

**SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT**

STAFF REPORT

**Analysis of Reasonably Available Control Technology for the 8-Hour Ozone State
Implementation Plan (RACT SIP)**

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BACKGROUND

The U.S. Environmental Protection Agency (EPA) published the final Phase 2 Rule to implement the 8-hour ozone air quality standard on November 29, 2005 (70 FR 71611). Among the requirements of the Phase 2 Rule, a new section was added to the Code of Federal Regulations (40 CFR 51.912) that requires the District to submit a revision to the State Implementation Plan (SIP) that meets the Reasonably Available Control Technology (RACT) requirements for VOC and NOx in accordance with Sections 182(b)(2) and 182(f) of the federal Clean Air Act. This requirement is known as the RACT SIP.

EPA defines RACT (44 FR 53762) 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.” Sections 182(b)(2) and 182(f) of the Clean Air Act require the District to implement RACT for:

- Each category of VOC sources that is covered by a Control Technique Guideline (CTG) document issued by EPA; and
- All major stationary sources of VOC and/or NOx.

EPA’s designations and classifications for the 8-hour ozone standard were published on April 30, 2004 (69 FR 23857) and became effective on June 15, 2004. The Sacramento Metropolitan Area was classified as a serious nonattainment area, with a deadline of 2013 to attain the standard. The major source emissions threshold for areas classified as serious is 50 tons per year of either VOC or NOx.

EPA Region 9 provided guidance for the RACT SIP submittal in a letter from Andrew Steckel dated March 9, 2006. The following elements were included in the recommended strategy:

- Describe efforts to identify all source categories within the District requiring RACT, including CTG sources (i.e., covered by an EPA Control Technique Guideline document) and major non-CTG sources.
- Submit negative declarations where there are no facilities (major or minor) within the District subject to a CTG.
- For all categories needing RACT, list the state/local regulation that implements RACT. It may also be helpful to list the date EPA approved these regulations as fulfilling RACT.
- Describe the basis for concluding that the regulations fulfill RACT. Documents useful in establishing RACT include CTGs, Alternative Control Technique guidance (ACTs), Maximum Achievable Control Technology (MACT) standards, New Source Performance Standards (NSPS), California Suggested Control Measures (SCM) and RACT/Best Available Retrofit Control Technology (BARCT) determinations, regulations adopted in other Districts, and guidance and rules developed by other state and local agencies.

The purpose of this staff report is to provide sufficient analysis of the CTG categories and major sources within the District to determine whether the District meets the requirements of RACT.

RACT ANALYSIS

The process Staff used to demonstrate compliance with federal RACT requirements consists of the following steps:

- For CTG source categories for which the District has no applicable rule, verify that the District has no sources in these categories.
- For CTG source categories for which the District has an applicable rule, perform a detailed comparison of the rule requirements with applicable CTG and other RACT guidance documents. Appendix A contains the analyses for CTG source categories.
- For non-CTG source categories that are found at one or more major sources within the District, perform a detailed comparison of the rule requirements applicable to those source categories with relevant RACT guidance documents. Appendix B contains the analyses for these non-CTG source categories.
- For major sources, determine the types of emission units at the facility and determine which District rules apply to these sources. The RACT requirement is satisfied for a major source when all units that emit VOC or NOx are subject to rules that have been determined to satisfy RACT (as demonstrated in Appendix A or B). Appendix C contains the analyses for major sources.

EPA Region 9 provided a list of CTG categories and documents in a letter from Andrew Steckel dated April 4, 2006. Staff reviewed the list, and determined which District rules are applicable to the CTG categories. For categories where the District has no applicable rule, Staff reviewed the database of permitted sources and the yellow pages to determine whether there are any sources in these categories. Staff determined that there are no CTG categories for which the District has sources but no applicable rule. Table 1 lists the CTG categories, the applicable District rules, and the SIP status of the rules.

Table 1 – CTG Source Categories

CTG Category	CTG Date	SMAQMD Rule No. (Most Recent Amendment)	SIP Status
Aerospace Manufacturing	Dec. 1997	456 (7/23/98)	Adopted 9/5/96; Approved 11/9/98
Automobile Coating	May 1977	No Sources	
Cutback Asphalt	1977	453 (8/31/82)	Adopted 8/31/82; Approved 1/24/85
Dry Cleaning (Petroleum Solvent)	Sep. 1982	No Sources	

CTG Category	CTG Date	SMAQMD Rule No. (Most Recent Amendment)	SIP Status
Gasoline Service Stations	Nov. 1975	448 (2/2/95) 449 (9/26/02)	Adopted 2/2/95; Approved 1/23/96 Adopted 9/26/02; Approved 3/24/03
Gasoline Tank Trucks and Bulk Plants	Oct. 1977, Dec. 1977 and Dec. 1978	447 (4/2/98) 448 (2/2/95)	Adopted 4/2/98; Approved 11/26/99 Adopted 2/2/95; Approved 1/23/96
Graphic Arts (Rotogravure)	Dec. 1978	No Sources	
Graphic Arts (Flexographic)	Dec. 1978	450 (3/23/00)	Adopted 12/5/96; Approved 11/13/98
Large Appliance Coating	1977	No Sources	
Magnetic Wire Coating	Dec. 1977	No Sources	
Metal Can Coating	May 1977	452 (9/5/96)	Adopted 9/5/96; Approved 11/9/98
Metal Coil Coating	May 1977	No Sources	
Metal Furniture Coating	Dec. 1977	451 (10/2/97)	Adopted 11/29/83; Approved 1/24/85 Adopted 9/5/96; No EPA Action
Metal Parts and Products Coating	June 1978	451 (10/2/97)	Adopted 11/29/83; Approved 1/24/85 Adopted 9/5/96; No EPA Action
Natural Gas/Gasoline Processing	Dec. 1983	No Sources	
Paper and Fabric Coating	May 1977	No Sources	
Petroleum Liquid Storage Tanks	Dec. 1977 and Dec. 1978	446 (11/16/93)	Adopted 11/16/93; Approved 9/16/94
Pharmaceutical Products Manufacturing	Dec. 1978	455 (9/5/96)	Adopted 11/29/83; Approved 1/24/85 Adopted 9/5/96; No EPA Action
Resin Manufacturing – High Density Polyethylene, Polypropylene, and Polystyrene	Nov. 1983 and Mar. 1984	No Sources	
Refineries	Oct. 1977 and June 1978	No Sources	
Rubber Tire Manufacturing	Dec. 1978	No Sources	
Ship Coating	Aug. 1996	No Sources	
Solvent Cleaning (Degreasers)	Nov. 1977	454 (5/23/02)	Adopted 4/3/97; Approved 4/2/99
Synthetic Organic Chemical Manufacturing	Mar. 1984, Dec. 1984 and Aug. 1993	443 (9/5/96) 464 (7/23/98)	443: Adopted 9/5/96; Approved 11/9/98 464: Adopted 7/23/98; Approved 4/19/00
Wood Coating (Flat Wood Paneling)	June 1978	No Sources	
Wood Furniture Coating	Apr. 1996	463 (7/23/98)	Adopted 12/5/96; No EPA Action

Staff reviewed the permitting records of sources within the District to compile a list of major sources of VOC and/or NOx. Because the District is classified as a serious nonattainment area for the 8-hour ozone standard, major sources are those for which the potential-to-emit exceeds 50 tons per year of either VOC or NOx. Table 2 lists the major sources within the District.

Table 2 – Major Sources of VOC and NOx within SMAQMD

Major Source	Major Pollutant(s)
Aerojet	VOC, NOx
Campbell Soup	NOx
Carson Energy	NOx
Chevron	VOC
Kiefer Landfill	VOC, NOx
Procter and Gamble	VOC
Sacramento Cogeneration Authority	NOx
Santa Fe Pacific Pipeline	VOC
SMUD Cosumnes Power Plant	NOx
UCD Med Center	NOx

Because many of the major sources contain emission units that do not fall into one of the CTG categories, it was necessary to perform analysis of additional source categories. Table 3 lists the additional categories that were analyzed.

Table 3 – Additional (Non-CTG) Source Categories Applicable to Major Sources

Source Category	SMAQMD Rule No. (Most Recent Amendment)	SIP Status
Architectural Coatings	442 (5/24/01)	Adopted 9/5/96; Approved 11/9/98
Boilers, Process Heaters, and Steam Generators	411 (10/27/05)	Adopted 2/2/95; Approved 2/9/96 Adopted 1/9/97; No EPA Action Adopted 10/27/05; No EPA Action
Gas Turbines	413 (3/24/05)	Adopted 5/1/97; Approved 2/11/99
IC Engines	412 (6/1/95)	Adopted 6/1/95; Approved 4/30/96
Municipal Landfill Gas	NSPS Subpart WWW NESHAP Subpart AAAA	N/A
Organic Chemical Manufacturing – Tanks ≤ 40,000 Gallons	464 (7/23/98)	Adopted 7/23/98; Approved 4/19/00
Organic Chemical Manufacturing – Wastewater	464 (7/23/98)	Adopted 7/23/98; Approved 4/19/00
Solvent Cleaning (other than Degreasers)	466 (5/23/02)	Not yet submitted

CONCLUSION

Based on the analysis performed in Appendices A, B, and C, Staff finds that the District has fulfilled the requirements of RACT, as applicable to the 8-hour ozone standard, for all CTG source categories and for all major sources of VOC and NO_x, with the following exception. At the Kiefer Landfill, a major source of NO_x, the emissions of NO_x from the flare are not limited by a SIP-approved rule.

The RACT deficiency will be remedied by submitting for inclusion in the SIP the portions of the permit that require a NO_x limit of 0.06 lb/mmBtu for the flare and the associated testing and recordkeeping requirements. The permit to be submitted is included in Appendix D.

The District has no sources in the following CTG categories, based on a review of District permitting records, yellow pages, and the District's enforcement program for unpermitted sources:

- Automobile Coating (the CTG applies only to automotive assembly plants, not refinishing operations)
- Dry Cleaning (Petroleum Solvent)
- Graphic Arts (Rotogravure)
- Large Appliance Coating
- Magnetic Wire Coating
- Metal Coil Coating
- Natural Gas/Gasoline Processing (the CTG applies to plants that separate and/or fractionate natural gas liquids from field gas, and does not apply to compression stations and dehydration units alone)
- Paper and Fabric Coating
- Resin Manufacturing – High Density Polyethylene, Polypropylene, and Polystyrene
- Refineries
- Rubber Tire Manufacturing
- Ship Coating
- Wood Coating (Flat Wood Paneling)

ENVIRONMENTAL REVIEW AND COMPLIANCE

The proposed SIP revision will make the existing NO_x emission limit for the Kiefer Landfill flare federally enforceable. The source already meets the emission limit. Therefore, Staff has determined that the adoption of these rule commitments is exempt from the California Environmental Quality Act (CEQA) under Section 15061(b)(3) of the State CEQA Guidelines because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment.

APPENDICES

- Appendix A: RACT Analysis of CTG Source Categories
- Appendix B: RACT Analysis of Non-CTG Source Categories Applicable to Major Sources
- Appendix C: RACT Analysis of Major Sources
- Appendix D: Permit to Operate 17359 for the Kiefer Landfill Flare

Appendix A

RACT Analysis of CTG Source Categories

CTG Category	Page Number
Aerospace Assembly and Component Coating Operations	7
Cutback Asphalt	12
Gasoline Service Stations	14
Gasoline Tank Trucks and Bulk Plants (Liquid Loading)	16
Graphic Arts Operations	19
Metal Can Coating	22
Surface Coating of Metal Furniture	25
Surface Coating of Miscellaneous Metal Parts and Products	27
Storage of Petroleum Products (> 40,000 gallons)	30
Pharmaceuticals Manufacturing	33
Solvent Cleaning (Degreasers)	35
Organic Chemical Manufacturing. Process Vents from Reactor Processes, Distillation Operations, and Other Separation and Production Equipment	38
Leaks from Synthetic Organic Chemical and Polymer Manufacturing	41
Wood Furniture Manufacturing (Surface Coating)	44

Category: Aerospace Assembly and Component Coating Operations

EPA RACT Guidance

Guideline Series: Control of Volatile Organic Compound Emissions from Coating Operations at Aerospace Manufacturing and Rework Operations. U.S. EPA Publication No. EPA-453/R-97-004, December 1997.

Applicability

The CTG applies to the manufacture or rework of commercial, civil, or military aerospace vehicles or components.

The model rule exempts the following from VOC limits:

- Cleaning and coating associated with research and development, quality control, laboratory testing, and electronic parts and assemblies (except for cleaning and coating of completed electronic assemblies).
- Manufacturing and rework operations involving space vehicles, antique aerospace vehicles and components.
- Touch up, aerosol, and Department of Defense “classified” coatings (protected against unauthorized disclosure for national security purposes).
- Coatings used in volumes of 50 gallons per year or less of each formulation, not to exceed 200 gallons per year for all exempt coatings combined.

RACT Requirements

The CTG establishes the presumptive RACT for the following coatings by referring to the VOC limits in the aerospace NESHAP (40 CFR 63, subpart GG):

Coating Type	VOC Content Grams/Liter (Lbs/Gal) less water and exempt compounds
Chemical Milling Maskant - Type I	622 (5.2)
Chemical Milling Maskant - Type II	160 (1.3)
Primer	350 (2.9)
Primer – General aviation rework	540 (4.5)
Topcoat	420 (3.5)
Topcoat – General aviation rework	540 (4.5)

In addition, the CTG establishes VOC limits for 57 specialty coating categories that are exempt from the VOC and HAP limits in the aerospace NESHAP. These limits are listed in Table A at the end of this analysis.

The CTG also includes the following requirements:

- Hand wipe cleaning operations: use aqueous cleaners or cleaners with a VOC composite vapor pressure no greater than 45 mmHg at 20 C. (13 types of cleaning operations are exempt from this requirement).
- Flush cleaning: capture non-aqueous solvents in closed containers or with wipes that are kept in closed containers.

- Spray gun cleaning: use enclosed gun cleaners or work practices that avoid open atomized spraying of VOC solvent.
- Housekeeping practices to reduce VOC emissions from non-aqueous solvents, wipes, and spills.

Other Federal Requirements

The NESHAP (40 CFR 63, subpart GG) for Aerospace Manufacturing and Rework Facilities establishes coating limits for organic HAP and VOC that are identical. These limits are presented in the earlier table summarizing presumptive RACT.

SMAQMD Requirements

District Rule 456 Implements RACT with the emission limits listed in the following table and the work practice requirements in the bullets below:

Coating Type	VOC Content: Grams/Liter (Lbs/Gal) less water and exempt compounds
Ablative	600 (5.0)
Adhesive	600 (5.0)
Adhesive Bonding Agent	780 (6.5)
Conformal	600 (5.0)
Electrostatic Discharge	612 (5.1)
Extreme Performance	750 (6.3)
Fire Resistant/Retardant	600 (5.0)
Flight Test	420 (3.5)
Fuel Tank	650 (5.4)
High Temperature	420 (3.5)
Maskants:	
Type I - Chemical Milling	622 (5.2)
Type II - Chemical Milling	160 (1.3)
All Others	850 (7.1)
Mold Release	762 (6.4)
Part Marking	850 (7.1)
Pretreatment Wash Primer	780 (6.5)
Primer	350 (2.9)
Radiation Effect	600 (5.0)
Rain Erosion Resistant:	
Fluoroelastomer	800 (6.7)
All Other	600 (5.0)
Sealant	600 (5.0)
Sealant Adhesion Promoter	750 (6.3)
Self-priming Topcoat	420 (3.5)
Solid Film Lubricant	880 (7.3)
Space Vehicle:	
Electrostatic Discharge	880 (7.3)
All Other	1000 (8.3)
Temporary Protective	250 (2.1)
Thermal Expansion Release	762 (6.4)

Coating Type	VOC Content: Grams/Liter (Lbs/Gal) less water and exempt compounds
Thermocontrol	600 (5.0)
Topcoat: Acrylic Lacquer for F-111	780 (6.5)
All Other	420 (3.5)
Wet Fastener Installation	620 (5.2)

- Coating removers: no more than 300 g VOC/liter of material (2.5 lb/gal), or a composite vapor pressure greater than 9.5 mm Hg at 68 F.
- High transfer-efficiency application equipment (e.g., HVLP, roll coater, dip coater, flow coater, electrostatic deposition).
- Work practices for material storage and equipment cleaning.
- Cleaning and surface prep solvents: no more than 200 g VOC/liter of material (1.67 lb/gal), or a composite vapor pressure no greater than 45 mmHg at 68 F.

