counties in Delaware, five counties in eastern Pennsylvania and eight counties in southern New Jersey, as shown in Figure 1. Since this moderate NAA is centered by Philadelphia, it is often referred to as “Philadelphia NAA.”

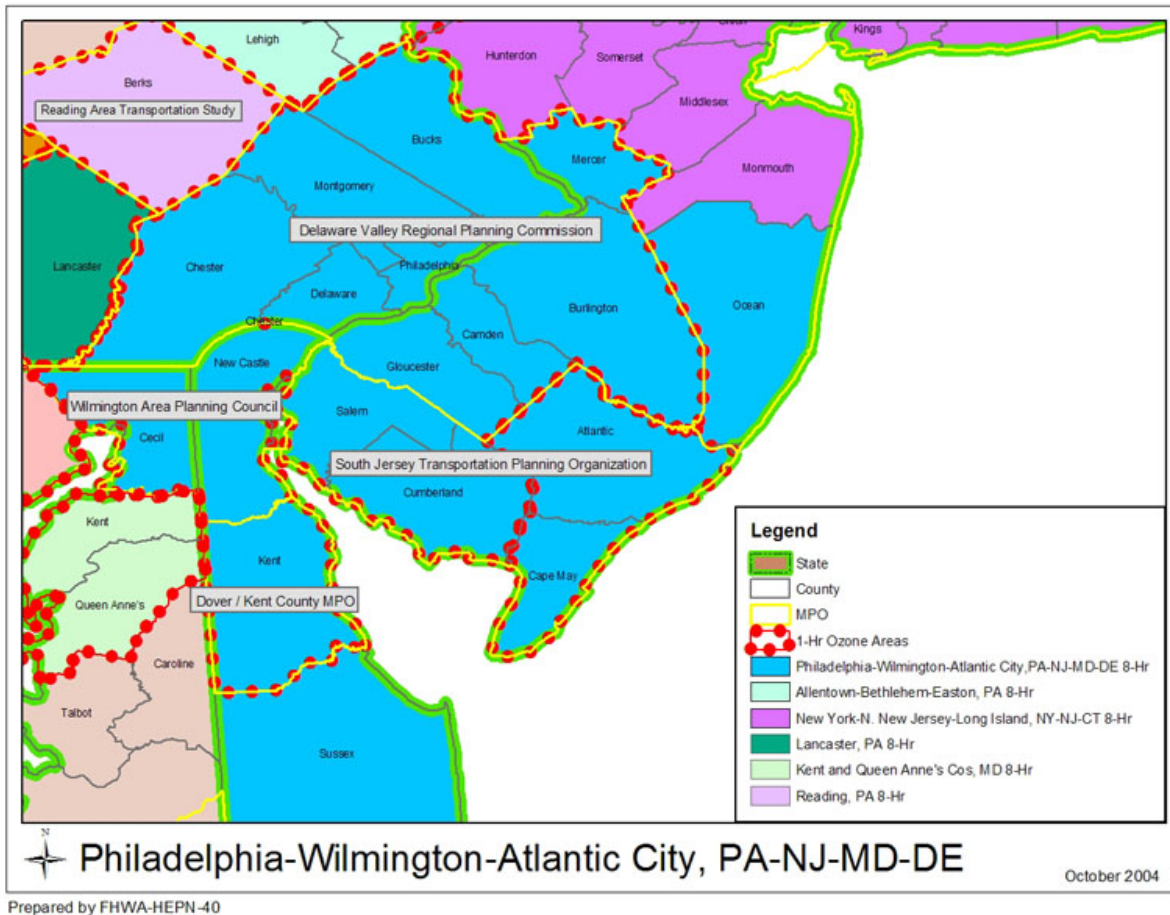


Figure 1. Philadelphia-Wilmington-Atlantic City PA-DE-MD-NJ Moderate Non-Attainment Area

Ozone is generally not directly emitted to the atmosphere; rather it is formed in the atmosphere by photochemical reactions between volatile organic compounds (VOC), oxides of nitrogen (NO<sub>x</sub>), and carbon monoxide (CO) in the presence of sunlight. Consequently, in order to reduce ozone concentrations in the ambient air, the CAA requires all non-attainment areas to apply controls on VOC/NO<sub>x</sub> emission sources to achieve emission reductions. Since CO's role in forming ozone is relatively insignificant, the CAA does not specify requirements on CO emission reductions regarding ozone attainment. Among effective control measures, the Reasonably Available Control Technology (RACT) controls are a major group for reducing VOC and NO<sub>x</sub> emissions from stationary sources.

The US Environmental Protection Agency (EPA) has defined RACT as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility (44 FR 53761 at 53762, September 17, 1979). Section 182 of the CAA sets forth two separate RACT requirements for ozone non-attainment areas. The first requirement, contained in section 182(a)(2)(A) of the CAA, and referred to as RACT fix-up, requires the correction of RACT rules for which EPA identified deficiencies before the Act was amended in 1990. Philadelphia has no

deficiencies to correct under this Section of the CAA. The second requirement, set forth in section 182(b)(2) of the CAA, applies to moderate or worse ozone non-attainment areas as well as to marginal and attainment areas in ozone transport regions (OTRs) established pursuant to section 184 of the CAA, and requires these non-attainment areas to implement RACT controls on all major VOC and NO<sub>x</sub> emission sources and on all sources and source categories covered by a Control Technique Guideline (CTG) issued by EPA.

Under section 183 of the CAA, EPA was required to issue by certain timeframes several guidance documents for RACT controls that would help states meet the requirements of section 182(b)(2). This requirement upon EPA includes developing (1) CTGs for controls of VOC emissions from stationary sources, and (2) Alternate Control Techniques (ACTs) for controls of VOC and NO<sub>x</sub> emissions from stationary sources.

The EPA issued three groups of CTG documents, establishing a “presumptive norm” for RACT for various categories of VOC sources: Group I, issued before January 1978 including 15 CTGs; Group II, issued in 1978 including 9 CTGs; and Group III, issued in the early 1980s with 5 CTGs. Sources not covered by the issued CTGs are referred to as non-CTG sources. Section 182(b)(2) of the CAA requires states with ozone non-attainment areas classified as moderate or worse to develop RACT controls for all pre-enactment (i.e., pre-1990) CTG source categories, for all sources subject to post-enactment (i.e., post-1990) CTGs, and for all non-CTG major sources in their non-attainment areas. The EPA has also issued over a dozen ACTs for various categories of VOCs and NO<sub>x</sub> sources.

All published CTG and ACT documents, along with other documentation, are listed in Table 3 of this document. In general, states meet the CAA’s RACT requirements by imposing controls that meet the control requirements established in final CTG documents and considering the information in ACT documents to relevant VOC and NO<sub>x</sub> sources in their moderate or worse non-attainment areas.

The CAA requires that states achieve the NAAQS by specified dates, based on the severity of an area’s air quality problem. The entire Commonwealth of Pennsylvania is considered a ‘moderate’ ozone nonattainment area for the new federal 8-hour ozone standard because it is in an Ozone Transport Region, and is required by the CAAA to attain the federal 8-hour ozone standard by June 15, 2010.

According to the EPA’s Final Rule to Implement the 8-Hour Ozone NAAQS (70 FR 71612, November 29, 2005), areas classified as moderate nonattainment or higher must submit a demonstration that their current rules fulfill 8-hour ozone RACT requirements for all CTG categories and all major, non-CTG sources as a revision to their SIPs. Such demonstrations can be made with either a new RACT determination or a certification that previously required RACT controls represent RACT for the 8-hour ozone standard. A certification shall be accompanied by appropriate supporting information such as consideration of information received during the public comment period and consideration of new data, and that may supplement existing RACT guidance documents that were developed for the 1-hour standard, such that SIPs accurately reflect RACT for the 8-hour ozone NAAQS based on current availability of technically and

economically feasible controls. The RACT SIP submittal is in addition to the area's 8-hour ozone attainment demonstration plan, which is also a SIP submittal.

The RACT SIP must be submitted to EPA by September 15, 2006. Philadelphia AMS has developed a draft RACT SIP revision that demonstrates: 1) it has implemented required RACT controls on all relevant stationary sources of VOC and NO<sub>x</sub> emissions; 2) all RACT controls have been approved by EPA under the 1-hour ozone NAAQS; and 3) all RACT controls have been certified, based on EPA's guidance and standards, to represent RACT control levels under the new 8-hour ozone NAAQS.

**Summary:**

Philadelphia AMS is certifying through this SIP revision that its SIP meets the CAA RACT requirements for the 50 ton per year (tpy) non-CTG major VOC sources and for 100 tpy NO<sub>x</sub> sources, and that all CTG-covered source categories are addressed at the emission thresholds set in the CTG. This certification is based on a combination of: 1) certification that previously adopted RACT controls in Philadelphia's portion of the Pennsylvania SIP that were approved by EPA under the 1-hour ozone NAAQS are based on the currently available technically and economically feasible controls, and that they represent RACT for 8-hour implementation purposes (Under the 1-hour ozone NAAQS, Philadelphia was designated part of a severe ozone non-attainment area and subject to RACT requirements under the 1-hour ozone standard), and 2) the adoption of new or more stringent regulations that represent RACT control levels. Based on the foregoing, all Philadelphia AMS rules that apply to ozone precursor emissions fulfill RACT requirements for the 8-hour ozone NAAQS. Moreover, all CTG sources and major, non-CTG sources under Philadelphia AMS' jurisdiction are controlled to RACT or better standards.

**Notice of Public Comment:**

Philadelphia AMS will hold a public hearing to receive comments on this SIP revision at 6:00 pm on Wednesday, September 6, 2006 at the following location:

1<sup>st</sup> Floor Large Conference Room  
Medical Examiner Office  
Spelman Building  
321 University Avenue  
Philadelphia, PA 19104

**Responsible Agency:**

The agency with direct responsibility for preparing and submitting this document is Philadelphia's Department of Public Health, Air Management Services (AMS), under the Agency's Director, Morris Fine. The working responsibility for air quality planning falls within Program Services, under Thomas Weir.

## **2. CERTIFICATION OF VOC AND NO<sub>x</sub> RACT REQUIREMENTS**

### **Discussion:**

Air Management Services and its air pollution control program operate under the approval of the Pennsylvania Department of Environmental Protection in accordance with the provisions of 25 Pa Code 133. Air Management Services controls air pollution from air contamination sources by means of visible, mass and concentration emission standards equal to, or more stringent than, those standards established by the Department for emissions (25 Pa Code 133.4 (b) (2)).

Since the early 1990s, Philadelphia has implemented numerous RACT controls to meet the CAA's RACT requirements. RACT controls for VOC were promulgated in Philadelphia's Air Management Regulation V "Control Of Emissions Of Organic Substances From Stationary Sources" and 25 Pa Code 129. RACT controls for NO<sub>x</sub> were promulgated in Philadelphia's Air Management Regulation VII "Control of Emissions of Nitrogen Oxides from Stationary Sources" and 25 Pa Code 129 and 145.

Provisions of 25 Pa Code 129 and 145 are implemented under Air Management Regulation I General Provisions, Section X. Compliance With Regulations Of The Environmental Quality Board Of Pennsylvania and Air Management Regulation V Control Of Emissions Of Organic Substances From Stationary Sources, Section X. Compliance With Pennsylvania Standards For Volatile Organic Compounds (VOC). Therefore, air contaminants can not be discharged in excess of the limits established in the regulations of the Environmental Quality Board of Pennsylvania, or utilize air contaminant control of less efficiency than required by the regulation of the Environmental Quality Board of Pennsylvania.