SMAQMD Exemptions

Rule 456 provides the following exemptions:

- Non-compliant materials that total no more than 200 gallons per facility per year.
- Non-refillable aerosol containers holding 1 liter (1.1 quarts) or less.
- Other exemptions for lettering, touch up and repair, cleaning of space vehicles, and cleanup prior to adhesive bonding.

Conclusion

Rule 456 establishes VOC limits that are at least as stringent as the CTG, with some exceptions. The following limits are included in the CTG, but not in Rule 456, and the CTG limits are more stringent than the otherwise applicable limit in Rule 456:

Coating Type	CTG Limit g/liter (lb/gallon)	SMAQMD Applicable Limit g/liter (lb/gallon)
Adhesive – Nonstructural	360 (3.0)	600 (5.0)
Adhesive – Structural Autoclavable	60 (0.5)	600 (5.0)
Sealant – Extrudable, Rollable, Brushable	280 (2.3)	600 (5.0)

There is only one source (Aerojet) within the District that is subject to Rule 456. Staff has verified that they do not use materials in the above three categories. Therefore, it is not necessary to adopt specific limits for these materials.

In addition, records verify that Aerojet does not use noncompliant materials in amounts exceeding either 55 gallons per year for individual material or 200 gallons per year total. Therefore, the Rule 456 low usage exemption limit of 200 gallons per year is functionally as stringent as the CTG.

Rule 456 satisfies RACT for this source category.

Table A
VOC Content Limits for Specialty Coatings from the Aerospace CTG

Coating Type	VOC Content: Grams/Liter (Lbs/Gal) less water and exempt compounds
Ablative	600 (5.0)
Adhesion Promoter	890 (7.4)
Adhesive Bonding Primers Cured at 250 F or below Cured above 250 F	850 (7.1) 1,030 (8.6)
Adhesive: Commercial Interior Adhesive Cyanoacrylate Adhesive Fuel Tank Adhesive Nonstructural Adhesive Rocket Motor Bonding Adhesive Rubber-based Adhesive Structural Autoclavable Adhesive Structural Non-Autoclavable Adhesive	760 (6.3) 1,020 (8.5) 620 (5.2) 360 (3.0) 890 (7.4) 850 (7.1) 60 (0.5) 850 (7.1)
Antichafe Coating	660 (5.5)
Bearing Coating	620 (5.2)
Caulking and Smoothing Compounds	850 (7.1)
Chemical Agent-Resistant Coating	550 (4.6)
Clear Coating	720 (6.0)
Commercial Exterior Aerodynamic Structure Primer	650 (5.4)
Compatible Substrate Primer	780 (6.5)
Corrosion Prevention Compound	710 (5.9)
Cryogenic Flexible Primer	645 (5.4)
Dry Lubricative Material	880 (7.3)
Cryoprotective Coating	600 (5.0)
Electrical or Radiation-Effect Coating	800 (6.7)
Electrostatic Discharge and Electromagnetic Interference (EMI) Coating	800 (6.7)
Elevated Temperature Skydrol Resistant Commercial Primer	740 (6.2)
Epoxy Polyamide Topcoat	660 (5.5)
Fire Resistant (interior) Coating	800 (6.7)
Flexible Primer	640 (5.3)
Flight Test: Missile or single use aircraft All other	420 (3.5) 840 (7.0)
Fuel Tank Coating	720 (6.0)
High Temperature	850 (7.1)
Insulation Covering	740 (6.2)

Coating Type	VOC Content: Grams/Liter (Lbs/Gal) less water and exempt compounds
Intermediate Release Coating	750 (6.25)
Lacquer	830 (6.9)
Maskants Bonding Maskant Critical Use and Line Sealer Maskant Seal Coat Maskant	1,230 (10.25) 1,020 (8.5) 1,230 (10.25)
Metallized Epoxy Coating	740 (6.2)
Mold Release	780 (6.5)
Optical Anti-Reflective Coating	750 (6.25)
Part Marking	850 (7.1)
Pretreatment Coating	780 (6.5)
Rain Erosion Resistant:	850 (7.1)
Rocket Motor Nozzle Coating	660 (5.5)
Scale Inhibitor	880 (7.3)
Screen Print Ink	840 (7.0)
Sealants: Extrudable/Rollable/Brushable Sprayable	280 (2.3) 600 (5.0)
Silicone Insulation Material	850 (7.1)
Solid Film Lubricant	880 (7.3)
Specialized Function Coating	890 (7.4)
Temporary Protective Coating	230 (1.9)
Thermal Control Coating	800 (6.7)
Wet Fastener Installation	675 (5.6)
Wing Coating	850 (7.1)

Category: Cutback Asphalt

EPA RACT Guidance

Control of Volatile Organic Compounds from Use of Cutback Asphalt, EPA-450/2-77-037, December 1977.

Applicability

The RACT guidance applies to the application of cutback asphalt. Cutback asphalt is a blend of asphalt cement and solvent. The solvent ranges in volatility depending upon the need for rapid cure (uses highly volatile gasoline or naphtha), medium cure (uses less volatile kerosene), or slow cure (uses low volatile oils). The VOCs evaporate when the cutback asphalt cures, and can range from 20 to 50 percent by volume, averaging 35 percent.

RACT Requirements

The RACT guidance requires the substitution of an emulsifying agent and water for the solvent, resulting in a VOC emission reduction of nearly 100%. The RACT guidance states that the emulsifier is composed of non-volatile organic chemicals. This product combining asphalt cement, emulsifying agent, and water is known as emulsified asphalt.

As a practical matter, although the CTG specifies the use of materials containing no VOCs, asphalt itself is composed of organic compounds that meet the regulatory definition of VOC, however low in volatility they may be. Therefore, rules to limit solvent content in asphalt paving materials rely on distillation test methods (percent evaporation versus temperature) to distinguish between asphalt and added solvents.

Other Federal Requirements or Guidance

No other Federal requirements have been established for this category. However, EPA's "Bluebook" (*Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations*, May 25, 1988, revised January 11, 1990) which contains guidance on developing VOC RACT rules, includes a section on cutback and emulsified asphalt. The guidance recommends that the maximum solvent content of emulsified asphalt, as determined by ASTM Method D-244, be limited to 7% for all applications, or limited between 3% - 12% depending on application. An exemption for cutback asphalt used as a prime penetrating coat is allowed.

SMAQMD Requirements

District Rule 453, Cutback and Emulsified Asphalt Paving Materials, prohibits the manufacture and use of rapid and medium cure cutback asphalt, as well as slow cure cutback asphalt containing organic compounds that evaporate at 500°F or lower (as determined by ASTM Method D-402).

In addition, Rule 453 limits the manufacture for sale or use of emulsified asphalt containing VOC that evaporates at 500°F or lower, in excess of 3% by volume (as determined by ASTM D-244).

SMAQMD Exemptions

Rule 453 exempts the manufacture of cutback or emulsified asphalt when it will be immediately shipped for use outside of Sacramento County. (As noted in the CTG, the vast majority of emissions from cutback asphalt occur after application, not during manufacture). Also, medium cure cutback asphalt is allowed for use as a penetrating prime coat (i.e., application of asphalt to an absorptive surface to penetrate that surface, to bind the aggregate, and/or promote adhesion to new construction), although the rule states that this exemption will be evaluated annually to determine if an acceptable substitute material has been identified.

Conclusion

The requirements of Rule 453 meet or exceed the requirements specified in the CTG, as clarified in the EPA "Bluebook."

Category: Gasoline Service Stations

EPA RACT Guidance

1. Design Criteria for Stage I Vapor Control Systems – Gasoline Service Stations (CTG), *November 1975*.
2. Technical Guidance – Stage II Vapor Recovery Systems for Control of Vehicle Refueling Emissions at Gasoline Dispensing Facilities, *EPA -450/3-91-022a&b, November 1991*.
3. Gasoline Vapor Recovery Guidelines – Minimum SIP Requirements for EPA Region IX to Approve a Phase I or Phase II Gasoline Transfer Rule for Ozone Nonattainment Areas, *EPA Region IX, April 24, 2000*.

Applicability

The CTG applies to the control of gasoline vapors during storage tank filling at gasoline service stations (Stage I sources). The CTG does not apply to vehicle fueling at gasoline service stations (Stage II sources). Emissions are the result of displaced organic vapor-laden air being forced out of the storage tank by liquid gasoline.

RACT Requirements

The CTG prohibits the release of more than 10 percent by weight of displaced organic vapors (90 percent reduction). The CTG indicates that this control efficiency can be obtained using vapor recovery systems that incorporate a number of design features including submerged fill pipe, submerged gauge well drop tube, sufficiently sized vapor return lines and connections, vapor tight caps, vapor tight tank trucks, interlocks to prevent fuel delivery until the vapor hose is connected, pressure/vacuum valves, and other requirements.

The EPA technical guidance on Stage II vapor recovery (document #2 above) specifies that gasoline dispensing facilities use Stage II vapor recovery systems that have at least 95% control of displaced vapors.

The EPA Region 9 guidelines (document #3 above) specify that RACT rules in California meet the following requirements:

- Require that Phase I and Phase II systems use CARB-certified vapor recovery equipment.
- List the Phase I and Phase II vapor recovery system defects contained in California Code of Regulations (CCR) 94006 or cite CCR 94006 as a reference for these defects.
- Prohibit operation of a Phase I or Phase II vapor recovery equipment that has liquid leaks, vapor leaks, fails to pass tests, or contains CCR 94006 defects that substantially impair effectiveness of vapor recovery equipment.
- Require that Phase I gasoline storage tanks be equipped with submerged liquid fill pipes.
- Require that Phase II systems have a warning posted prohibiting topping-off, which may cause spillage of gasoline.

Other Federal Requirements

No other Federal requirements have been established for this category.

SMAQMD Requirements

District Rule 448 (Gasoline Transfer into Stationary Storage Containers) prohibits the transfer of gasoline from a tank truck or trailer unless the container has a permanent submerged fill pipe and the displaced vapors are processed by a vapor recovery system with at least a 95 percent control efficiency. The vapor recovery system must be CARB-certified. Rule 448 also requires that gasoline delivery vessels must be leak-free and vapor-tight, and the purging of vapors from a delivery vessel to the atmosphere is prohibited.

Rule 448 also requires vapor-tight caps on the storage container fill and vapor adapters, a dry break in the vapor adapter and space, and a functioning spring mechanism in the coaxial fill tube that causes the dry break to form a vapor-tight seal. Any vapor recovery system is required to have a pressure vacuum valve on all open vents with the following settings: a minimum pressure setting of 3.0 ± 0.5 inches of H₂O and a minimum vacuum setting of 8.0 ± 2.0 inches of H₂O.

District Rule 449 (Transfer of Gasoline into Vehicle Fuel Tanks) requires that gasoline transfer into motor vehicle fuel tanks be performed only when equipped with Stage II vapor recovery systems with efficiencies of at least 95%, and requires that these systems be CARB-certified. Rule 449 also includes the requirements for defects, equipment leaks and failures, and posting of operating instruction that are specified in the EPA Region 9 guidance.

SMAQMD Exemptions

Rule 448 exempts the transfer of gasoline into the following stationary containers:

- Containers smaller than 250 gallons.
- Containers used primarily for the fueling of implements of husbandry (i.e., a vehicle used exclusively in the conduct of agricultural operations) if equipped with a permanent submerged fill pipe.

Rule 449 exempts fuel dispensing equipment for:

- Emergency motor vehicles
- Odd fill configurations
- Implements of husbandry

Conclusion

Rules 448 and 449 meet or exceed the requirements of the CTG and the EPA guidance documents, and satisfy RACT for this source category.

Category: Gasoline Tank Trucks and Bulk Plants (Liquid Loading)

EPA RACT Guidance

CTG #1 - Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA-450/2-77-026, October 1977.

CTG #2 – Control of Volatile Organic Emissions from Bulk Gasoline Plants, EPA-450/2-77-035, December 1977.

CTG #3 – Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems, EPA-450/2-78-051, December 1978.

Applicability

The RACT Guidance in CTG #1 applies to the loading of gasoline tank trucks at tank truck terminals with a daily gasoline throughput of greater than 76,000 liters.

The RACT Guidance in CTG #2 applies to loading of gasoline tank trucks at bulk gasoline plants with a daily gasoline throughput of less than 76,000 liters.

The RACT Guidance in CTG #3 applies to gasoline tank trucks that are equipped for vapor collection, and to vapor collection systems at bulk terminals, bulk plants, and service stations.

RACT Requirements

In CTG #1, presumptive RACT for loading of tank trucks at terminals is identified as vapor collection systems with emissions of no more than 80 mg hydrocarbon per liter of gasoline loaded. CTG #1 indicates that this 80 mg limit can be met with vapor collection and recovery or oxidation control systems.

In CTG #2, two RACT alternatives are presented for loading of account (tank) trucks at bulk gasoline plants:

- submerged filling of account trucks, or
- submerged filling and vapor balance systems to control VOC displaced by filling account trucks.

The CTG indicates that submerged filling of account trucks is equivalent to 60% control relative to uncontrolled splash filling, and that vapor balance systems provide 90% VOC control. The CTG indicates that consideration should be given to the compatibility of bulk plants with Stage I service station regulations, as well as potential economic impacts and retrofit difficulty.

CTG #3 establishes presumptive RACT for gasoline tank trucks and vapor collection systems. Loading is limited to only vapor-tight tank trucks, established using a pressure-vacuum test (included in Appendix A of CTG #2). The vapor collection and vapor processing equipment should be designed and operated to prevent tank truck gauge pressure from exceeding 4500 pascals (18 inches of H₂O) and the tank truck vacuum from exceeding 1500 pascals (6 inches of H₂O).

Vapor collection systems must be operated below the lower explosive limit (i.e., LEL, measured as propane) measured at 2.5 centimeters around the perimeter of a potential leak source (e.g., piping, seals, hoses, connections, pressure-vacuum vents, etc.) using the methodology included in Appendix B of CTG #3. In general, there should be no avoidable visible liquid leaks. However, the CTG acknowledges that there will invariably be a few drops of liquid resulting from the disconnection of dry breaks in liquid lines and the raising of well-maintained top loading vapor head; CTG #3 indicates that these drops are allowable.

Other Federal Requirements

The bulk gasoline terminal NSPS (40 CFR 60 subpart XX) applies to loading of gasoline tank trucks at bulk terminals (throughput > 75,700 liters/day). It contains the same emission limit as CTG #1 (80 mg TOC/liter of gasoline loaded) for facilities with existing vapor processing systems (60.502(c)). The NSPS has a more stringent limit than CTG #1 (35 mg TOC/liter of gasoline loaded) for loading of tank trucks at new facilities that do not already have an existing vapor processing system. The NSPS limits loading to only vapor-tight tank trucks. The vapor collection and loading equipment must be designed and operated to prevent gauge pressures in the delivery tank from exceeding 4500 pascals (18 inches of H₂O). The NSPS also requires monthly visual inspection of the vapor processing system and gasoline loading racks for leaks, and repair of any leaks detected.

The NESHAP for gasoline distribution facilities (40 CFR 63 subpart R) applies to loading of tank trucks at bulk terminals that are major sources of HAP. It limits emissions from vapor collection and processing systems to 10 mg TOC/liter of gasoline loaded. It limits loading to only vapor-tight tank trucks. It also requires monthly leak inspection and repair for equipment (pumps, valves, pressure relief devices, connectors, etc.) that transfers gasoline or is part of the vapor processing system.

SMAQMD Requirements

District Rule 447 (Organic Liquid Loading) prohibits the transfer of organic liquids into any tank truck, trailer, or railroad tank car unless the emissions do not exceed certain limits (i.e., 0.08 lbs VOC per 1,000 gallons of transferred organic liquids for bulk terminals and 0.6 lbs VOC per 1,000 gallons of transferred organic liquids for bulk plants).

Rule 447 requires that all equipment associated with the loading facility must be maintained to be leak-free and vapor-tight, determined using visual and instrument monitoring methods as defined in the rule.

In addition, Rule 447 requires that the diaphragms used in vapor storage tanks must be maintained such that the VOC concentration in the airspace above the diaphragm does not exceed 3,000 ppm (expressed as methane).

Rule 448 prohibits operation of a gasoline delivery vessel that is not leak-free and vapor-tight.

SMAQMD Exemptions

Rule 447 exempts the loading of organic liquids with low vapor pressures (i.e., less than 0.5 psia) under actual loading conditions.