Adoption of new RACT regulation(s) shall occur when states have new stationary sources not covered by existing RACT regulations, or when new data or technical information indicates that a previously adopted RACT measure does not represent a newly-available RACT control level. RACT Requirements were identified, implemented and approved into the SIP under the 1-hour ozone NAAQS through Air Management Regulations, Case by Case RACT and Title 25. Environmental Protection of the Pennsylvania Code

Identification and certification of VOC RACT controls are provided in Table 1 below.  
Identification and certification of NO<sub>x</sub> RACT controls are provided in Table 2 below.

Explanations for each column of Tables 1 and 2 are as follows:

- Column 1: Identifies each section of the Air Management Regulation or PA DEP Code. These require, in general, major VOC emitting sources to comply with the relevant provisions by May 31, 1995. Under the 1-hour ozone standard, the VOC RACT regulation defines a major VOC emitting source as a stationary source that emits VOCs at a rate equal to or greater than 10 tons per year (TPY). (Note - Some sections are general implementing provisions necessary to implement RACT, not actual RACT controls.)
- Column 2: Identifies the underlying basis for the RACT determination (CTG, ACT, ect)
- Column 3: Identifies the date the rule was approved into the Pennsylvania SIP, along with the Federal Register citation.

- Column 4: Explains RACT control applicability and requirements.
- Column 5: Certifies whether or not the current rule represents RACT under the 8-hour ozone NAAQS. Where Philadelphia has certified that a current SIP approved regulation represents RACT under the 8-hour ozone standard, AMS affirms that it is not aware of any significant changes in control technology that affect the original RACT determination, unless otherwise explained in Column 5. Also, note that any discussion on cost effectiveness is relative only to this RACT SIP, and is not relevant as to whether or not control of a particular source or source category is cost effective relative to the entire SIP.

Philadelphia's minor source permitting program requires a detailed administrative and technical review of sources that emit air contaminants far below the "major" threshold" and CTG cutoffs (i.e., permits are required for the emission of 1 ton per year or more of any pollutant, except for sources specifically exempted in Air Management Code. Some small sources may just require a permanent operating license (registration)). This permitting program gives confidence that all major and CTG covered sources are controlled by RACT level or better controls.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>Regulation</b>	<b>RACT Documental Basis</b>	<b>SIP /Revision Approved By EPA</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as RACT for the 8-hour Ozone NAAQS</b>
<b><u>AMR V Section I.</u></b> – <i>Definitions</i> ( <i>Except for definitions related to paragraphs V.C. and V.D.</i> )	<b>Supporting provision</b>	6/16/93; 58 FR 33200		
<b><u>AMR V Section II.</u></b> – <i>Storage Tanks</i>	CTG: Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks, EPA-450-2/78-047, December 1978 (Group II). 19. CTG: Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks, EPA-450/2-77-036, December 1977 (Group I).	5/31/72; 37 FR 10842	This section applies to any stationary storage tank or container of 40,000 gallon capacity or greater with a vapor pressure greater than 1.5 psia or 11 psia.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  This section fully implements the CTG specified control in Philadelphia, and represents current RACT control level over the covered sourced under the 8-hour ozone NAAQS.  Similar PA DEP Regulation PA129.56 PA129.57
<b><u>AMR V Section III.</u></b> – <b>Oil-Effluent Water Separator</b>	CTG: Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds, EPA-450/2-77-025, October 1977 (Group I).	5/31/72; 37 FR 10842	This section applies to oil-effluent water separators that receive 200 gallons a day or more of organic materials.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.55(a)

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

Regulation	RACT Documental Basis	SIP /Revision Approved By EPA	RACT Rule Applicability and Requirements	Requirements at least as stringent as RACT for the 8-hour Ozone NAAQS
<b><u>AMR V Section IV.</u></b> – <i>Pumps and Compressors</i>	CTG: Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment, EPA-450/2-78-036, June 1978 (Group II)	5/31/72; 37 FR 10842	This section applies to all pumps handling organic materials having a vapor pressure of 1.5 psia or greater and compressors.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.55 (b)
<b><u>AMR V Section V.</u></b> – <i>Organic Material Loading</i> ( <i>Except for paragraphs V.C. and V.D.</i> )	CTG: Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA-450/2-77-026, December 1977 (Group I).	5/31/72; 37 FR 10842	This section applies to any loading facility loading organic material of 4.0 pounds or greater.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.60
<b><u>AMR V Section VI.</u></b> – <i>Solvents</i>	CTG: Control of Volatile Organic Emissions from Solvent Metal Cleaning, EPA-450/2-77-022 November 1977 (Group I).	5/31/72; 37 FR 10842	This section applies to the discharge of organic material into the atmosphere.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.51- 95



**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

Regulation	RACT Documental Basis	SIP /Revision Approved By EPA	RACT Rule Applicability and Requirements	Requirements at least as stringent as RACT for the 8-hour Ozone NAAQS
<p><b><u>AMR V Section VII.</u></b>  <i>– Processing of Photochemically Reactive Materials</i></p>		5/31/72; 37 FR 10842	<p>This section applies to the discharge of organic material into the atmosphere.</p> <p>The rule establishes organic material vapor control devices properly installed and well maintained.</p>	<p>Yes, as implemented in combination with PA DEP Regulations</p> <p>Similar PA DEP Regulation PA129.51- 95</p>
<p><b><u>AMR V Section VIII.</u></b>  <i>— Architectural Coatings</i></p>		5/31/72; 37 FR 10842	This section applies to the use of architectural coatings	Yes, as implemented in combination with PA Regulations
<p><b><u>AMR V Section IX.</u></b>  <i>Disposal of Solvents</i></p>		5/31/72; 37 FR 10842	This section applies to the disposal of more than 5 gallons of any photochemically reactive solvent	Yes, as implemented in combination with PA DEP Regulations
<p><b><u>AMR V Section X.</u></b>  <i>Compliance with Pennsylvania Standards for Volatile Organic Compounds (VOC)</i></p>	Provides for Case by Case RACT (NonCTG RACT, CAA Section 182 (b)(2)(c))	6/16/93; 58 FR 33192	This section applies to enforce applicable standards set forth on 25 Pa Code 129 for sources of VOC.	<p>Yes, as implemented in combination with PA DEP Regulations</p> <p>Similar PA DEP Regulation PA129.91 through PA129.95</p>

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

Regulation	RACT Documental Basis	SIP /Revision Approved By EPA	RACT Rule Applicability and Requirements	Requirements at least as stringent as RACT for the 8-hour Ozone NAAQS
<b><u>AMR V Section XI.</u></b> <i>Petroleum Solvent Dry Cleaning</i>	CTG: Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners, EPA-450/3-82-009, September 1982 (Group III).	4/12/93; 58 FR 19066	This section applies to petroleum solvent dry cleaning facilities that consume more than 100 gallons of petroleum solvent daily.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes  No PA DEP Regulation is similar
<b><u>AMR V Section XII.</u></b> <i>Pharmaceutical Tablet Coating</i>	CTG: Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products, 450/2-78-029, December 1978	6/16/93; 58 FR 33200	This section applies to pharmaceutical tablet coating at pharmaceutical manufacturing facilities that emit greater than 50 tons of VOC per year.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.68
<b><u>AMR V Section XIII.</u></b> <i>Process Equipment Leaks</i>	CTG: Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems, EPA-450/2-78-051, December 1978 (Group II).	4/6/93; 58 FR 17778	This section applies to VOCs leaking from flanges, gaskets, seals, connections, joints, fittings or other process equipment components not involving moving parts.  The rule establishes organic material vapor control devices properly installed and well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.59

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

PA Regulation Title 25. Environmental Protection, Chapter 129	RACT Basis Document	SIP Revision Approved by EPA (Date and Citation)	RACT Rule Applicability and Requirements	Requirements at least as stringent as the 8-hour ozone RACT?
SOURCES OF VOC Section 129.51. - General	This section lists the general implementing provisions of SOURCES OF VOC, and not RACT controls.	<b>6/25/01, 66 Federal Register 33645</b>		
SOURCES OF VOC Section 129.52. - Surface coating processes	<p>CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks, EPA-450/2-77-008, May 1977</p> <p>CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume III: Surface Coating of Metal Furniture, EPA-450/2-77-032, December 1977</p> <p>CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume IV: Surface Coating for Insulation of Magnet Wire, EPA- 450/2-77-033, December 1977</p> <p>CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume V: Surface Coating of</p>	<b>7/20/01, 66 Federal Register 37908</b>	<p>This section applies to coating operations at automobile and light-duty truck assembly plants, and to any can, coil, paper, fabric, or vinyl coating unit and establishes maximum allowable VOC emissions per unit of coating solids.</p> <p>This section applies to the coating of metal furniture, and establishes max allowable VOC emissions per unit of coating solids.</p> <p>This section applies to the coating of magnetic wire and establishes max allowable VOC emissions per unit of coating solids.</p> <p>This section applies to the coating of large appliances and establishes max allowable VOC emissions per unit of coating solids.</p>	<p>Yes.</p> <p>This section fully implements the CTG- specified controls, and represents current RACT control levels over the affected sources under the 8- hour ozone NAAQS.</p>

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

PA Regulation Title 25. Environmental Protection, Chapter 129	RACT Basis Document	SIP Revision Approved by EPA (Date and Citation)	RACT Rule Applicability and Requirements	Requirements at least as stringent as the 8-hour ozone RACT?
	<p>Large Appliances, EPA-450/2-77-034, December 1977</p> <p>CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VI: Surface Coating of Miscellaneous Metal Parts and Products, EPA-450/2-78-015, June 1978</p>		<p>This section applies to any miscellaneous metal parts coating line, and establishes max allowable VOC emissions per unit of coating solids.</p>	
<p>SOURCES OF VOC Section 129.55. - Petroleum refineries—specific sources</p>	<p>CTG: Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds, EPA-450/2-77-025, October 1977</p>	<p><b>01/19/83, 48 Federal Register 2319</b></p>	<p>This section applies to vacuum-producing systems, wastewater separators and process unit turnaround at petroleum refineries.</p> <p>Requirements include (1) no uncompressed VOC emission from vacuum producing systems, (2) covers, lids or seals for wastewater separators, and (3) depressurization of process unit or vessel to reduce its internal pressure to 136 kPa or less and then venting to vapor recovery system, flare or firebox.</p>	<p>Yes.</p> <p>This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8-hour ozone NAAQS.</p>