Conclusion

District Rule 447 control requirements are more stringent than the CTG for gasoline terminals (CTG #1). The presumptive RACT from CTG #1, when converted to the same units as Rule 447, is 0.668 lbs hydrocarbon per 1,000 gallons loaded. The Rule 447 limits (i.e., 0.08 lbs VOC per 1,000 gallons of transferred organic liquids for bulk terminals and 0.6 lbs VOC per 1,000 gallons of transferred organic liquids for bulk plants) are more stringent. (This comparison assumes that the definition of hydrocarbon under the CTG #1 RACT is equivalent to VOC.) Rule 447 is also consistent with the CTG for bulk gasoline plants (CTG #2), which requires, as a minimum, submerged fill (and potentially requires a vapor balancing system). From a practical standpoint, the emission limits in Rule 447 are more stringent than CTG #1.

The Rule 447 requirement that all equipment associated with the loading facility must be maintained to be leak-free and vapor-tight is consistent with the CTG #3 provision that limits visible equipment leaks.

The Rule 448 requirement that requires gasoline delivery vessels to be leak-free and vapor-tight is consistent with the requirements in the CTG and the NSPS to load only vapor-tight tank trucks.

Rules 447 and 448 satisfy the RACT requirement for liquid loading using gasoline tank trucks.

Category: Graphic Arts Operations

EPA RACT Guidance

OAQPS Guideline Series – *Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VIII: Graphic Arts – Rotogravure and Flexography*, U.S. EPA Publication No. EPA-450/2-78-033, December 1978.

Applicability

The CTG applies to both the flexographic and rotogravure processes as applied to both publication and packaging printing. The guideline document does not apply to offset lithography or letterpress printing.

RACT Requirements

The guidance document specifies two alternatives for presumptive RACT: Add-on control devices, or water-borne and high solids inks. For add-on control (carbon adsorption or incineration), the CTG requires a capture and control system as specified in the following table:

Graphic arts operation	VOC capture efficiency (%)	Control device VOC reduction efficiency (%)	Overall VOC control and capture efficiency (%)
Publication rotogravure	75-85	90	75
Packaging rotogravure	70-80	90	65
Flexography printing	65-70	90	60

For water-borne and high solids inks, comparable emission limits to add-on control options listed above can be achieved when the solvent portion of the ink consists of 75 percent (by volume) water and 25 percent (by volume) organic solvent.

Other Federal Requirements

Subpart QQ of 40 CFR part 60 (Standards of Performance for the Graphics Arts Industry: Publication Rotogravure Printing) limits VOC emissions to less than 16 percent of the total mass of VOC solvent and water used at the facility.

Subpart FFF of 40 CFR part 60 (Standards of Performance for Flexible Vinyl and Urethane Coating and Printing) specifies either VOC limitations or VOC percent reductions for rotogravure printing lines used to print or coat flexible vinyl or urethane products. The NSPS requires either of the following: 1) Use inks with VOC content of less than 1.0 kg VOC per kg of ink solids; or 2) reduce VOC emissions with a combined capture and control efficiency of 85 percent.

Subpart KK of 40 CFR part 63 (National Emissions Standards for Hazardous Air

Pollutant Emissions from the Printing and Publishing Industry) limits hazardous air pollutant (HAP) emissions as follows:

Graphic Arts Operation type:	HAP Emissions standard:
Publication rotogravure printing	Limits organic HAP emissions to 8% of total volatile matter used; or combined capture and control efficiency of at least 92% of organic HAP used.
Packaging rotogravure and flexographic printing	Limit emissions to: <ul style="list-style-type: none"> - No more than 5% of the organic HAP applied; or - No more than 4% of the mass of materials applied; or - No more than 20% of the mass of solids applied; or - No more than a calculated equivalent allowable mass.

SMAQMD Requirements

District Rule 450 (Graphics Arts Operations) limits the VOC content for 17 categories of graphics arts materials (e.g., inks, adhesives, coatings), and 8 categories of cleaning compounds (e.g., general cleaning, screen printing, ultraviolet inks). Some cleaning compounds have VOC partial pressure limits also. For lithographic and letter press printing, Rule 450 limits the volume of cleaning solution to be used for cleaning operations other than blanket and roller washes. Additionally, VOC materials and VOC-containing cloth, sponges, and other materials used for solvent cleaning must be stored in closed containers when not in use.

As an alternative to the VOC content limits, emissions control equipment may be used provided that the control device efficiency is 95 % or more on a mass basis, and the collection efficiency is at least 70 %.

Rule 450 also prohibits the sale of noncompliant materials for use in graphics arts operations except to facilities using emission control devices. Sellers are required to provide product information, including the maximum VOC content, at the time of sale.

SMAQMD Exemptions

Rule 450 does not apply to gravure printing, business and personal printers, and graphic arts sources that have actual emissions of 60 pounds VOC or less per quarter. The VOC limitations do not apply to aerosol adhesives used by 1) screen printing operations, provided the adhesive complies with the VOC limits specified under Section 300 of District Rule 460 – ADHESIVES AND SEALANTS; or 2) graphic arts operations that have facility VOC emissions less than 660 pounds per month.

Conclusion

Based on a comparison of the capture and control efficiencies, Rule 450 is at least as

stringent as the CTG for flexography printing, and meets the requirements of RACT. There are no sources in the District using gravure printing, and a negative declaration will be submitted for that portion of this source category.

Category: Metal Can Coating

EPA RACT Guidance

Control of Volatile Organic Emissions from Existing Stationary Sources – Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobile, and Light-Duty Trucks U.S. EPA Publication No. EPA-450/2-77-008, May 1977.

Applicability

The CTG applies to two and three-piece can manufacturing processes, can fabrication processes, and end coating operations.

RACT Requirements

The CTG identifies five control alternatives, as shown in the following table:

Control Technology	VOC Percent Reduction
Catalytic and non-catalytic incineration	90
Carbon adsorption	90
Water-borne and high-solids coatings	60-90
Ultraviolet curing	Up to 100
Powder coating	100

For various technical reasons, not all RACT alternatives apply to each can manufacturing process. Therefore, the CTG specifies the controls that are feasible for each process operation, as shown below:

Can Coating Operation:	Available controls:
2-piece exterior coating	Incineration, water-borne and high solid coatings, UV curing
2-piece interior spray coating	Incineration, water-borne and high solid coatings, powder coating, carbon adsorption
3-piece sheet coating, interior	Incineration, water-borne and high solid coatings
3-piece sheet coating, exterior	Incineration, water-borne and high solid coatings, UV curing
Can fabricating, side seam spray coating	Water-borne and high solid coatings, powder coating
Can fabricating, interior spray coating	Incineration, water-borne and high solid coatings, powder coating, carbon adsorption
End coating, sealing compound	Water-borne and high solid coatings
End coating, sheet coating	Carbon adsorption, incineration, water-borne and high solid coatings

The CTG specifies presumptive RACT as the following numeric VOC limits, based on the water-borne and high solids coatings control alternative:

Can Coating Operation:	VOC limit (g/L of coating, minus water)
Sheet basecoat, overvarnish, 2-piece exterior	340
2 and 3-piece interior spray, 2-piece end	510
3-piece side seam spray	660
End sealing	440
Prime topcoat or single coat	310

Other Federal Requirements

Subpart WW of 40 CFR part 60 (Standards of Performance for the Beverage Can Surface Coating Industry) limits VOC emissions as shown in the following table. The facility may use low VOC materials and/or capture and control systems to meet the limits. Limits for the specific operations are as follows:

Operation type:	VOC limit (g VOC/L coating solids)
2-piece exterior (except clear base coat)	290
2-piece exterior clear base coat and overvarnish coating	460
2-piece interior spray coating	890

Subpart KKKK of 40 CFR part 63 (National Emissions Standards for Hazardous Air Pollutants: Surface Coating of Metal Cans) specifies hazardous air pollutant (HAP) emissions limitations for new and existing can coating operations. The following table summarizes the standards for existing sources (there are multiple subcategories within most operations, each with a unique limit. For brevity, a range is presented):

Operation type:	HAP Emissions limit (kg HAP/L solids):
1 and 2-piece body coating	0.06-0.12
Sheetcoating	0.03
3-piece can assembly	0.29-1.94
End coating	0.00-2.06

As an alternative compliance option, facilities may meet a HAP capture and control efficiency of 95% or overall HAP emission concentration of 20 ppmv at the control device outlet.

Note: There are no sources in the District that are subject to either the NSPS or the NESHAP.

SMAQMD Requirements

District Rule 452 (Can Coating) limits the VOC content for 11 categories of can coating materials as shown in the table below.

Operation type:	VOC limit (g/L coating as applied, excluding water and exempt compounds)
Interior base coating	225
Interior base coating overvarnish	225
Exterior base coating	225
Exterior base coating overvarnish	225
2-piece can exterior base coating	250
2-piece can exterior base overvarnish	250
2-piece can interior spray	440
3-piece interior spray	510
2-piece can exterior end coating	250
3-piece can side seam spray	660
End sealing compound	440

Emissions control equipment may be used instead of VOC content limits, provided that the control device efficiency is 95% or more on a mass basis, and the collection efficiency is at least 90%. Rule 452 also specifies a 200 g/L limit for cleaning materials used for container assemble equipment. Additionally, all VOC-materials and VOC-containing cloth, sponges, and other materials used for solvent cleaning must be stored in closed containers when not in use.

SMAQMD Exemptions

None.

Conclusion

Rule 452 is as stringent, or more stringent, than the CTG presumptive RACT limits for coatings. The CTG specifies emission control as an alternative to the coating limits. The CTG does not specify capture efficiency, but concludes that at least 90% control efficiency is achievable for incineration and carbon adsorption. Rule 452 specifies a capture efficiency of 90 percent and control efficiency of 95%, which exceeds the CTG specification.

Rule 452 satisfies the RACT requirement for this category.

Category: Surface Coating of Metal Furniture

EPA RACT Guidance

Guideline Series: Control of Volatile Organic Compound Emissions from Existing Stationary Sources – Volume III: Surface Coating of Metal Furniture. U.S. EPA Publication No. EPA-450/2-77-032, December 1977.

Applicability

The CTG applies to any facility that performs surface coating (finishing) of metal furniture, including any furniture made of metal or any metal parts that will be assembled with other non-metal parts to form a furniture piece.

Federal RACT Requirements

The CTG does not include a model rule, but establishes presumptive RACT for metal furniture surface coating operations as a VOC limit of 360 g VOC emitted/liter coating, minus water (3.0 lb VOC emitted/gallon coating, minus water). The CTG does not distinguish between baked and air dried coatings.

Other Federal Requirements

40 CFR part 60, subpart EE, specifies Standards of Performance for Surface Coating of Metal Furniture. The NSPS applies to any metal furniture surface coating operation using 3,842 liters (1,015 gallons) or more of organic coating per year. The emission limit in subpart EE is 0.90 kg of VOC per liter of coating solids applied to the part (i.e., the denominator does not include solids lost as over spray).

40 CFR Part 63, subpart RRRR specifies NESHAP for metal furniture surface coating operations at major HAP sources. Existing major sources must emit no more than 0.10 kg organic HAP/liter coatings solids used (0.83 lb/gal). The denominator of the NESHAP emission limits does not include solids lost as over spray. New and reconstructed major sources must emit no organic HAP, unless the permitting authority approves use of an alternative limit of 0.094 kg organic HAP/liter coatings solids used (0.78 lb/gal) for certain specialty applications. The new source standards were based on facilities that use powder coatings or liquid coatings that contained no organic HAP. Since powder coatings also contain little or no VOC, sources that are complying with the new source limits in subpart RRRR may also have very low VOC emissions.

SMAQMD Requirements

District Rule 451, Surface Coating of Miscellaneous Metal Parts and Products, sets emission limits for metal furniture coatings under the category “all other coatings,” as shown in the table below:

Coating	VOC Limits g/liter, less water and exempt compounds (lbs/gallon)	
	Air Dried	Baked
Aluminum coating for window frames and door frames	420 (3.5)	420 (3.5)
Camouflage	420 (3.5)	360 (3.0)
Electrical Insulating	340 (2.8)	275 (2.3)
Extreme High Gloss	420 (3.5)	360 (3.0)
Extreme Performance	420 (3.5)	420 (3.5)
Heat Resistant	420 (3.5)	360 (3.0)
Metallic Iridescent	420 (3.5)	420 (3.5)
Non-skid	420 (3.5)	360 (3.0)
Prefabricated Architectural Component	420 (3.5)	275 (2.3)
Pretreatment wash primer	420 (3.5)	420 (3.5)
Silicone release coating	420 (3.5)	420 (3.5)
Solar Absorbent	420 (3.5)	360 (3.0)
All other coatings	340 (2.8)	275 (2.3)

- Coating removers (strippers): no more than 200 g VOC/liter of material (1.7 lb/gal).
- High efficiency applications equipment (e.g., HVLP, roll oater, dip coater, flow coater, electrodeposition).
- Work practices for material storage and equipment cleaning.
- Product cleaning or surface prep solvents: no more than 72 g VOC/liter of material (0.6 lb/gal).

SMAQMD Exemptions

Rule 451 exempts facilities that use 55 gallons of coating per year, consistent with the EPA Region IX "Little Bluebook" (*Guidance Document for Correcting Common VOC & Other Rule Deficiencies*, April 1, 1991, revised August 21, 2001).

Conclusion

District Rule 451 regulates metal furniture coatings under the VOC limit for "all other coatings," which is more stringent than the CTG limit for metal furniture coating. Rule 451 satisfies the RACT requirement for this category.

Category: Surface Coating of Miscellaneous Metal Parts and Products

EPA RACT Guidance

Guideline Series: Control of Volatile Organic Compound Emissions from Existing Stationary Sources – Volume VI: Surface Coating of Miscellaneous Metal Parts and Products. U.S. EPA Publication No. EPA-450/2-78-015, June 1978.

Applicability

The CTG applies to any facility that performs surface coating (finishing) on miscellaneous metal parts. The CTG specifically excludes surface coating of metal cans, coils, wire, automobiles and light duty trucks, metal furniture, and large appliances. The CTG includes emission limits which represent RACT, but does not include a model rule.

Federal RACT Requirements

The CTG establishes presumptive RACT for metal part surface coating operations as the following emission limits:

Surface Coating Operation		VOC limit g/liter, minus water (lb/gallon)
Air or forced air-dried items: Parts too large or too heavy for practical size ovens and/or sensitive heat requirements. Parts to which heat-sensitive materials are attached. Equipment assembled prior to top coating for specific performance or quality standards.		420 (3.5)
Clear Coat		520 (4.3)
No or infrequent color changes, or small numbers of colors applied	Powder coatings	50 (0.4)
	Others	360 (3.0)
Outdoor or harsh exposure or extreme performance characteristics		420 (3.5)
Frequent color change or large number of colors applied, or first coat applied on untreated ferrous substrate		360 (3.0)

The CTG estimated the cost-effectiveness of complying with the limits using waterborne coatings, higher solids coatings, powder coating, and electrodeposition coating. The costs, in 1977 dollars, ranged from a savings \$191/ton (\$630/ton in today's dollars) of VOC reduced to a cost of \$6,600/ton (\$21,800/ton in today's dollars) of VOC reduced. The median value for 47 scenarios examined was a cost of \$625/ton (\$2,060/ton in today's dollars). Sources also can use add-on controls to meet the limits. The CTG made no policy statements regarding acceptable cost effectiveness levels for RACT.

Other Federal Requirements

Subpart MMMM of 40 CFR Part 63 specifies NESHAP for miscellaneous metal parts and products manufacturing surface coating operations at major HAP sources. These standards are in terms of lb organic HAP per gallon solids used. Since many VOC are not HAP, these limits for HAP establish no practical limits on VOC content or VOC emissions from these operations.

SMAQMD Requirements

District Rule 451, Surface Coating of Miscellaneous Metal Parts and Products implements sets the following emission limits and work practices:

Coating	VOC Limit g/liter, less water and exempt compounds (lbs/gallon)	
	Air Dried	Baked
Aluminum coating for window frames and door frames	420 (3.5)	420 (3.5)
Camouflage	420 (3.5)	360 (3.0)
Electrical Insulating	340 (2.8)	275 (2.3)
Extreme High Gloss	420 (3.5)	360 (3.0)
Extreme Performance	420 (3.5)	420 (3.5)
Heat Resistant	420 (3.5)	360 (3.0)
Metallic Iridescent	420 (3.5)	420 (3.5)
Non-skid	420 (3.5)	360 (3.0)
Prefabricated Architectural Component	420 (3.5)	275 (2.3)
Pretreatment wash primer	420 (3.5)	420 (3.5)
Silicone release coating	420 (3.5)	420 (3.5)
Solar Absorbent	420 (3.5)	360 (3.0)
All other coatings	340 (2.8)	275 (2.3)

- Coating removers (strippers): no more than 200 g VOC/liter of material (1.7 lb/gal).
- High efficiency applications equipment (e.g., HVLP, roll coater, dip coater, flow coater, electrostatic spray coating).
- Work practices for material storage and equipment cleaning.
- Product cleaning or surface prep solvents: no more than 72 g VOC/liter of material (0.6 lb/gal).