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

PA Regulation Title 25. Environmental Protection, Chapter 129	RACT Basis Document	SIP Revision Approved by EPA (Date and Citation)	RACT Rule Applicability and Requirements	Requirements at least as stringent as the 8-hour ozone RACT?
SOURCES OF VOC Section 129.56.- Storage tanks greater than 40,000 gallons capacity containing VOCs	<p>CTG: Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks, EPA-450/2- 78-047, December 1978</p> <p>CTG: Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks, EPA-450/2- 77-036, December 1977</p>	<b>07/26/00, 65 Federal Register 45920</b>	<p>This section applies to petroleum liquid storage tanks with external floating or fixed roofs and with a capacity of greater than 40,000 gal.</p> <p>The rule establishes sealing standards for storage tanks, including a vapor collection and recovery system.</p>	<p>Yes.</p> <p>This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.</p>
SOURCES OF VOC Section 129.57.- Storage tanks less than or equal to 40,000 gallons capacity containing VOCs	<p>CTG: Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks, EPA-450/2- 77-036, December 1977</p> <p>CTG: Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks, EPA-450/2- 78-047, December 1978</p>	<b>01/19/83, 48 Federal Register 2319</b>	<p>This section applies to petroleum liquid storage tanks with external floating or fixed roofs and with a capacity of 40,000 gal or less.</p> <p>The rule establishes sealing standards for storage tanks, including a vapor collection and recovery system.</p>	<p>Yes.</p> <p>This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.</p>

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section 129.58.- Petroleum refineries—fugitive sources	CTG: Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment, EPA- 450/2-78-036, June 1978	<b>07/27/84, 49 Federal Register 30183</b>	This section applies to equipment in VOC service in any process unit at petroleum refineries.  The rule establishes standards for proper valve operations under various scenarios to prevent VOC leak emissions.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section 129.59.-Bulk gasoline terminals	CTG: Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA- 450/2-77-026, December 1977	<b>08/11/92, 57 Federal Register 35777</b>	This section applies to the total of all the loading racks at any bulk gasoline terminal that delivers liquid product into gasoline tank trucks.  Requirements include control using a vapor collection and control system designed to collect and destroy the organic compound liquids or vapors displaced from gasoline tank trucks during product loading; and various other equipment and operational requirements.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section129.60.-Bulk gasoline plants	CTG: Control of Volatile Organic Emissions from Bulk Gasoline Plants, EPA-450/2- 77- 035, December 1977	<b>08/11/92, 57 Federal Register 35777</b>	This section applies to all unloading, loading, and storage operations at bulk gasoline plants and to any gasoline tank truck delivering or receiving gasoline at a bulk gasoline plant.  Requirements include the use of vapor balance, and various equipment and work practice standards.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section129.61.-Small gasoline storage tank control (Stage I control).	CTG: Design Criteria for Stage I Vapor Control Systems - Gasoline Service Stations, November 1975	<b>08/11/92, 57 Federal Register 35777</b>	This section applies to stationary gasoline storage tanks at gasoline dispensing facilities.  The requirements include (1) loading with submerged fill method, and (2) installing vapor recovery system that returns the displaced vapors to the delivery vessels and then to the bulk plant or terminal.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section 129.62.- General standards for bulk gasoline terminals, bulk gasoline plants and small gasoline storage tanks	CTG: Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA- 450/2-77-026, December 1977  CTG: Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems, EPA-450/2-78-051, December 1978	<b>12/22/94, 59 Federal Register 65971</b>	This section applies to gasoline tank trucks equipped for gasoline vapor collection.  The rule requires that the affected gasoline tank trucks must be vapor-tight.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section 129.63.- Degreasing operations	CTG: Control of Volatile Organic Emissions from Solvent Metal Cleaning, EPA- 450/2-77-022, November 1977  ACT Document – Halogenated Solvent Cleaners, EPA- 450/3-89-030, August 1989.	<b>01/16/03, 68 Federal Register 2208</b>	This section applies to solvent cleaning machine that contains solvent in which VOC is more than 5% by weight.  This rule establishes standards for (1) batch cold cleaning machines, (2) batch vapor cleaning machines, (3) inline cleaning machines, (4) and cleaning machines without a solvent-air interface. It also specifies an alternative standard for (2) and (3) above.	Yes.  This section is more stringent than the current CTG/ACT control level, and represents RACT control level under the 8-hour ozone NAAQS.



**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section129.64.- Cutback asphalt paving	CTG: Control of Volatile Organic Compounds from Use of Cutback Asphalt, EPA- 450/2-77-037, December 1977	<b>07/27/84, 49 Federal Register 30183</b>	This section establishes requirements related to the use of cutback asphalt and establishes VOC content limits for emulsified asphalt.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section129.65.- Ethylene production plants		<b>11/14/02, 67 Federal Register 68935</b>	This section establishes control requirements for waste gas streams from ethylene production plants.	Yes.  This section represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section129.67.- Graphic arts systems	CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VIII: Graphic Arts - Rotogravure and Flexography, EPA- 450/2-78-033, December 1978	<b>07/26/00, 65 Federal Register 45920</b>	This section applies to any rotogravure or flexographic printing process at a facility with potential uncontrolled VOC emission greater than 100 tons per year.  The rule establishes the limits of VOC contents in coatings and inks used in the covered facilities, and specifies standards for control devices for various printing processes.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

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<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section 129.68.- Manufacture of synthesized pharmaceutical products	CTG: Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products, 450/2-78- 029, December 1978	<b>08/11/92, 57 Federal Register 35777</b>	This section applies to VOC sources at synthesized pharmaceutical manufacturing facilities, including reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers.  The rule establishes standards for controlling and reducing VOC emissions from all covered sources.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section 129.69.- Manufacture of pneumatic rubber tires	CTG: Control of Volatile Organic Emissions from Manufacture of Pneumatic Rubber Tires, EPA-450/2- 78-030, December 1978	<b>12/22/94, 59 Federal Register 65971</b>	This section establishes VOC emission limits for pneumatic rubber tire manufacturing operations.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section 129.71.- Synthetic organic chemical and polymer manufacturing— fugitive sources	CTG: Control of Volatile Organic Compound Emissions from Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins, EPA-450/3-83-008, November 1983  CTG: Control of Volatile Organic Compound Fugitive Emissions from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment, EPA- 450/3-83-006, March 1984	<b>12/22/94, 59 Federal Register 65971</b>	This section establishes provisions for minimizing leaks, and establishes a leak detection and repair program for process equipment.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.
SOURCES OF VOC Section 129.72.- Manufacture of surface active agents	Non-CTG RACT: An industry-specific RACT determination.	<b>12/22/94, 59 Federal Register 65971</b>	This section establishes VOC control requirements for process operations involved in surface active agents manufacturing.	Yes.  This section represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section 129.73.- Aerospace manufacturing and rework	CTG: Aerospace (CTG & MACT) (see 59 FR 29216, June 6, 1994); CTG (Final), EPA-453/R- 97-004, December 1997	<b>06/25/01, 66 Federal Register 33645</b>	This section applies to any aerospace manufacturing and rework facility.  In brief, the rule establishes vapor pressure limits, VOC content limits, emission limits and/or work practice standards for: (a) handwipe, spray gun, or flush cleaning operations, (b) primer, topcoat, self-priming topcoat, and specialty coating operations, (c) chemical milling maskant application, (d) repainting of aerospace vehicles, and (e) handling and storing of VOC.	Yes.  This section fully implements the CTG- specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
SOURCES OF VOC Section 129.75.- Mobile equipment repair and refinishing	ACT: Automobile Body refinishing ACT (EPA 453/R- 94-031, April 1994)	<b>08/14/00, 65 Federal Register 49501</b>	This section applies to any person who applies coatings to mobile equipment.  The rule establishes: (a) Requirements for using improved transfer efficiency coating and application equipment; (b) requirements for enclosed spray gun cleaning techniques; and (c) minimum training standards in the proper use of equipment and materials. The VOC limits for mobile equipment repair and refinishing coatings are in effect nationally under the Federal requirements at 40 CFR Part 59, subpart B, National VOC Emission Standards for Automobile Refinish Coatings, which was adopted by EPA in 1998.	Yes.  This section is more stringent than the current ACT control level, and represents RACT control level under the 8-hour ozone NAAQS.
STATIONARY SOURCES OF NO <sub>x</sub> AND VOC Sections 129.91- 129.95 Control of major sources of NO <sub>x</sub> and VOCs	Non-CTG RACT, CAA Section 182(b)(2)(C)	<b>07/20/01, 66 Federal Register 37908</b>	This section establishes provisions for case- by-case determinations of RACT for major non-CTG VOC sources.	Yes.  This provision represents current NO <sub>x</sub> RACT control requirement under the 8-hour ozone NAAQS.

**Table 1. Philadelphia VOC RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>PA Regulation Title 25. Environmental Protection, Chapter 129</b>	<b>RACT Basis Document</b>	<b>SIP Revision Approved by EPA (Date and Citation)</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as the 8-hour ozone RACT?</b>
WOOD FURNITURE MANUFACTURING OPERATIONS Sections 129.101- 129.107	CTG: Wood Furniture (CTG- MACT) - draft MACT out 5-94; Final CTG, EPA- 453/R-96-007, April 1996; see also 61 FR 25223, and, 61 FR 50823, September 27, 1996	<b>07/20/01, 66 Federal Register 37908</b>	This section establishes VOC emission limitations and work practice standards for wood furniture manufacturing operations with the potential to emit 25 tpy or greater of VOC.	Yes.  This section fully implements the CTG specified control and represents current RACT control level over the affected sources under the 8- hour ozone NAAQS.

**Table 2. Philadelphia NOx RACT List and Certification under the 8-Hour Ozone NAAQS**

<b>Regulation</b>	<b>RACT Documental Basis</b>	<b>SIP /Revision Approved By EPA</b>	<b>RACT Rule Applicability and Requirements</b>	<b>Requirements at least as stringent as RACT for the 8-hour Ozone NAAQS</b>
AMR VII. Section II. Fuel Burning Equipment		1/14/87; 52 FR 1456	This section applies to fuel burning equipment greater than or equal to 250,000 BTU/hr.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA145.111 - 113
AMR VII. Section III. Nitric Acid Plants		5/14/73; 38 FR 12696	This section applies to nitric acid plants in excess of three pounds per ton of acid produced on a two hour average.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA129.11
AMR VII. Section IV. Emissions Monitoring		5/14/73; 38 FR 12696	This section requires instrument(s) for continuously monitoring and recording emissions of nitrogen oxides be well maintained.	Yes, as implemented in combination with PA DEP Regulations  Similar PA DEP Regulation PA123.51

**Table 2. Philadelphia NO<sub>x</sub> RACT List and Certification under the 8-Hour Ozone NAAQS**

PA Regulation Title 25. Environmental Protection, Chapter 129 & Chapter 145	RACT Basis Document	SIP Revision Approved by EPA	RACT Rule Applicability and Requirements	Requirements at least as stringent as the 8-hour ozone RACT?
STATIONARY SOURCES OF NO <sub>x</sub> AND VOC Sections 129.91- 129.95 Control of major sources of NO <sub>x</sub> and VOCs	NO <sub>x</sub> RACT, CAA Section 182(b)(2) and Section 182(f)	<b>07/20/01, 66 Federal Register 37908</b>	This section establishes provisions for case-by- case determinations of RACT for major NO <sub>x</sub> sources.  In addition, it establishes requirements for case- by-case RACT determinations for certain major NO <sub>x</sub> sources and establishes presumptive RACT limitations for certain classes of combustion units: coal-fired combustion units rated equal or greater than 100 MMBtu, combustion units rated equal or greater than 20 MMBtu and less than 50 MMBtu.	Yes.  This provision represents current NO <sub>x</sub> RACT control requirement under the 8-hour ozone NAAQS.
INTERSTATE POLLUTION TRANSPORT REDUCTION Subchapter A. Sections 145.1- 145.100 NO <sub>x</sub> Budget Trading Program	These sections ensure that sources subject to the cap-and-trade program achieve RACT-level reductions because they meet the NO <sub>x</sub> SIP Call requirements.  EPA believes that the SIP provisions for those sources subject to the State's emission cap-and-trade program where the cap-and- trade program has been adopted by the State that meets the NO <sub>x</sub> SIP Call requirements meet the ozone NO <sub>x</sub> RACT requirement (70 FR 71652).	<b>08/21/01, 66 Federal Register 43795</b>	This rule establishes a NO <sub>x</sub> budget and trading program for large sources of NO <sub>x</sub> , including electric generating units (EGUs), internal combustion engines, and cement kilns.	Yes.  This provision represents current NO <sub>x</sub> RACT control requirement under the 8-hour ozone NAAQS.