SMAQMD Exemptions

Rule 451 contains the following exemptions:

- Prefabricated architectural components not coated in a shop.
- Motor vehicles.
- Aircraft or aerospace vehicles.
- Cans, coils, and magnet wire.
- Adhesives and sealants.

- Magnetic data storage disks.
- Safety indicating coatings.
- Stencil coatings.
- Conformal coatings.
- Hand lettering.
- Any coating used at less than 55 gallons per year per source, consistent with the EPA Region IX "Little Bluebook" (*Guidance Document for Correcting Common VOC & Other Rule Deficiencies*, April 1, 1991, revised August 21, 2001).
- Aluminum coatings for window frames and door frames used at less than 200 gallons per year per source.
- Pre-treatment wash primers at less than 200 gallons per year per source.

Conclusion

The emission limits in Rule 451 are at least as stringent as those in the CTG. The District performed a "5% analysis" for the low usage exemptions when Rule 451 was submitted for SIP approval, which demonstrated that excess emissions allowed by the exemptions are less than 5% of the total emissions allowed by the CTG. Rule 451 satisfies the RACT requirement for this source category.

Category: Storage of Petroleum Products (> 40,000 gallons)

EPA RACT Guidance

Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed-Roof Tanks. EPA-450/2-77-036, December 1977.

Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks. EPA-450/2-78-047, December 1978.

Alternative Control Techniques Document: Volatile Organic Liquid Storage in Floating and Fixed Roof Tanks. EPA-453/R-94-001, January 1994.

Applicability

Both CTGs apply to tanks with capacities greater than 150,000 liters containing petroleum liquids with a true vapor pressure (VP) greater than 10.5 kPa.

The ACT provided costs and emission reductions for various tank sizes and vapor pressures. No model rule or applicability requirements are provided.

RACT Requirements

The CTGs establish presumptive RACT for External Floating Roof Tanks and Fixed Roof tanks, as shown in the following table:

CTG	Applicability	Tank type	Requirement	Exemptions
External floating roof (EFR) tanks	Vapor pressure (VP) >27.6 kPa	Welded external floating roof tank equipped with primary metallic shoe or liquid mounted seals	Retrofit with a rim-mounted secondary seal	External floating roof tanks with capacities < 1,600,000 liters that store crude oil and condensate Tanks equipped with metallic-type shoe seal in a welded tank which has a shoe mounted secondary seal.
	VP >10.5 kPa	Welded external floating roof tank equipped with primary vapor mounted seals	Gap area of gaps exceeding 0.32 cm in width between secondary seal and the tank wall be < 6.5 cm ² per 0.3 m of tank diameter.	
	VP >10.5 kPa	Riveted external floating roof tank equipped with primary metallic shoe or liquid mounted seals	Openings are to be equipped with a cover, seal, or lid.	
Fixed roof tanks	VP >10.5 kPa		Retro-fitted with internal floating roofs equipped with closure seals	Fixed roof tanks with capacities < 1,600,000

CTG	Applicability	Tank type	Requirement	Exemptions
			Openings are to be equipped with a cover, seal, or lid.	liters used to store crude oil and condensate

Other Federal Requirements

Three new source performance standards (NSPS) were promulgated for storage vessels: 40 CFR Part 60, subpart K, Ka, and Kb. The most recent NSPS is subpart Kb. The following table lists the requirements for subpart Kb:

Applicability	Requirement
Volume $\geq 151 \text{ m}^3$ (about 40,000 gallons) and VP 5.2 kPa to 76.6 kPa	<p>Three options are allowed:</p> <ol style="list-style-type: none"> 1. Internal floating roof (IFR) or fixed roof retrofitted with an IFR. Equip with a foam or liquid filled seal mounted in contact with the liquid or a mechanical shoe seal or 2 seals mounted one above the other to form a continuous enclosure. Openings are to be equipped with a cover, seal, or lid. 2. External Floating Roof Equipped with a closure device that has specified types of seals between the wall of the tank and the roof edge. Openings are to be equipped with a cover, seal, or lid. 3. A closed vent system routed to a control device that achieves at least 95% reduction. <p>The NSPS specifies extensive fitting requirements for various types of openings and cover penetrations.</p>
Volume $\geq 75 \text{ m}^3$ and VP $\geq 76.6 \text{ kPa}$	A closed vent system routed to a control device that achieves at least 95% reduction

The Hazardous Organic NESHAP, 40 CFR 63, subpart G, applies to storage vessels in organic HAP service. For vessels larger than 151 m^3 , the NESHAP applicability levels and control requirements for existing storage vessels are the same as in NSPS subpart Kb. For new storage vessels, the control requirements are the same as the NSPS, but apply to storage of liquids with a vapor pressure of 0.7 kPa or more.

SMAQMD Requirements

District Rule 446, Storage of Petroleum Products applies to storage tanks storing liquids with vapor pressures greater than 10.3 kPa.

- Storage vessels in excess of 150,000 liters (about 40,000 gallons) must be under pressure or equipped with a floating roof, internal floating roof or vapor recovery system that achieves at least 95 % reduction in emissions.
- A vapor recovery system that achieves at least 95 % reduction in emissions must be used if the liquid stored has a VP of 75.9 kPa or more.
- Floating roofs must have 2 seals.
- All openings in the roof shall be equipped with a cover, seal or lid which shall remain closed at all times.
- The gap between the primary and secondary seal shall not exceed 0.15 cm.
- Rule 446 also has seal requirements for metallic shoe seals, weld tanks with metallic shoe seals, and resilient toriod seals.

SMAQMD Exemptions

Rule 446 does not apply to tanks having a capacity of less than or equal to 150,000 liters. The rule also exempts tanks when undergoing periodic maintenance or the process of replacing seals.

Conclusion

Rule 446 has slightly more stringent control requirements than the CTG. Fewer exemptions are allowed and the gap allowed between primary and secondary seals is smaller. Rule 446 is as stringent as the NSPS Subpart Kb and the NESHAP for storage tanks to which the CTG applies. Sources which are subject to the NSPS and/or NESHAP comply with those requirements, and the District has been delegated the authority to enforce these federal standards. Rule 446 satisfies the RACT requirement for this source category.

Category: Pharmaceuticals Manufacturing

EPA RACT Guidance

Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products, EPA-450/2-78-029, December 1978.

Applicability

The guidance applies to unit operations at facilities manufacturing synthesized pharmaceuticals. These unit operations include reactors, distillation operations, crystallizers, centrifuges, vacuum dryers, and associated storage tanks and transfer operations.

RACT Requirements

The CTG establishes presumptive RACT for the following sources at facilities that manufacture synthesized pharmaceuticals.

Emission Point	Applicability Criteria	VOC Limit
Process vents at reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers	Emitting more than 15 lb/day of VOC	Surface condensers or equivalent controls
Air dryers and production equipment exhaust systems	Emitting 330 lbs/day VOC or more	90 percent VOC reduction
	Emitting less than 330 lbs/day VOC	Emission limit of 33 lbs/day VOC
Storage tanks	Storing VOC with a vapor pressure > 4.1 psi and volume > 2000 gallons	90 percent vapor balance
	Storing VOC with vapor pressure > 1.5 psi	Pressure conservation vents set at 0.2 kPa
Centrifuges, rotary vacuum filters, and other filters having an exposed liquid surface	Applies to liquids with a total VOC vapor pressure of 0.5 psi	Enclose equipment
In process tanks	All	Covers on tanks
Equipment leaks	Liquid leaks (visible)	Repair as soon as practicable

Other Federal Requirements

The NESHAP for pharmaceuticals production (40 CFR Part 63, subpart GGG) regulates organic HAP emissions from process vents, storage vessels, equipment leaks, and wastewater treatment systems. The rule contains provisions for emissions averaging and pollution prevention alternatives. The rule has applicability cutoffs for each emission point, but those criteria would not be relevant for VOC emissions. The control requirements are presented below.

Emission Point	HAP Limits
Storage tanks	Store applicable liquids in an internal floating roof, external floating roof, or fixed roof tank that sends emissions to a control device that reduces emissions by 90 or 95 percent (depending on tank size and vapor pressure of HAP stored), or comply with a vapor balancing alternative
Process vents	Reduce HAP by 98 percent by weight for each large process vent, and by 93 percent by weight for all remaining vents combined. As an alternative, reduce outlet concentrations to 20 ppmv, or use a flare.
Equipment Leaks	Liquid leak visual inspection and repair requirements

SMAQMD Requirements

District Rule 455, Pharmaceuticals Manufacturing, implements the RACT emission limits as recommended by the EPA's CTG. The Rule 455 emission limits are the same as the limits in the CTG. Rule 455 also applies to cosmetics manufacturing plants.

SMAQMD Exemptions

Rule 455 exempts facilities that emit, at the design production rate, 15 lb/day or less of VOC. This exemption level is consistent with the CTG and EPA's "Bluebook" (*Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations*, May 25, 1988, revised January 11, 1990).

Conclusion

The VOC emission control requirements in District Rule 455 are the same as those specified in the CTG.

The NESHAP applies to pharmaceutical manufacturing that is located at major sources of HAPs. There are no facilities within the District to which the NESHAP applies. Although the NESHAP requires process vents to reduce organic HAP emissions by 93 – 98%, this requirement does not apply to total VOC emissions. Rule 455 is as stringent as the NESHAP for total VOC emissions from emission points to which the CTG applies.

Rule 455 satisfies the RACT requirement for this source category.

Category: Solvent Cleaning (Degreasers)

EPA RACT Guidance

Control Techniques Guidelines (CTG) Document - *Control of Volatile Organic Emissions from Solvent Metal Cleaning*, U.S. EPA Publication No. EPA-450/2-77-022, November 1977.

Alternative Control Technology (ACT) Document - *Halogenated Solvent Cleaners*, U.S. EPA Publication No. EPA-450/3-89-030, August 1989.

Applicability

The CTG document applies to cold cleaners, open top vapor degreasers, and conveyORIZED degreasers.

The ACT document for halogenated solvent cleaners applies to cold, open-top, and in-line (i.e., conveyORIZED) degreasers using 1,1,1-trichloroethane, trichloroethylene, perchloroethylene, methylene chloride, and trichlorotrifluoroethane.

RACT Requirements

The CTG identifies machine design specifications, control devices, and work practices to reduce solvent losses from diffusion and convection, carryout, leaks, downtime, solvent transfer, water contamination, and waste disposal for each type of degreaser. The CTG does not specify a single control strategy, but defines a number of measures at two levels of cost that can be combined to form an effective control strategy depending on the level of control needed. The types of controls are summarized generally below:

Cold cleaners: Covers on machine openings, parts draining requirements to avoid carry-out, labeling of work practices, 0.7 freeboard ratio (alternatives: water cover or control device), and work practices for waste disposal.

Vapor degreasers: More stringent cover and carry-out controls, work practice requirements for vapor cleaning, labeling, automatic shut-off switches in case of operating deviations, leak checks, 0.75 freeboard ratio (alternatives: refrigerated chiller, carbon adsorber, enclosed design, or other control device), and work practices for separator water and waste disposal.

ConveyORIZED degreasers: Refrigerated chiller or carbon adsorber, carry-out controls, automatic shutoff switches, minimized machine openings, downtime covers, and work practices for separator water and waste disposal.

The controls listed in the ACT document are the same as the CTG and include a few additional design or work practice standards that are more explicit than the CTG, but not substantially different or more stringent.

Other Federal Requirements

The National Emission Standards for Halogenated Solvent Cleaning (40 CFR Part 63,

Subpart T) applies to batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machines that use any solvent containing at least five percent, by weight, of carbon tetrachloride, chloroform, perchloroethylene, 1,1,1-trichloroethane, trichloroethylene, or methylene chloride (either alone or in combination). The NESHAP is based on the same controls as the CTG, but specifies a number of alternative combinations of control measures for each type of degreaser.

SMAQMD Requirements

District Rule 454 (Degreasing Operations) specifies design and work practice standards for non-vapor degreasers, vapor degreasers, remote reservoir degreasers, and conveyORIZED degreasers. Rule 454 is equivalent to or more stringent than the CTG guidance. In addition, Rule 454 limits the VOC content of solvent used in non-vapor degreasers. As an alternative to the work practice standards, Rule 454 allows the use of airtight/airless cleaning systems or emission collection and control devices to reduce VOC emissions.

SMAQMD Exemptions

The provisions of Rule 454 do not apply to:

- Wipe cleaning.
- Products subject to the Air Resources Board Consumer Products Regulations (Subchapter 8.5, Article 2, Section 94507-94517 of Title 17 of the California Code of Regulations).
- Solvent degreasing operations using exempt compounds mixed with VOC if the mixture does not contain more than 5 percent VOC (by weight).
- Solvent degreasing operations that are subject to the NESHAP for Halogenated Solvent Cleaning (40 CFR Part 63, Subpart T). Carbon tetrachloride and chloroform are the two VOC covered by the NESHAP.
- Non-vapor degreasers which use solvents containing 50 g/L VOC or less (including water and exempt compounds).

Rule 454 also provides exemptions from some work practice standards for certain types of degreasers. Open-top vapor degreasers are not subject to the solvent flow operating standards if the solvent spray is kept at least 4 inches below the air-vapor interface and liquid solvent does not splash above the air-vapor interface. Also, non-vapor degreasers are not subject to the solvent VOC content limit (50 g/L) when degreasing tools, equipment, and machinery regulated under Rule 456 (Aerospace Assembly and Component Coating Operations) and when degreasing aerospace products using solvents that comply with the surface preparation and cleanup VOC limits of Rule 456 (Aerospace Assembly and Component Coating Operations).

Conclusion

District Rule 454 requires equipment design and work practice standards that are equivalent to or more stringent than the CTG guidance for RACT, and the ACT guidance for halogenated solvent controls.

Rule 454 exempts sources that are subject to the NESHAP. Sources within the District

that are subject to the NESHAP will comply with the NESHAP requirements. The District has been delegated the authority to enforce the NESHAP.

Rule 455, in combination with the District's NESHAP authority, satisfies the RACT requirement for this source category.

Category: Organic Chemical Manufacturing. Process Vents from Reactor Processes, Distillation Operations, and Other Separation and Production Equipment

EPA RACT Guidance

1. *Control of Volatile Organic Compound Emissions from Air Oxidation Processes in the Synthetic Organic Chemical Manufacturing Industry, EPA-450/3-84-015, December 1984.*
2. *Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in the Synthetic Organic Chemical Manufacturing Industry, EPA-450/4-91-031, August 1993.*
3. *Control of Volatile Organic Compound Emissions from Batch Processes – Alternative Control Techniques Information Document, EPA-453/R-93-017, February 1994.*

Applicability

The CTGs apply to continuous process vent streams emitted from air oxidation reactors, other reactors, and distillation operations at synthetic organic chemical manufacturing industry (SOCMI) process units. The CTG documents provide lists of chemicals affected by each CTG and by the Air Oxidation, Reactor Processes, and Distillation NSPS (see document #2 above, table 7-1).

The ACT applies to reactors, distillations columns, filters, dryers, extractors, crystallizers, and other process vent emissions within batch processes.

RACT Requirements

The CTGs establish presumptive RACT for process vents by specifying vent stream applicability criteria and VOC limits.

Process vents from air oxidation reactors, other reactor processes, and distillation operations must be controlled if the Total Resource Effectiveness (TRE) index value is less than or equal to 1.0. The TRE is a measure of the relative cost effectiveness of applying combustion controls. It is calculated using equations in the CTGs. Inputs to the TRE calculation are the vent stream flowrate, heating value, and VOC emission rate measured after any product recovery devices (e.g., condensers, absorbers, adsorbers) through which the reactor or distillation vent stream is discharged. For the air oxidation CTG, a TRE of 1.0 is roughly equivalent to a cost effectiveness of \$1,600/Mg VOC reduced (early 1980s dollars). For the reactor processes and distillation operations CTG, a TRE of 1.0 is roughly equivalent a cost of \$2,500/Mg (early 1990s dollars).