**Table 2. Philadelphia NOx RACT List and Certification under the 8-Hour Ozone NAAQS**

PA Regulation Title 25. Environmental Protection, Chapter 129 & Chapter 145	RACT Basis Document	SIP Revision Approved by EPA	RACT Rule Applicability and Requirements	Requirements at least as stringent as the 8-hour ozone RACT?
Subchapter B. Sections 145.111- 145.113 Emissions of NOx From Stationary Internal Combustion Engines	“RACT is considered met for cement kilns and stationary internal combustion engines that are subject to a SIP approved as meeting the NOx SIP Call obligation to install and operate controls that are expected to achieve at least a 30 percent and 82 percent reduction, respectively, from uncontrolled levels.” (70 FR 71653).	<b>07/14/06, 71 Federal Register 40048</b>	This section establishes presumptive RACT limitations and standard requirements for certain stationary internal combustion engines: stationary internal combustion engine rated equal or greater than 2,400 brake horsepower, diesel stationary internal combustion engine rated equal or greater than 3,000 brake horsepower, and dual-fuel stationary internal combustion engine rated equal or greater than 4,000 brake horsepower.	Yes.  This provision represents current NOx RACT control requirement under the 8-hour ozone NAAQS.
Subchapter C. Sections 145.141- 145.144 Emissions of NOx From Cement Manufacturing	“RACT is considered met for cement kilns and stationary internal combustion engines that are subject to a SIP approved as meeting the NOx SIP Call obligation to install and operate controls that are expected to achieve at least a 30 percent and 82 percent reduction, respectively, from uncontrolled levels.” (70 FR 71653).	<b>07/14/06, 71 Federal Register 40048</b>	This section establishes presumptive RACT limitations and standard requirements for certain (Portland) cement kilns..	Yes.  This provision represents current NOx RACT control requirement under the 8-hour ozone NAAQS.

### 3. NEGATIVE DECLARATION LIST

Philadelphia AMS found no emission sources that require this CTG requirement:

Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VII: Factory Surface Coating of Flat Wood Paneling, EPA-450/2-78-032, June 1978.

#### 4. CONSISTENCY WITH PA DEP's NEGATIVE DECLARATION LIST

Philadelphia has sources that were included in the “**Pennsylvania Department of Environmental Protection Reasonably Available Control Technology (RACT) Proposed State Implementation Plan (SIP) Revision Under The 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)**” Negative Declaration List. These are sources that were evaluated through a Case-by-Case RACT determination.

In these cases it was reasonable and more cost-effective to establish a federally enforceable permit than promulgate a regulation. Each of these are as stringent as the guidance provided in the associated guidance documents.

The following list provides the facility name, permit number and associated guidance documents considered in establishing RACT:

Philadelphia Gas Works, Operating Permit No. V95-042 and Sunoco Philadelphia Refinery, Operating Permit No. V95-038

Control of Volatile Organic Equipment Leaks from Natural Gas/Gasoline Processing Plants, EPA-450/2-83-007, December 1983

Aker Philadelphia Shipyard, Operating Permit No. V01-006

Shipbuilding/Repair ACT (EPA 453/R-94-032, April 1994) and CTG, see 61 FR 44050, August 27, 1996

– Sunoco Chemicals, Operating Permit No. V95-047

Control of Volatile Organic Compound Emissions from Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry, EPA-450/3-84-015, December 1984

Sunoco Chemicals, Operating Permit No. V95-047

Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry, EPA-450/4-91-031, August 1993 -

#### **Table 3. U.S. EPA's Control Techniques Guidelines (CTG) documents, Alternative Control Techniques (ACT) documents, and Additional Reference Documents, cited in this SIP and Other Supporting Documents.**

1. Control Technology Guidance (CTG) document: Control of Volatile Organic Compound Emissions from Coating Operations at Aerospace Manufacturing and Rework Operations, EPA-453/R-97-004, December 1997.

2. Alternative Control Techniques (ACT) document: Reduction of Volatile Organic Compound Emissions from Automobile Refinishing, EPA-450/3-88-009, October 1988.

3. ACT: Automobile Refinishing, EPA-453/R-94-031, April 1994.

4. ACT: Surface Coating of Automotive/Transportation and Business Machine Plastic Parts, EPA-453/R-94-017, February 1994.

5. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks, EPA-450/2-77-008, May 1977 (Group I).

6. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume III: Surface Coating of Metal Furniture, EPA-450/2-77-032, December 1977.
7. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume V: Surface Coating of Large Appliances, EPA-450/2-77-034, December 1977 (Group I).
8. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume IV: Surface Coating of Insulation of Magnet Wire, EPA-450/2-77-033, December 1977 (Group I).
9. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VI: Surface Coating of Miscellaneous Metal Parts and Products, EPA-450/2-78-015, June 1978 (Group II).
10. CTG: Control of Volatile Organic Emissions from Bulk Gasoline Plants, EPA-450/2-77-035, December, 1977 (Group I).
11. CTG: Design Criteria for Stage I Vapor Control Systems - Gasoline Service Stations, November 1975 (Group I).
12. CTG: Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA-450/2-77-026, December 1977 (Group I).
13. CTG: Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems, EPA-450/2-78-051, December 1978 (Group II).
14. CTG: Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds, EPA-450/2-77-025, October 1977 (Group I).
15. CTG: Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment, EPA-450/2-78-036, June 1978 (Group II).
16. CTG: Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks, EPA-450-2/78-047, December 1978 (Group II).
17. CTG: Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks, EPA-450/2-77-036, December 1977 (Group I).
18. CTG: Control of Volatile Organic Compound Equipment Leaks from Natural Gas/Gasoline Processing Plants, EPA-450/2-83-007, December 1983 (Group III).
19. CTG: Control of Volatile Organic Emissions from Solvent Metal Cleaning, EPA-450/2-77-022 November 1977 (Group I).
20. ACT: Halogenated Solvent Cleaners, EPA-450/3-89-030, August 1989.
21. CTG: Control of Volatile Organic Compounds from Use of Cutback Asphalt, EPA-450/2-77-037, December 1977 (Group I).
22. CTG: Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products, EPA-450/2-78-029, December 1978 (Group II).
23. CAA Section 182(b)(3).
24. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VIII: Graphic Arts-Rotogravure and Flexography, EPA-450/2-78-033, December 1978 (Group II).
25. CTG: Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners, EPA-450/3-82-009, September 1982 (Group III).
26. CTG: Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in SOCOMI, November 15, 1993, EPA-450/4-91-031.
27. CTG: Control of Volatile Organic Compound Fugitive Emissions from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment, EPA-450/3-83-006, March 1984 (Group III).
28. CTG: Control of Volatile Organic Compound Emissions from Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins, EPA-450/3-83-008, November 1983 (Group III).
29. CTG: Control of Volatile Organic Compound Emissions from Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry, EPA-450/3-84-015, December 1984 (Group III).
30. CAA Section 183(f).
31. ACT: Control of Volatile Organic Compound Emissions from Batch Processes, EPA-453/R-93-017, February 1994.
32. ACT Document: Industrial Cleaning Solvents, EPA-453/R-94-015, February 1994.
33. CTG: Control of Volatile Organic Compound Emissions from Offset Lithographic Printing (CTG Draft), EPA-453/D-95-001, September 1993.
34. ACT: Offset Lithographic Printing, EPA-453/R-94-054, June 1994.
35. ACT: Volatile Organic Liquids Storage in Floating and Fixed Roof Tanks, EPA-453/R-94-001, February 1994.
36. CAA Section 182(b)(2)(C).
37. NESCAUM Stationary Source Committee Recommendation on NOx RACT for Utility Boilers, 8/12/1992.
38. NESCAUM Stationary Source Committee Recommendation on NOx RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines, 9/18/1992.

39. Controlling Emissions of Nitrogen Oxides from Existing Utility Boilers Under Title I of the Clean Air Act: Options and Recommendations, STAPPA/ALAPCO, 4/27/1992.
40. State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, USEPA, 10/27/1995.
41. Summary of NOx Control Technologies and their Availability and Extent of Application, USEPA, February 1992.
42. Alternative Control Techniques Document: NOx Emissions from Process Heaters (Revised), USEPA, September 1993.
43. Alternative Control Techniques Document: NOx Emissions from Industrial/Commercial/Institutional (ICI) Boilers, USEPA, March 1994
44. Alternative Control Techniques Document: NOx Emissions from Utility Boilers, USEPA, March 1994.
45. State's Report on Electric Utility Nitrogen Oxides Reduction Technology Options for Application by the Ozone Transport Assessment Group, prepared for the OTAG Control Technology & Options Workgroup by Ken Colburn, 4/11/1996.
46. Status Report on NOx Controls for Gas Turbines, Cement Kilns, Industrial Boilers, Internal Combustion Engines, NESCAUM, December 2000.
47. Summary of State/Local NOx Regulations for Stationary Sources, USEPA, 2004.
48. Summary of NOx Control Technologies and their Availability and Extent of Application, USEPA, February 1992.
49. Summary of NOx Control Technologies and their Availability and Extent of Application, USEPA February 1992
50. Memorandum subject, Fuel Switching to Meet the Reasonably Available Control Technology (RACT) Requirements for Nitrogen Oxides (NOx), Michael H. Shapiro, Air and Radiation, 7/30/1993
51. Memorandum subject, Nitrogen Oxides (NOx) Questions from Ohio EPA, Tom Helms, Chief Ozone/ Carbon Monoxide Programs Branch, (no date cited, references 11/30/1993 questions)
52. State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, USEPA.
53. Alternative Control Techniques Document: NOx Emissions from Stationary Gas Turbines, USEPA, January 1993
54. Alternative Control Techniques Document: NOx Emissions from Stationary Reciprocating Internal Combustion Engines, USEPA 1993.
55. NOx Emissions from Stationary Internal Combustion Engines, USEPA, October 2003.
56. Stationary Reciprocating Internal Combustion Engines – Updated Information on NOx Emissions and Control Techniques – Revised Final Report, USEPA, 9/1/2000.
57. Sourcebook: NOx Control Technology Data, USEPA, July 1991.
58. Memorandum Subject: De Minimis Values for NOx RACT, from G.T. Helms, Ozone Policy and Strategies Group, dated 1/1/1995.
59. Alternative Control Techniques Document: NOx Emissions from Iron and Steel Mills, USEPA, September 1994.
60. Shipbuilding/Repair ACT (EPA 453/R-94-032, April 1994) and CTG, see 61 FR 44050, August 27, 1996.