The presumptive RACT VOC limit for process vent streams is 98% VOC reduction or 20 ppmv at the outlet of the combustion control device, corrected to 3% oxygen. A flare meeting the design and operational requirements of 40 CFR 60.18 can also be used. Product recovery devices (e.g., condensers, absorbers, adsorbers) cannot be used to meet the 98% reduction requirement. However a facility could add a recovery device or improve recovery efficiency to reduce the VOC emission rate (measured at the outlet of

the recovery device) to the point where the TRE became greater than 1.0, and thereby avoid the need to install combustion controls. This feature of the RACT guidance encourages pollution prevention.

For batch processes, the ACT presents three alternative control levels of 90%, 95%, or 98% VOC reduction. The 98% level is based on combustion control. The 90% and 95% levels allow for use of recovery devices. The ACT does not recommend process vent applicability criteria, but instead provides optional methodologies for individual or aggregated batch vents based on emission rates, flow rates, and costs. The model rule exempts batch process trains if combined vent emissions are less than 10,000 lb/yr VOC.

Other Federal Requirements

The NSPS for SOCOMI air oxidation processes (40 CFR 60 subpart III), SOCOMI distillation operations (40 CFR 60 subpart NNN), and SOCOMI reactor processes (40 CFR 60, subpart RRR) specify vent stream applicability criteria that are a bit more stringent than the CTGs (a TRE of 1.0 for the NSPS equates to a cost of \$3,000/Mg VOC reduced in early 1990s dollars). The control requirements are the same as the CTGs.

The Miscellaneous Organic NESHAP (40 CFR 63 subpart FFFF) controls HAP emissions from a specific list of organic chemical processes. The control requirements for batch processes apply if uncontrolled organic HAP emissions from all batch process vents at the facility, including vents from reactors, filters, and centrifuges, are greater than 10,000 lb/yr. Overall batch process vent emissions must be reduced by 98 percent or to 20 ppmv using control devices, or by 95% using recovery devices.

SMAQMD Requirements

District Rule 464, Organic Chemical Manufacturing Operations, requires any reactor, distillation column, crystallizer, evaporator or enclosed centrifuge that emits more than 15 lb/day of maximum uncontrolled VOC to be vented to a VOC capture and control system that has a combined system efficiency of at least 85% and a control efficiency of at least 90%.

Rule 464 also requires capture and control of emissions from any centrifuge, rotary vacuum filter, or other device at an organic chemical plant that has an exposed liquid surface if the liquid contains VOC above a specified vapor pressure and emits more than 15 lb/day maximum uncontrolled VOC. The rule also requires capture and control of dryer or other production equipment exhaust systems that emit 330 lb/day or more of maximum uncontrolled VOC emissions. The required combined capture and control system efficiency is at least 85% and the control efficiency must be at least 90%.

SMAQMD Exemptions

Rule 464 exempts facilities that emit 15 lb/day or less of maximum uncontrolled VOC emissions.

The rule also exempts vent streams from reactors, distillation columns, evaporators, crystallizers, and centrifuges with maximum uncontrolled VOC emissions of 15 lb/day or

less, and separation devices (except at pharmaceutical plants) with maximum uncontrolled VOC emissions of 15 lb/day or less.

Research and development operations including bench scale laboratory and pilot plant operations that emit, cumulatively, at design production ratings, 15 lb/day maximum uncontrolled VOC emissions are also exempt.

Conclusion

Rule 464 is consistent with the ACT guidance for batch processes. Rule 464 requires 90% control for emissions from batch process vents including reactors, distillation columns, crystallizers, evaporators, centrifuges, and dryers. The ACT suggests a range of control from 90% to 98%.

There is only one source (Procter and Gamble) within the District to which the CTG applies, based on the specific list of chemicals covered by the CTG. Although the requirements in Rule 464 are less stringent than the Miscellaneous Organic NESHAP in some areas, the Procter and Gamble facility is subject to this NESHAP, for which the District has been delegated enforcement authority. The NESHAP requires full compliance by May 10, 2008.

Rule 464, in combination with the District's NESHAP authority, satisfies the RACT requirement for this source category.

Category: Leaks from Synthetic Organic Chemical and Polymer Manufacturing

EPA RACT Guidance

Control of Volatile Organic Compound Leaks from Synthetic Organic Chemical and Polymer Manufacturing Equipment. EPA-450/3-83-006, March 1984.

Applicability

This CTG applies to equipment in VOC service in process units operated to produce synthetic organic chemicals or polymers. The polymer manufacturing industries to which the CTG is applicable are polyethylene, polypropylene, and polystyrene.

RACT Requirements

The EPA guidance document establishes presumptive RACT for equipment leaks as follows:

Equipment	Service	Monitoring Frequency using EPA Method 21	Other requirements
Valves	Gas	Quarterly at a leak definition of 10,000 ppmv	-
	Light liquid		
Pumps	Light liquid		Weekly visual inspection of leaks
Compressors	Gas		-
Pressure relief valves	Gas		-
Open-ended lines	All	None	Caps or plugs
Flanges	All	None	Repair visual leaks

Leaking equipment is required to be repaired within 15 days after the date the leak is detected.

Other Federal Requirements

Subpart VV of 40 CFR Part 60 specifies new source performance standards (NSPS) for equipment leaks of VOC in the synthetic organic chemical manufacturing industry as follows:

Equipment	Service	Monitoring Frequency using EPA Method 21	Other requirements
Valves	Gas	Monthly at a leak definition of 10,000 ppmv	Decreased monitoring frequency with good performance
	Light liquid		
Pumps	Light liquid		Weekly visual inspection of leaks

Equipment	Service	Monitoring Frequency using EPA Method 21	Other requirements
Compressors	Gas	None	Equip with seal system that prevents leaks or has no detectable emissions
Pressure relief valves	Gas	None	No detectable emissions
Open-ended lines	All	None	Caps or plugs
Flanges	All	None	Repair visual leaks

The Miscellaneous Organic NESHAP (40 CFR 63 subpart FFFF) contains requirements for equipment leaks in specific chemical manufacturing process units. The NESHAP requirements are as follows:

Equipment	Service	Monitoring Frequency using EPA Method 21	Other requirements
Valves	Gas	Monthly at 10,000 ppm decreasing to 500 ppm (2.5 years later)	Decreased monitoring frequency with good performance
	Light liquid		
Pumps	Light liquid	Monthly at 10,000 ppm decreasing to 1,000 ppm (2.5 years later)	Weekly visual inspection of leaks
Compressors	Gas	None	Equip with seal system that prevents leaks or has no detectable emissions
Pressure relief valves	Gas	None	No detectable emissions
Open-ended lines	All	None	Caps or plugs
Connectors (including flanges)	Gas/light liquid	Annually at 500 ppm	Decreased monitoring frequency with good performance

The NESHAP provides that valves and pumps at process units with more than 2 percent leaks must meet a quality improvement program, which requires removal and inspection of failed equipment, identification of superior technology, and an equipment replacement program to achieve less than 2 percent leaks.

SMAQMD Requirements

District Rule 443, Synthetic Organic Chemical and Polymer Manufacturing, implements

the presumptive RACT rule specified in the CTG. Rule 443 is somewhat more stringent because Rule 443 requires monitoring of flanges (annually) and requires leaking equipment to be repaired more quickly (within 2 working days). Rule 443 allows process units with less than 2 percent leaking valves for five consecutive quarters to monitoring valves annually, rather than monthly.

SMAQMD Exemptions

Rule 443 does not apply to equipment operated under a vacuum or to VOCs with a vapor pressure less than 0.3 kPa.

Conclusion

Rule 443 has slightly more stringent requirements than the presumptive RACT guidance in the CTG. However, Rule 443 is less stringent than the NSPS and NESHAP, both of which require more frequent monitoring and specify lower leak definitions.

There is only one source (Procter and Gamble) within the District to which the CTG applies, based on the specific list of chemicals covered by the CTG. Although the requirements in Rule 443 are less stringent than the Miscellaneous Organic NESHAP in some areas, the Procter and Gamble facility is subject to this NESHAP, for which the District has been delegated enforcement authority. The NESHAP requires full compliance by May 10, 2008. The NESHAP is more stringent than the NSPS.

Rule 443, in combination with the District's NESHAP authority, satisfies the RACT requirement for this source category.

Category: Wood Furniture Manufacturing (Surface Coating)

EPA RACT Guidance

Guideline Series: Control of Volatile Organic Compound Emissions from Wood Furniture Manufacturing Operations, U.S. EPA Publication No. EPA-453/R-96-007, April 1996.

Applicability

The CTG applies to any facility that performs surface coating (finishing) on wood furniture, or performs cleaning or wash-off operations associated with wood furniture finishing operations. Wood furniture includes residential furniture, cabinets, office furniture, public building furniture (e.g., benches, bleachers, church furniture), and office and store fixtures (e.g., partitions, shelves, lockers).

RACT Requirements

The EPA guidance document establishes presumptive RACT for wood furniture surface coating operations as the following emission limits and work practices:

Surface Coating Operation		VOC limit
Topcoat		0.8 lb VOC/lb solids, as applied
Sealers		1.9 lb VOC/lb solids, as applied
Acid-cured alkyd amino vinyl sealers and acid-cured alkyd amino conversion varnish topcoats	Sealer	2.3 lb VOC/lb solids, as applied
	Topcoat	2.0 lb VOC/lb solids, as applied
Sealer other than an acid-cured alkyd amino vinyl sealer; and using acid-cured alkyd amino conversion varnish topcoats	Sealer	1.9 lb VOC/lb solids, as applied
	Topcoat	2.0 lb VOC/lb solids, as applied
Acid-cured alkyd amino vinyl sealer and a topcoat other than an acid-cured alkyd amino conversion varnish topcoat	Sealer	2.3 lb VOC/lb solids, as applied
	Topcoat	1.8 lb VOC/lb solids, as applied

Surface Coating Operation	VOC limit
Strippable booth coatings	0.8 lb VOC/lb solids, as applied
Work practice standards and Work practice implementation plan to include: Operator training course Leak inspection and maintenance plan Cleaning and washoff solvent accounting system Storage requirements Application equipment requirements Line cleaning Gun cleaning Wash off operations	

The CTG estimated the nationwide cost-effectiveness of the model rule at \$1200/ton of VOC reduced (1991 dollars). The cost per model plant ranged from a savings of \$900/ton of VOC reduced to a cost of \$3,600/ton.

Other Federal Requirements

Subpart JJ of 40 CFR Part 63 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) for wood furniture manufacturing operations at major sources. These standards are in terms of lb volatile organic HAP per lb solids applied. Since many VOC are not HAP, these limits for HAP establish no practical limits on VOC content or emissions from these operations. Work practices in Subpart JJ, which are essentially equal to those in the CTG model rule, would reduce VOC as well as HAP emissions.

SMAQMD Requirements

District Rule 463, Wood Products Coatings, applies to any person who uses, manufactures, blends, sells, repackages, distributes, or specifies the use of wood products coatings or strippers. Rule 463 covers coatings used in both new furniture manufacturing and in refinishing. Since the CTG covers only new manufacturing operations, only the limits for new manufacturing from Rule 463 are presented here.

Coating	VOC Limits g/liter, less water and less exempt compounds (lbs-VOC/lbs Solids)
Clear Topcoats	275 (0.35)
Conversion varnish	550 (1.20)
Filler	275 (0.18)
High Solid Stain	350 (0.42)
Inks	500 (0.96)
Mold Seal Coating	750 (4.20)
Multi-Colored Coating	275 (0.33)
Pigmented Coating	275 (0.25)
Sealer	275 (0.36)
Sealer applied where the topcoat does not exceed 275 grams/liter	680

Coating	VOC Limits g/liter (lbs-VOC/lbs-solids)
Low-Solids Stains, Toners, Washcoats	120 (1.00)
Strippers (analogous to Washoff operations in CTG)	350 (or has a partial composite vapor pressure less than 2 mm Hg at 20 °C)
Surface preparation or cleanup	200
Work Practice Requirements include the following: <ul style="list-style-type: none"> • Application equipment requirements • Spray gun cleaning requirements • Disposal of cloth/paper used for surface preparation, cleanup, or coating removal 	

SMAQMD Exemptions

Rule 463 contains the following exemptions:

- Sources using less than 55 gallons per year.
- Wood products coatings sold in non-refillable aerosol-spray containers.
- Coating operations associated with the manufacture of finished wood panels intended for attachment to walls.
- Coating of architectural components when not done in a shop environment.
- Stencil coatings used to comply with U.S. Military Specifications.

Conclusion

District Rule 463 establishes VOC limits that are more stringent than the limits in the CTG model rule for all coating categories. One difference is that the CTG contains a limit for strippable booth coatings, but no limit is included in Rule 463. However, strippable booth coatings would be subject to Rule 442, Architectural Coatings, in the categories of flat (100 g/L , approx. 0.12 lb VOC/lb solids) or nonflat coatings (150 g/L , approx. 0.18 lb VOC/lb solids) which are more stringent than the CTG.

Rule 463 includes some coating categories not included in the CTG (clear topcoat, filler, high-solid stain, multi-colored coating, and pigmented coating). These coatings are subcategories of the ones in the CTG, and the VOC limits in Rule 463 are more stringent than the most stringent limits in the CTG. Rule 463 also includes limits for inks and mold release coatings. These two categories are not addressed in the CTG.

The work practices in Rule 463 are equivalent to the CTG, except that Rule 463 does not include the requirement for an operator training course.

Appendix B

RACT Analysis of Non-CTG Source Categories Applicable to Major Sources

Non-CTG Category	Page Number
Architectural Coatings	49
Boilers	51
Stationary Gas Turbines	53
IC Engines	55
Municipal Landfill Gas	58
Organic Chemical Manufacturing - Process Tanks, Liquid Transfer, and Storage Tanks ($\leq 40,000$ gallons)	60
Organic Chemical Manufacturing - Wastewater	63
Solvent Cleaning (other than Degreasers)	66

Category: Architectural Coatings

EPA RACT Guidance

The EPA has not published a Control Techniques Guideline (CTG) or Alternative Control Technology (ACT) Document for this source category.

Applicability

Not applicable.

RACT Requirements

Not applicable.

Other Federal Requirements

Subpart D of 40 CFR part 59 (National Volatile Organic Compound Emission Standards for Architectural Coatings) specifies VOC content limits (g/L, lb/gal) for 61 categories of architectural coatings (i.e., coatings recommended for application to stationary structures, their appurtenances, to portable buildings, to pavement, and to curbs). Subpart D applies to manufacturers and importers of architectural coatings. The VOC content limits are based on "best available controls," as specified in §183(e) of the Clean Air Act.

Subpart D does not apply to coatings that are:

- manufactured exclusively for sale or distribution outside the United States,
- manufactured prior to September 13, 1999,
- sold in nonrefillable aerosol containers,
- collected and redistributed at paint exchanges in accordance with this rule,
- sold in containers with a volume of one liter or less.

The regulation contains two exemptions. Manufacturers and importers may sell a limited quantity of coatings that do not meet the standards, if the total mass of VOC contained in those coatings does not exceed the mass limits specified in the rule. The rule also allows manufacturers and importers to pay a fee for each gram (or ton) of VOC in excess of the applicable VOC limit rather than complying with the content limits.

SMAQMD Requirements

District Rule 442 (Architectural Coatings) limits the VOC content for 47 categories of architectural coatings and specifies work practice standards (e.g., application methods, thinning) for coating applications. Rule 442 applies to any person who supplies, sells, offers for sale, or manufacturers any architectural coating for use within the SMAQMD and to any person who applies or solicits the application of any architectural coating within the SMAQMD.

In most cases, the categories covered under Rule 442 are the same as the categories covered under 40 CFR 59. For each coating category, the VOC content limits in Rule

442 are the same or more stringent than those specified in 40 CFR 59. However, the following 14 coating categories in 40 CFR 59 do not have specific VOC limits in Rule 442:

- anti-graffiti coatings,
- calcimine recoaters,
- chalkboard resurfacers,
- concrete protective coatings,
- concrete surfaced retarders,
- conversion varnish,
- extreme high durability coatings,
- heat reactive coatings,
- impacted immersion coatings,
- non-ferrous ornamental metal lacquers and surface protectants,
- nuclear coatings,
- repair and maintenance thermoplastic coatings,
- stain controllers, and
- thermoplastic rubber coatings and mastics.

For coating categories that are not specifically listed in Rule 442, the VOC content limits for either flat or non-flat coatings apply (depending on gloss). The flat and non-flat coatings limits in Rule 442 are more stringent than the 40 CFR 59 limits for each of the 14 categories listed above.

Rule 442 also regulates the following coating categories that are not specifically identified in 40 CFR 59:

- recycled coatings;
- specialty primers, sealers, and undercoaters;
- swimming pool repair and maintenance coatings; and
- temperature-indicator safety coatings.

SMAQMD Exemptions

Rule 442 does not apply to:

- Any architectural coating that is sold or manufactured for use outside the Sacramento Metropolitan Air Quality Management District or for shipment to other manufacturers for reformulation or repackaging;
- Any aerosol coating product; or
- Any architectural coating that is sold in a container with a volume of one liter (1.057 quart) or less.

Rule 442 does not contain the tonnage or fee exemption contained in 40 CFR 59.

Conclusion

For all architectural coating categories, the VOC limits specified in District Rule 442 are at least as stringent as the limits specified 40 CFR 59, subpart D. Therefore, Rule 442 satisfies the RACT requirement for this source category.

Category: Boilers

EPA RACT Guidance

Alternative Control Techniques Document – NOx Emissions from Industrial/Commercial/Institutional (ICI) Boilers, U.S. EPA Publication No. EPA-453/R-94-022, March 1994.

Applicability

The guidance applies to boiler, steam generators, and process heaters fired with gaseous or liquid fuels.

RACT Requirements

The EPA guidance document does not establish presumptive RACT for this category. However, the ACT document discusses four control techniques for NOx that can be applied to natural gas-fired, packaged watertube boilers and estimates achievable performance as follows:

Control Technique	Achievable NOx Level
Water injection w/ oxygen trim	49 ppmv @3% O ₂
Low NOx burners	66 ppmv @3% O ₂
Low NOx burners w/ flue gas recirculation	49 ppmv @3% O ₂
SCR	16 ppmv @3% O ₂

Other Federal Requirements

Subpart Db of 40 CFR Part 60 specifies New Source Performance Standards (NSPS) for industrial, commercial, and institutional steam generating units > 100 mmBtu/hr input that were constructed, modified, or reconstructed after June 19, 1984. Low heat release rate units are limited to approximately 82 ppmv NOx @ 3% O₂, while high heat release rate units are limited to approximately 164 ppmv NOx @ 3% O₂ firing natural gas or distillate oil fuel. These standards are substantially less stringent than the achievable levels presented in the ACT document.

SMAQMD Requirements

In 1991, the ARB issued a RACT determination document for industrial, institutional, and commercial boilers, steam generators, and process heaters. The ARB analysis considered the achievable performance levels and cost effectiveness of various NOx control strategies as applied to different size units. The analysis also took in account the variation in NOx emissions between gaseous and liquid fuels. The ARB concluded that RACT for units with ratings of 5 mmBtu/hr and larger, using 90,000 therms of fuel or more per year, is a NOx emission limit of 70 ppmv @ 3% O₂ when firing on gaseous fuel and 115 ppmv @ 3% O₂ when firing on liquid fuel.

District Rule 411, NOx from Boilers, Process Heaters and Steam Generators, originally

went beyond the RACT emission limits for natural gas and liquid fuels as recommended by the ARB guidance. Units with rated heat inputs ≥ 5 mmBtu/hr and using $\geq 90,000$ of fuel per year were required to meet NOx emission limits of 30 ppmv @ 3% O₂ when firing gaseous fuel and 40 ppmv @ 3% O₂ when firing liquid fuel. This version of the rule was approved into the SIP by EPA on February 9, 1996.

On October 27, 2005, the District amended Rule 411 to establish NOx limits for units rated between 1 mmBtu/hr and 5 mmBtu/hr, and to set more stringent standards for units rated ≥ 5 mmBtu/hr when firing gaseous fuel. Units rated from 1-5 mmBtu/hr are limited to NOx emissions of 30 ppmv @ 3% O₂; units rated from 5-20 mmBtu/hr are limited to NOx emissions of 15 ppmv @ 3% O₂; and units rated > 20 mmBtu/hr are limited to NOx emissions of 9 ppmv @ 3% O₂. The implementation of these revised limits will phase in starting on October 27, 2007. This amended version of Rule 411 has been submitted to EPA for inclusion in the SIP.

SMAQMD Exemptions

The original, SIP-approved version of Rule 411 contained an exemption for units with annual fuel usage less than 90,000 therms. When Rule 411 was amended on October 27, 2005, exemptions from the more stringent emission limits were added because of cost-effectiveness and technological concerns. Units rated between 1 and 2.5 mmBtu/hr are exempt from emission limits if they have annual fuel consumption less than 40,000 therms. Units rated between 2.5 and 5 mmBtu/hr are exempt from emission limits if they have annual fuel consumption less than 70,000 therms.

Units rated between 5 and 100 mmBtu/hr are not subject to the more stringent emission limits (but are still subject to the previous emission limits) if they have annual fuel consumption less than 200,000 therms. Units rated at 100 mmBtu/hr and greater are not subject to the more stringent emission limits (but are still subject to the previous emission limits) if they have annual fuel consumption less than 300,000 therms. Finally, gas fire reformer furnaces, units fired on landfill gas, and load following units not subject to the more stringent NOx limits (but are still subject to the previous emission limits).

Conclusion

District Rule 411 requires NOx emission limits that more stringent than the range of achievable levels as specified in the EPA guidance document and more stringent than the NSPS. The NOx limits in Rule 411 are also more stringent than the ARB determination of RACT and apply to smaller units.

Rule 411 satisfies the RACT requirement for this source category.

Category: Stationary Gas Turbines

EPA RACT Guidance

Alternative Control Techniques (ACT) Document – NOx Emissions from Stationary Gas Turbines, U.S. EPA Publication No. EPA-453/R-93-007, January 1993.

Applicability

The guidance applies to stationary gas turbines fired with gaseous or liquid fuels.

RACT Requirements

The EPA guidance document does not establish presumptive RACT for stationary gas turbines. However, the ACT document discusses three control techniques for NOx and estimates achievable performance as follows:

Control Technique	Achievable NOx Level
Wet injection	25 - 42 ppmv @15% O ₂
Dry low-NOx combustion	25 - 42 ppmv @15% O ₂
SCR w/ combustion controls (wet injection or dry low-NOx)	9 ppmv @15% O ₂

Other Federal Requirements

Subpart GG of 40 CFR Part 60 specifies New Source Performance Standards (NSPS) for stationary gas turbines ≥ 10 mmBtu/hr input (approximately 1 MW output) that were constructed, modified, or reconstructed after October 3, 1977. Turbines with rated heat inputs between 10 and 100 mmBtu/hr are limited to approximately 150 ppmv NOx (with upward adjustments for efficiency and fuel-bound nitrogen). Turbines with rated heat inputs between > 100 mmBtu/hr are limited to approximately 75 ppmv NOx. These standards are substantially less stringent than the achievable levels presented in the ACT document.

SMAQMD Requirements

In 1992, the ARB issued a RACT/BARCT determination document for stationary gas turbines. The ARB analysis considered the achievable performance levels and cost effectiveness of various NOx control strategies as applied to different sizes of gas turbines. The analysis also took in account the variation in NOx emissions between gaseous and liquid fuels. The ARB concluded that RACT for gas turbines with ratings of 0.3 MW and larger is a NOx emission limit of 42 ppmv @ 15% O₂ when firing on gaseous fuel and 65 ppmv @ 15% O₂ when firing on liquid fuel. More stringent levels of control were considered as BARCT.

District Rule 413, Stationary Gas Turbines, implements the RACT and BARCT emission limits as recommended by the ARB guidance. The Rule 413 emission limits are listed in the table below.

Requirement Type	Annual Hours of Operation (hr/yr)	Unit Size Rating (MW)	NOx Emission Limit (ppmv @ 15% O ₂)	
			Gaseous Fuel	Liquid Fuel
RACT	any	≥0.3	42.0	65.0
BARCT	any	≥0.3 to <2.9	42.0	65.0
	<877	≥2.9	42.0	65.0
	≥877	≥2.9 to <10	25.0	65.0
	≥877	≥10.0 (no SCR)	15.0	42.0
	≥877	≥10.0 (w/ SCR)	9.0	25.0

SMAQMD Exemptions

Rule 413 contains exemptions that were included in the ARB determination of RACT/BARCT:

- Laboratory units used in research and testing for the advancement of gas turbine technology.
- Units used to provide emergency electrical power, emergency water pumping for flood control or fire fighting, emergency potable water pumping, or emergency sewage pumping, provided they are limited to an annual total of 200 hours of operation (100 hours for maintenance).

Startup and shutdown periods are exempt from Rule 413. Shutdown periods are not to exceed 1 hour. Startup periods are not to exceed 1 hour, except for turbines ≥ 160 MW output that are part of a combined cycle process, for which the one-hour period was determined to be technologically infeasible. These units are allowed up to 4 hours for a startup that follows a shutdown of 72 hours or more, and up to 3 hours for a startup that follows a shutdown of between 8 and 72 hours.

Conclusion

District Rule 413 requires NOx emission limits that are in the range of achievable levels as specified in the EPA guidance document. The requirements are in accordance with the ARB determination of RACT for gas turbines rated between 0.3 and 2.9 MW. More stringent BARCT emission limits are required for gas turbines rated greater than 2.9 MW.

Rule 413 satisfies the RACT requirement for this source category.

Category: IC Engines

EPA RACT Guidance

Alternative Control Techniques Document – NOx Emissions from Stationary Reciprocating Internal Combustion Engines, U.S. EPA Publication No. EPA-453/R-93-032, July 1993.

Applicability

The guidance applies to spark-ignited and compression ignition stationary engines.

RACT Requirements

The EPA guidance document does not establish presumptive RACT for this category. However, the ACT document discusses the control techniques for NOx that can be applied to rich burn spark-ignited engines, lean burn spark-ignited engines, and diesel engines, and estimates achievable performance as follows:

Rich Burn Engines, 80-hp to 8,000-hp

Control Technique	Achievable NOx Level
Air/Fuel Adjustment	640-940 ppmv @15% O ₂
Ignition Timing Retard	640-1,060 ppmv @15% O ₂
Air/Fuel Adjustment plus Ignition Timing Retard	640-940 ppmv @15% O ₂
Prestratified Charge	135 ppmv @15% O ₂
Nonselective Catalytic Reduction	20-110 ppmv @15% O ₂
Low-Emission Combustion	135 ppmv @15% O ₂

Lean Burn Engines, 200-hp to 11,000-hp

Control Technique	Achievable NOx Level
Air/Fuel Adjustment	860-1,170 ppmv @15% O ₂
Ignition Timing Retard	980-1,260 ppmv @15% O ₂
Air/Fuel Adjustment plus Ignition Timing Retard	740-980 ppmv @15% O ₂
Selective Catalytic Reduction	125 ppmv @15% O ₂
Low-Emission Combustion	150 ppmv @15% O ₂

Diesel Engines, 80-hp to 8,000-hp

Control Technique	Achievable NOx Level
Ignition Timing Retard	610-700 ppmv @15% O ₂
Selective Catalytic Reduction	90-175 ppmv @15% O ₂

SMAQMD Requirements

District Rule 412, Stationary Internal Combustion Engines Located at Major Stationary Sources of NOx, sets emission standards for engines greater than 50 horsepower (hp)

at major sources of NOx. The rule establishes the following NOx emission limits:

Engine Type	NOx Emission Limit (ppmv @15% O ₂)
Spark Ignited, Rich Burn	50
Spark Ignited, Lean Burn	65
Compression Ignited	700

In addition, spark ignited rich burn engines and compression ignited engines are required to meet more stringent emission limits if they are operated more than a specified number of annual hours, depending on engine size:

Engine Type	More Stringent NOx Emission Limit (ppmv @15% O ₂)
Spark Ignited, Rich Burn	25
Compression Ignited	80

The above limits apply to engines with annual operating hours exceeding those shown in the table below:

Engine Type	Size (hp)	Annual Hours of Operation
Spark Ignited, Rich Burn	> 50 to 75	200
Spark Ignited, Rich Burn	> 75 to 125	120
Spark Ignited, Rich Burn	> 125 to 155	100
Spark Ignited, Rich Burn	> 155 to 200	80
Spark Ignited, Rich Burn	> 200 to 300	60
Spark Ignited, Rich Burn	> 300 to 400	45
Spark Ignited, Rich Burn	> 400 to 525	40
Spark Ignited, Rich Burn	> 525	0
Compression Ignited	> 50 to 75	1,435
Compression Ignited	> 75 to 125	830
Compression Ignited	> 125 to 155	565
Compression Ignited	> 155 to 200	460
Compression Ignited	> 200 to 300	365
Compression Ignited	> 300 to 400	250
Compression Ignited	> 400 to 525	200
Compression Ignited	> 525	0

SMAQMD Exemptions

The following types of engines are exempt from Rule 412:

- Emergency standby engines
- Agricultural engines
- Engines on test stands
- Research engines

- Nonroad (portable) engines
- Motor vehicle engines
- Engines used to support flight line operations

Conclusion

District Rule 412 requires NOx emission limits that either within or more stringent than the range of achievable levels as specified in the EPA guidance document. Rule 412 satisfies the RACT requirement for this source category.

Category: Municipal Landfill Gas

EPA RACT Guidance

The EPA has not published a Control Techniques Guideline (CTG) or Alternative Control Technology (ACT) Document for this source category.

Applicability

Not Applicable.

RACT Requirements

Not Applicable.

Other Federal Requirements

Subpart WWW of 40 CFR Part 60 specifies New Source Performance Standards (NSPS) for municipal solid waste landfills that commenced construction, modification, or reconstruction on or after May 30, 1991. Landfills with design capacities of at least 2.5 million Mg and 2.5 million m³ must calculate nonmethane organic compound (NMOC) emissions annually. When calculated uncontrolled NMOC emissions reach 50 Mg/year, the landfill must install a landfill gas collection and control system within 30 months. The gas collection system must meet specified design criteria or the equivalent. The control system must reduce NMOC by 98% or to an outlet concentration of 20 ppmv (if using an enclosed combustion device). Use of a flare meeting NSPS design and operating criteria, or use of a gas treatment system that treats landfill gas for subsequent sale or use as a fuel are also allowed.

Subpart Cc of 40 CFR Part 60 specified Emission Guidelines that apply to landfills that both (1) have accepted waste since November 8, 1987 or have additional design capacity available for future waste deposition, and (2) commenced construction, modification or reconstruction before May 30, 1991 (i.e., are not subject to the NSPS). The landfill gas collection and control requirements in the Emission Guidelines are identical to the NSPS. The Emission Guidelines are implemented through State Plans that are approved by EPA.

Subpart AAAA of 40 CFR Part 63 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) for new and existing municipal solid waste landfills that have accepted waste since November 8, 1987 or have additional design capacity available for future waste deposition. The gas collection and control requirements are identical to the NSPS. The only difference is that landfills that are operated as bioreactors must collect and control gas earlier because they emit more gas sooner than conventional landfills. Bioreactors are defined as landfills that add liquids other than leachate to reach a minimum waste moisture content of 40% to accelerate anaerobic biodegradation of the waste. For a bioreactor located at a landfill that has a design capacity of at least 2.5 million Mg and 2.5 million m³, gas collection and control systems must be installed before initiating liquids addition and these systems must begin operation within 180 days after initiating liquids addition or within 180 days after reaching 40% waste moisture content.

SMAQMD Requirements

District Rule 485, Municipal Landfill Gas, implements the 40 CFR Part 60 Subpart Cc Emission Guidelines for municipal solid waste landfills described in the preceding section. Rule 485 is identical to the Subpart Cc Emission Guidelines except that Rule 485 does not allow passive gas collection systems or open flares. Landfills that meet the design capacity and NMOC emission rate criteria for requiring controls must use active collection systems and control devices or treatment systems, other than flares, that meet the requirements in the NSPS and Emission Guidelines.

SMAQMD Exemptions

Rule 485 exempts sources that are subject to the NSPS subpart WWW.

Conclusion

There is only one major source (Kiefer Landfill) within the District for which RACT must be demonstrated in this source category. The Kiefer Landfill is subject to the NSPS subpart WWW, and is therefore exempt from Rule 485. This source is also subject to the NESHAP subpart AAAA.

The NSPS and NESHAP contain the most stringent requirements that are applicable to municipal landfill gas, and meet or exceed the requirements of RACT. The District has been delegated the authority to enforce the NSPS and NESHAP. The RACT requirement has been satisfied for this source category.

Category: Organic Chemical Manufacturing - Process Tanks, Liquid Transfer, and Storage Tanks (≤40,000 gallons)

EPA RACT Guidance

The EPA has not published a CTG or ACT for process tanks, liquid transfer, or storage tanks with capacities ≤40,000 gallons for this source category.

(RACT for volatile organic liquid storage tanks > 40,000 gallons is analyzed as a separate category.)

Applicability

Not applicable

RACT Requirements

Not applicable

Other Federal Requirements

Process tanks: There are no NSPS covering in-process tanks at synthetic organic chemical manufacturing industry (SOCMI) facilities. The Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF) controls surge control vessels and bottoms receivers at existing sources if the vessels are larger than 75 m³ (20,000 gallons) and have a maximum true vapor pressure of organic HAP above specified levels (see 40 CFR 63.170 and table 2 of 40 CFR 63 subpart H). Such vessels must be either (1) routed through a closed vent system to a 95% efficient control device, or (2) equipped with an internal floating roof (IFR) or external floating roof (EFR) with the seals and fittings specified in 40 CFR 63.119.

Liquid transfer: There are no NSPS covering liquid transfer from SOCMI facilities. The NESHAP (40 CFR Part 63, Subpart FFFF) covers transfer racks that load liquid containing organic HAP into tank trucks or railcars. Control is required only for racks that load at least 0.65 million liters/yr (170,000 gallons/yr) and have average vapor pressures of at least 10.3 kPa (1.5 psia). These racks require vapor collection systems and controls. There are 3 control options: (1) control devices (e.g., combustion devices or recovery devices) that reduce organic HAP emissions by 98% or to 20 ppmv, (2) flares that meet the design and operational requirements of 40 CFR 60.18, or (3) a vapor balance system that routes collected vapors back to a storage vessel or to a process.

Storage Tanks (≤ 40,000 gallons): The NSPS subpart Kb applies to storage vessels with a volume between 19,800 gallons and 40,000 gallons. Tanks with a vapor pressure between 27.6 kPa and 76.6 kPa must be controlled with either an internal floating roof (IFR), an external floating roof (EFR), or by routing emissions to a control device that achieves at least 95% VOC reduction. IFR tanks, or fixed roof tanks retrofitted with an IFR, must be equipped with a foam or liquid filled seal mounted in contact with the liquid or a mechanical shoe seal or 2 seals mounted one above the other to form a continuous enclosure. EFR tanks are to be equipped with a closure device that has specified types of seals between the wall of the tank and the roof edge. For IFR and EFR tanks,

openings must be equipped with covers, seals, or lids. The NSPS specifies extensive fitting requirements for the various types of openings and cover penetrations.

All tanks with volumes greater than 19,800 gallons and vapor pressures greater than 76.6 kPa are required to route vent streams to a control device that achieves at least 95% VOC reduction.

The NESHAP (40 CFR Part 63, Subpart FFFF) also applies to storage vessels in organic HAP service. The requirements for NESHAP storage vessels are the same as in subpart Kb. Tanks with volumes between 75 m³ (20,000 gallons) and 151 m³ (40,000 gallons) with vapor pressures greater or equal to 13.1 kPa are required to be controlled.

SMAQMD Requirements

Process Tanks: District Rule 464, Organic Chemical Manufacturing Operations, prohibits process tanks with a VOC composite vapor pressure over 26 mm Hg (0.5 psi) unless it is a closed container that is kept tightly covered. Any process tanks with vapor pressures over 26 mm Hg (0.5 psi) that emit more than 15 lb/day maximum uncontrolled VOC must be vented to a capture and control system with a combined system efficiency of at least 85% and a control efficiency of at least 90%. Process tanks include surge control vessels, bottoms receivers and other in-process tanks as defined in the rule.

Liquid Transfer: Rule 464 requires control of transfer operations that load liquid with a VOC composite partial vapor pressure of 26 mm Hg (0.5 psi) into tank trucks, trailers, railcars, or storage tanks of 2000 gallons capacity or greater. There are 3 control options: (1) a vapor balancing system that captures and routes vapors back to a supply storage tank, (2) a capture and control system with a combined efficiency of at least 85% and a VOC control efficiency of at least 90%, or (3) an IFR or EFR that complies with 40 CFR 63.119 and 63.120 (NESHAP storage vessel requirements).

Storage Tanks (≤40,000 gallons): Rule 464 requires storage tanks with capacities greater than 55 gallons and less than or equal to 40,000 gallons that store materials with a VOC composite partial vapor pressure greater than 78 mm Hg (1.5 psi) to install a pressure/vacuum valve on all tank vents. Storage tanks with capacities of 55 gallons or less and vapor pressures greater than 78 mm Hg (1.5 psi) must be closed containers that are kept tightly covered.

SMAQMD Exemptions

Rule 464 exempts facilities that emit 15 lb/day or less of maximum uncontrolled VOC emissions.

Rule 464 exempts process tanks that emit 15 lb/day or less of maximum uncontrolled VOC emissions.

Research and development operations including bench scale laboratory and pilot plant operations that emit, cumulatively, at design production ratings, 15 lb/day maximum uncontrolled VOC emissions are also exempt.

Conclusion

There is only one major source (Procter and Gamble) within the District for which RACT must be demonstrated in this source category. The Procter and Gamble facility is also subject to the NESHAP (40 CFR Part 63, Subpart FFFF), for which the District has been delegated enforcement authority. The NESHAP contains more stringent requirements in some areas, and full compliance with the NESHAP is required by May 10, 2008. The NESHAP is more stringent than NSPS subpart Kb.

Rule 464, in combination with the District's NESHAP authority, satisfies the RACT requirement for this source category.

Category: Organic Chemical Manufacturing - Wastewater

EPA RACT Guidance

1. *Control Techniques Guidelines (CTG) Document - Control of Volatile Organic Compound Emissions from Industrial Wastewater, EPA-453/D-93-056, Draft. September 1992.*
2. *Alternative Control Technology (ACT) Document - Air Emissions from Industrial Wastewater. April 1994.*

Applicability

The draft CTG document addresses RACT for control of VOC emissions from the collection and treatment of industrial wastewater generated from the organic chemicals, plastics, and synthetic fibers industry and other industries. A final version of the CTG was not published.

The ACT document updates the draft CTG to be consistent with the provisions of the final NESHAP for the Synthetic Organic Chemical Manufacturing Industry (40 CFR 63, subparts F and G). The NESHAP serves as the model rule for the draft CTG document. The ACT contains revised factors for estimating emissions from wastewater streams and treatment devices and revised impact tables (i.e., emissions, emission reductions, and control costs for various concentration and flow rate applicability cutoffs) for States to use in selecting RACT.

RACT Requirements

The draft CTG specifies presumptive RACT as (1) suppression of emissions from the point of generation through final treatment, (2) treatment of wastewater streams to remove VOC, and (3) control of VOC emissions from any vents from the wastewater collection system or treatment devices. The treatment technology that is the basis for RACT is steam stripping (or an equivalent technology such as biological treatment). Table A summarizes the design and control requirements for wastewater collection system components and treatment processes in the draft CTG. The presumptive RACT applies to wastewater streams with a VOC concentration of at least 500 parts per million by weight (ppmw) and a flow rate of 1 liter per minute (lpm) or more, or a VOC concentration of at least 10,000 ppmw at any flow rate.

Other Federal Requirements

The Miscellaneous Organic NESHAP (40 CFR 63 subpart FFFF) applies to wastewater streams generated by specific chemical processes located at major sources. The NESHAP requirements (see Table A) are essentially the same as the draft CTG (i.e., suppression or control of emissions from collection system components and control of emissions from treatment processes). The requirements include 40 CFR 63 subparts F and G by reference. The control requirements apply to wastewater streams with HAP concentrations of at least 1,000 ppmw and flow rates of at least 10 lpm, and streams with HAP concentrations of 10,000 ppmw or more at any flow rate. Different applicability cutoffs (10 ppmw and greater, 0.02 lpm and greater) apply to wastewater streams

containing very volatile HAP at new sources.

SMAQMD Requirements

District Rule 464, Organic Chemical Manufacturing Operations, regulates any wastewater stream with a total VOC concentration of at least 5 ppmw and a flow rate of at least 0.02 lpm, or a total VOC concentration at least 10,000 ppmw at any flow rate. Rule 464 requires the same types of suppression and control techniques for wastewater collection system components as specified in the draft CTG and the NESHAP (see Table A). Rule 464, however, does not require treatment of the wastewater to remove VOC.

SMAQMD Exemptions

Rule 464 exempts organic chemical plants that emit 15 lb/day or less of maximum uncontrolled VOC emissions. Research and development operations that emit 15 lb/day or less of maximum uncontrolled VOC emissions also are exempt.

Conclusion

The Rule 464 criteria (i.e., concentration and flow rate) for determining which wastewater streams are subject to the control requirements are more stringent than the draft CTG and the NESHAP. Therefore, Rule 464 would regulate more waste streams than the CTG or NESHAP. The Rule 464 suppression requirements for wastewater collection system components are more stringent than the draft CTG and are essentially the same as those specified in the NESHAP. However, the required destruction efficiency of devices used to control any vented emissions from wastewater collection system components is not as high as the draft CTG or the NESHAP. Rule 464 requires 90 percent destruction while the NESHAP requires at least 95 percent destruction.

The draft CTG and the NESHAP both require removal of VOC from wastewater streams, which is not required by Rule 464.

There is only one major source (Procter and Gamble) within the District for which RACT must be demonstrated in this source category. The Procter and Gamble facility is also subject to the NESHAP (40 CFR Part 63, Subpart FFFF), for which the District has been delegated enforcement authority. The NESHAP contains more stringent requirements in some areas, and full compliance with the NESHAP is required by May 10, 2008.

Rule 464, in combination with the District's NESHAP authority, satisfies the RACT requirement for this source category.

Table A. Summary of Wastewater Management Unit Requirements			
This type of equipment . .	Must be equipped with a . . .		
	Draft CTG	Miscellaneous Organics NESHAP (40 CFR 63 Subpart FFFF)	SMAQMD Rule 464
Tanks	<ul style="list-style-type: none"> Fixed roof, Floating roof, or Cover vented to a control device 	Fixed roof ^a	Fixed roof ^a
Surface impoundments	Floating membrane cover	<ul style="list-style-type: none"> Floating membrane cover^b, or Cover vented to a control device^b 	Cover vented to a control device
Separators	<ul style="list-style-type: none"> Fixed roof, or Floating roof 	<ul style="list-style-type: none"> Fixed roof vented to a control device, or Floating roof 	<ul style="list-style-type: none"> Fixed roof vented to a control device, Floating roof, Solid, sealed, gasketed, fixed cover, or Solid, vapor-tight, full-contact fixed cover
Containers ^c	Not addressed in the draft CTG	<ul style="list-style-type: none"> Leak-less cover, Container meeting Dept. of Transportation (DOT) standards^d, or Cover vented to a control device^d 	Cover
Individual drain system components	Leak-less cover	<ul style="list-style-type: none"> Leak-less covers, Cover vented to a control device, or Drains, junction boxes, and sewer lines that meet design standards 	<ul style="list-style-type: none"> Vapor-tight cover, or Cover vented to a control device
Wastewater treatment devices	Steam stripping (or equivalent technology)	Steam stripping (or equivalent technology)	Not specified
Emission control devices	95 - 99.5% destruction	95% destruction (or an outlet concentration of ≤ 20 ppmv - for enclosed combustion devices only)	90% destruction

^aIf used to mix (e.g., by air sparging), heat, or treat wastewater with an exothermic reaction, then the tank must be equipped with a floating roof or be vented to control device.

^bAir emission controls (e.g., covers) are not required for surface impoundments that are used for open biological treatment processes.

^cThe NESHAP and SMAQMD Rule 464 require submerged fill pipes for containers with capacities of 0.42 m³ or more.

^dOnly for containers with capacities less than 0.42 m³.

Category: Solvent Cleaning (other than Degreasers)

EPA RACT Guidance

ACT Document - *Industrial Cleaning Solvents*, U.S. EPA Publication No. EPA-453/R-94-015, February 1994.

Applicability

The ACT document applies to the use of solvents to remove contaminants (e.g., adhesives, inks, paint, dirt, soil, oil, and grease) in unit operations involving techniques such as wiping, spraying, brushing, purging, and dipping. The ACT document does not address remote reservoir cold cleaners or vapor, in-line, or batch-loaded degreasers.

RACT Requirements

The ACT document essentially specifies an environmental management program for reducing VOC emissions from industrial cleaning solvents. The program consists of solvent accounting and plant management actions. The accounting practices raise awareness of solvent use practices by measuring and recording the use, fate, and cost of all cleaning solvents used at a facility. The knowledge gained from the solvent accounting practices would be used by facility managers to develop techniques for reducing emissions (e.g., alternative cleaning solutions, work practices and equipment changes to reduce solvent use, use of control devices). The ACT does not evaluate specific work practices or emission limits.

Other Federal Requirements

No Federal requirements have been established for this category, but a Control Techniques Guidelines (CTG) document for industrial solvent cleaning is currently under development and, by court order, must be published by September 2006.

SMAQMD Requirements

District Rule 466 (Solvent Cleaning) implements the recommendations of the ACT by specifying VOC content limits for solvents; labeling requirements; and work practices for solvent cleaning devices and for solvent storage and disposal. Rule 466 applies to users and sellers of VOC cleaning materials and to persons that store and dispose of VOC-containing materials used in solvent cleaning.

Rule 466 specifies a VOC content limit of 50 g/liter of solvent (including water and exempt solvents) for general wipe cleaning and maintenance cleaning. The limits range from 300 to 800 g/liter for certain specialized applications.

As an alternative to meeting the VOC content, cleaning device, and cleaning method standards, Rule 466 allows the use of a vent system that collects at least 90 percent of the mass emissions generated by the solvent cleaning operations and a control device that meets either a 95-percent control efficiency or achieves an outlet concentration less than 50 parts per million as carbon.

For sellers of solvent, the rule requires that the following information be provided to the purchaser at the time of the sale:

- Solvent type by name/code/manufacturer;
- Maximum VOC content (g VOC/L of solvent, or lb VOC/gal) of the cleanup solvent as applied (including water and exempt compounds); and
- Recommendations regarding thinning, reducing, or mixing with any solvent (if applicable).

SMAQMD Exemptions

District Rule 466 exempts the following solvent cleaning operations:

- Cleaning of solar cells, laser hardware, scientific instruments, and high-precision optics;
- Cleaning of cotton swabs to remove cottonseed oil before cleaning of high-precision optics;
- Cleaning of paper-based gaskets and clutch assemblies where rubber is bonded to metal by means of an adhesive;
- Cleaning of application equipment used to apply coatings on satellites and radiation effect coatings;
- Cleaning of electrostatic coating application equipment; and
- Janitorial cleaning, including graffiti removal.
- Cleaning of sterilization ink indicating equipment if the solvent usage is less than 1.5 gallons per day; and
- Cleaning with aerosol if 160 fluid ounces or less of aerosol product are used per day, per stationary source.

District Rule 466 also exempts solvent cleaning operations that are covered by the District rules listed below. The requirements for cleaning solvents in these rules are summarized in Table 1 at the end of this report.

- Rule 444 (Petroleum Solvent Dry Cleaning);
- Rule 450 (Graphic Arts Operations);
- Rule 451 (Surface Coating Of Miscellaneous Metal Parts and Products);
- Rule 452 (Can Coating);
- Rule 454 (Degreasing Operations);
- Rule 456 (Aerospace Assembly and Component Coating Operations);
- Rule 459 (Automotive, Truck and Heavy Equipment Refinishing Operations);
- Rule 460 (Adhesives and Sealants);
- Rule 463 (Wood Products Coating);
- Rule 464 (Organic Chemicals Manufacturing Operations); and
- Rule 465 (Polyester Resin Operations).

Conclusion

District Rule 466 establishes VOC content limits and work practice standards that conform to the types of management practices identified in the ACT. The solvent cleaning requirements for the rules summarized in Table 1 also conform to the ACT.

Rule 466 has broader coverage than the ACT because it applies to sellers of cleaning solvents as well as users and to anyone that stores or disposes of cleaning solvents.

Rule 466 satisfies goes beyond the RACT requirements specified in the ACT for this source category. Rule 466 specifies emission limits and work practice standards, which the ACT does not. This rule has not yet been submitted for inclusion in the SIP, but will be submitted.

Table 1. Control Requirements for Solvent Cleaning Operations

District Rule Number	Source Category	Summary of Solvent Cleaning Requirements
444	Petroleum Solvent Dry Cleaning	<ul style="list-style-type: none"> - Does not regulate solvents used to clean equipment. - Dry cleaning solvent must be stored in closed containers which may be equipped with vents approved by the Air Pollution Control Officer.
450	Graphic Arts Operations	<ul style="list-style-type: none"> - Specifies VOC content limits of 72 g/L for general cleaning, and specifies other limits for 8 categories of application equipment cleaning. - As an alternative to VOC content limits, a collection system (efficiency of 75%) plus control device (efficiency of 95%) may be used. - For lithographic and letterpress cleaning other than blanket and roller washes, the rule specifies limit on total monthly usage of cleaning solvent. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
451	Surface Coating Of Miscellaneous Metal Parts and Products	<ul style="list-style-type: none"> - Specifies VOC content of 72 g/L for product cleaning and surface preparation materials. - Specifies VOC content of 72 g/L for application equipment cleanup materials (exempts electrostatic spray guns) or use of an enclosed spray gun cleaner. -As an alternative to VOC content limits and spray gun limits, an emission collection and control system with overall system efficiency of 85% must be used. - Spray gun nozzles may be soaked in solvent-based materials within a tightly closed container 5 gallons or less in size. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
452	Can Coating	<ul style="list-style-type: none"> - Specifies VOC content of 200 g/L for cleanup solvents. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
454	Degreasing Operations	<ul style="list-style-type: none"> - Regulates solvent use in degreasing machines. Does not contain

District Rule Number	Source Category	Summary of Solvent Cleaning Requirements
		<p>requirements for solvents used in other types of cleaning operations (e.g., wipe cleaning).</p> <ul style="list-style-type: none"> - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
456	Aerospace Assembly and Component Coating	<ul style="list-style-type: none"> - Specifies VOC content of 200 g/L for application equipment cleanup materials (exempts electrostatic spray guns) or use of an enclosed spray gun cleaner. - Specifies VOC content of 200 g/L or composite VOC partial vapor pressure limit of 45 mm Hg for surface preparation and cleaning. - As an alternative to VOC content limits, an emission collection and control system with overall system efficiency of 85% must be used. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
459	Automotive, Truck and Heavy Equipment Refinishing Operations	<ul style="list-style-type: none"> - Specifies VOC content of 72 g/L for surface preparation, except that a VOC content limit of 780 g/L is specified for hand-held spray bottle application of solvent to remove road tar, engine oil, grease, overspray, or adhesives. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc. - Specifies VOC content of 72 g/L for application equipment cleanup. Spray gun nozzles may be soaked in solvent-based materials within a tightly closed container 5 gallons or less in size.
460	Adhesives and Sealants	<ul style="list-style-type: none"> - Specifies VOC content limits and/or composite partial vapor pressure limits of: 70 g/L for unenclosed equipment cleaning, 45 mm Hg for enclosed gun cleaning and cleaning of equipment other than adhesive or sealant application, and 9.5 mm Hg for soaking application equipment in a closed container. - As an alternative to VOC content limits, a collection system with collection efficiency of 90% and an emission control device of 95% reduction efficiency may be used.

District Rule Number	Source Category	Summary of Solvent Cleaning Requirements
		<ul style="list-style-type: none"> - Must use wipe cleaning or non-propellant spray bottles. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
463	Wood Products Coating	<ul style="list-style-type: none"> - Specifies VOC content of 200 g/L for cleanup solvents. - Specifies that may not use VOC-containing cleaning materials for spray equipment cleaning unless equipment is disassembled and cleaned in an enclosed gun cleaner. - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
464	Organic Chemicals Manufacturing Operations	<ul style="list-style-type: none"> - Specifies VOC content of 200 g/L and VOC partial pressure of 45 mm Hg for in-line solvent cleanup of process units and piping (with limited exception for 15 lb/day or less FDA-regulated applications). As an alternative to VOC content limits, an emission collection and control system with overall system efficiency of 85% and 90% control device efficiency must be used. - Specifies a 50 g/L VOC content limit for maintenance of mechanical parts and work area cleaning (with the limited exception for laboratory equipment). - Specifies closed storage for VOC cleaning solvent when not in use, and for the disposal of VOC-containing cloth, sponges, etc.
465	Polyester Resin Operations	<ul style="list-style-type: none"> - Specifies VOC content of 204 g/L for cleaning materials, unless used in an enclosed gun cleaner. Exempts cleaning of molds, spray equipment, or dispensing equipment used in gel coat or specialty resin operations that come in direct contact with polyester resin, provided that the monthly usage of exempt cleaning materials does not exceed 16 gallons.

Appendix C

RACT Analysis of Major Sources

Major Source	Page Number
Aerojet	73
Campbell Soup Supply Co.	80
Carson Cogeneration Project	82
Chevron	84
Cosumnes Power Plant (SMUD)	86
Kiefer Landfill	87
Procter & Gamble	90
Sacramento Cogeneration Authority	93
Santa Fe Pacific Pipeline	95
UC Davis Medical Center	97

Major Source: Aerojet

Potential to Emit

VOC: 83.5 ton/yr (major)
NOx: 163.8 tons/yr (major)

Facility Description

Aerojet manufactures liquid and solid propulsion systems and aerospace components in support of government and commercial contracts. Aerojet also manufactures ordnance items in support of government and commercial contracts. The plant consists of the following components that emit VOC or NOx:

- 8 Emergency IC engine/generators - diesel
- 14 Emergency IC engines/fire pumps – diesel
- One Emergency IC engines/electrical generator – propane
- 39 Small boilers (<5.0 mmBtu/hr)
- 20 Large boilers
- One Autoclave unit
- 60 Space heaters
- 15 Rocket testing stands
- 5 Aerospace coating operations (NESHAP)
- 7 Aerospace coating operations (non-NESHAP)
- Two RDX drying facilities
- Two Cold cleaning operations
- Two Bowl cleaning operations
- One Liquid waste volume reduction operation
- One Gasoline Dispensing Facility

Air Pollution Controls and Emission Limits

This facility is a major source of NOx and VOC. Emissions of NOx are produced from combustion of fossil fuels in the engines, boilers, autoclave, space heaters, and rocket test stands. VOC emissions are generated by the coating operations, the cleaning operations, the RDX drying, and as a byproduct of the combustion of fossil fuels in the engines, boilers, autoclave, space heaters, and rocket test stands.

IC Engines: The engines are all designated for emergency use, and are limited to a maximum of 100 hours of non-emergency use. These engines do not have any external controls, and are not subject to any rule based emissions limits. The engines are permitted to the following emission limits:

Permit Number	NOx Limit (grams/hp-hr)	VOC Limit (grams/hp-hr)
10294	14.1	1.14
10421	14.1	1.14
10422	14.1	1.14

Permit Number	NOx Limit (grams/hp-hr)	VOC Limit (grams/hp-hr)
10423	14.1	1.14
10426	14.1	1.14
10779	14.1	1.14
14748	6.02	1.14
15335	6.9	1
10408	14.1	1.14
10434	14.1	1.14
10435	14.1	1.14
10436	14.1	1.14
10437	14.1	1.14
10438	14.1	1.14
10439	14.1	1.14
10440	14.1	1.14
10441	14.1	1.14
10442	14.1	1.14
10443	14.1	1.14
10444	14.1	1.14
10445	14.1	1.14
10446	14.1	1.14
10424	12	0.72

Boilers: The boilers at the facility are all used for either steam or hot water. They are fired on a variety of fuels, and are not required to be equipped with external controls. The following boilers, all with capacities greater than or equal to 1 mmBtu/hr and less than 5 mmBtu/hr, are subject to the following NOx emission limits:

Permit Number	NOx Rule Limit (lb/mmBtu)	NOx Limit (lb/mmBtu)	VOC Limit (lb/mmBtu)
3255	n/a	0.1	0.006
3256	n/a	0.1	0.006
6440	n/a	0.1	0.006
10303	n/a	0.1	0.006
10304	n/a	0.1	0.006
10305	n/a	0.1	0.006
10306	n/a	0.1	0.006
10307	n/a	0.1	0.006
10308	n/a	0.1	0.006
10309	n/a	0.1	0.006
10310	n/a	0.1	0.006
10314	n/a	0.1	0.006
10315	n/a	0.1	0.006
10317	n/a	0.1	0.006
10319	n/a	0.1	0.006
10321	n/a	0.1	0.006
10322	n/a	0.1	0.006
10326	n/a	0.164	0.007
10327	n/a	0.164	0.007

Permit Number	NOx Rule Limit (lb/mmBtu)	NOx Limit (lb/mmBtu)	VOC Limit (lb/mmBtu)
10330	n/a	0.164	0.007
10331	n/a	0.164	0.007
10332	n/a	0.1	0.006
10333	n/a	0.1	0.006
10334	n/a	0.164	0.007
10337	n/a	0.1	0.006
10339	n/a	0.1	0.006
10341	n/a	0.164	0.007
10342	n/a	0.164	0.007
10353	n/a	0.1	0.006
10355	n/a	0.164	0.007
10356	n/a	0.164	0.007
10358	n/a	0.1	0.006
10361	n/a	0.1	0.006
12918	n/a	0.1	0.006
12933	n/a	0.164	0.006
13556	n/a	0.1	0.006
13558	n/a	0.1	0.006
14603	n/a	0.0364	0.005
16049	n/a	0.1	0.006
12357	0.036	0.036	0.003
12358	0.036	0.036	0.003
12363	0.036	0.036	0.004
12364	0.036	0.036	0.004
12366	0.036	0.036	0.004
12367	0.036	0.036	0.004
12368	n/a	0.093	0.004
12369	n/a	0.093	0.004
12370	n/a	0.093	0.004
12376	0.036	0.036	0.004
12377	0.036	0.036	0.005
12378	0.036	0.036	0.004
12935	0.036	0.036	0.005
13560	0.036	0.036	0.006
13561	0.036	0.036	0.006
13562	0.036	0.036	0.006
14064	0.051	0.051	0.002
14611	0.051	0.051	0.001
15436	0.036	0.036	0.005
18053	0.036	0.036	0.006

Autoclave: The autoclave includes a 1.8 mmBtu/hr natural gas fired burner, and is used to sterilize products. The burner is not equipped with any controls, and is not subject to any rule based emissions limits. The burner is permitted to the following emission limits:

Permit Number	NOx Limit (lb/mmBtu)	VOC Limit (lb/mmBtu)	Annual NOx Emission (lb/yr)	Annual VOC Emissions (lb/yr)
13563	0.1	0.006	1592	88

Space Heaters: The space heaters are used to heat indoor spaces, and are fired on natural gas. The space heaters are not equipped with any controls, and are not subject to any rule based emissions limits. Permit 12127 includes 36 units rated at 3.6 mmBtu/hr total for all units. Permit 13660 includes 24 units rated at 3 mmBtu/hr total for all units. The space heaters are permitted to the following emission limits:

Permit Number	NOx Limit (lb/mmBtu)	VOC Limit (lb/mmBtu)	Annual NOx Emission (lb/yr)	Annual VOC Emissions (lb/yr)
12127	0.1	0.006	3180	176
13660	0.094	0.011	1000	116

Rocket Testing Stands: The rocket testing stands are used to test rocket engines, and generate NOx and VOC emissions. The testing stands are not subject to any rule based emissions limits or permit emission limits. Some of the testing stands are equipped with the controls for pollutants other than VOC or NOx.

Aerospace Coating Operations: The aerospace coating operations generate VOC emissions. The coating operations utilize coatings that comply with the VOC content limits contained in Rule 456. Some of the coating operations are further limited to the following permit emission limits:

Permit Number	VOC Emission Limit
150	--
153	40 lb/day
5811	40 lb/day
6893	39.7 lb/day
6981	39.7 lb/day
7497	--
8217	--
8444	--
15602	10 lb/day
17204	39.7 lb/day
17205	39.7 lb/day
17830	9.7 lb/day

RDX Drying Facilities: The RDX (cyclotrimethylenetrinitramine) drying rooms generate VOC emissions from the drying of the RDX. The rooms are equipped with condensers for VOC control. The drying rooms are permitted to the following emission limits:

Permit Number	VOC Emission Limit
7779	150 lb/day
7780	150 lb/day

Cold Cleaning Operations: The cold cleaning operations are used to degrease parts and generate VOC emissions from the solvents used. The cold cleaning operations both employ water covers for VOC control, and are subject to the equipment requirements of Rule 454, Degreasing Operations.

Bowl Cleaning Operations: The bowl cleaning operations are used to clean rocket fuel mixing bowls, and generate VOC emissions from the cleaning solvents. The cleaning operations comply with Rule 456, which requires that the solvent either contains ≤ 200 g/l of VOC or has a VOC composite vapor pressure ≤ 45 mmHg at 68 °F.

Liquid Waste Volume Reduction Operation: The liquid waste volume reduction operation utilizes an evaporative tower, and generates VOC emissions from the material contained in the liquid being reduced. The reduction operation is not subject to any rule based emissions limits, and is permitted to the following emissions limit.

Permit Number	VOC Emission Limit	Annual VOC Emissions
18118	105 lb/qtr	420 lb/yr

Gasoline Dispensing Facility: The gasoline dispensing facility generates VOC emissions. The dispensing operation is equipped with vapor control equipment for VOC control as required by Rule 448 and 449.

RACT Discussion

The equipment at Aerojet is subject to the following rules:

Source Category	Applicable Rules	SIP Status
IC Engines	412	Approved 4/30/96
Boilers	411	Submitted 1/9/97
Autoclave	n/a	
Space Heaters	n/a	
Rocket Testing Stands	n/a	
Aerospace Coating Operations (NESHAP)	456	Approved 11/9/98
Aerospace Coating Operations (Non-NESHAP)	456	Approved 11/9/98
RDX Drying Facilities	n/a	
Cold Cleaning Operations	454	Approved 4/2/99
Bowl Cleaning Operations	456	Approved 11/9/98
Liquid Waste Volume Reduction Operation	n/a	
Gasoline Dispensing Facility	449	Approved 3/24/03

The IC engines are subject to Rule 412 – Stationary Internal Combustion Engines Located at Major Stationary Sources of NO_x, which has been determined to satisfy the RACT requirement for this source category.

The boilers are subject to Rule 411 – NO_x from Boilers, Process Heaters, and Steam Generators, which has been submitted to EPA for approval. Boilers between 1 mmBtu/hr and 5 mmBtu/hr will be required to meet more stringent emission limits under the recently amended Rule 411 in a phase-in from 2007 to 2009.

The aerospace coating operations and bowl cleaning are subject to Rule 456 – Aerospace Assembly and Component Coating Operations, which has been determined to satisfy the RACT requirement for this source category.

The cold cleaning operations are subject to Rule 454 – Degreasing Operations, which has been determined to satisfy the RACT requirement for this source category.

The gasoline dispensing facility is subject to Rule 449 – Transfer of Gasoline into Vehicle Fuel Tanks, which has been determined to satisfy the RACT requirement for this source category.

There is no EPA guidance on RACT that is applicable to the rocket test stands. There are no New Source Performance Standards (NSPS) or District rules that apply to the test stands. Control of emission from rocket test stands would require enclosures to capture the rapid release of rocket exhaust, which is not technically feasible for reasons of safety.

There is no EPA guidance on RACT that is applicable to the small natural gas combustors, used in the autoclave and space heaters. There are no New Source Performance Standards (NSPS) or District rules that apply to small natural gas combustors. In the recent amendments to Rule 411, the cost effectiveness of retrofit controls on boilers rated at 1 mmBtu/hr was estimated to be \$55,000/ton of NO_x reduced, which far exceeds what could be considered RACT.

There is no EPA guidance on RACT that is applicable to the liquid waste reduction. There are no New Source Performance Standards (NSPS) or District rules that apply to the reduction system. While the permitted emissions are 420 lb/yr, the actual emissions are below 54 lb/yr. Because the VOC content of the wastewater stream is very low (about 20 ppmw), there are no cost effective controls that can be applied to this process. In addition, the daily emissions are well below the 15 lb/day cut-off level for RACT recommended in EPA's "Bluebook" (*Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations*, May 25, 1988, revised January 11, 1990).

EPA guidance for the RDX dryers is contained in the 1994 ACT for batch processes, EPA-453/R-93-017. The model rule included with the ACT exempts batch processes when the aggregate emissions from the batch train are less than 10,000 lb/yr. Recent operating records show that the RDX dryers are used infrequently. In 2004, no RDX drying occurred. In 2005, one batch of RDX was dried, and a total of 255 pounds of VOC were emitted over the 19-day drying period. Because the annual emissions are significantly less than the 10,000 lb/yr cut off recommended in the ACT document, no further controls on this operation should be required to meet RACT.

Conclusion

The RACT requirements have been satisfied for the IC engines, boilers, aerospace coating operations, bowl cleaning, cold cleaning operations, and gasoline dispensing operations because these units are subject to SIP-approved rules that have been determined to satisfy RACT.

Small natural gas combustion units, rocket test stands, and the liquid waste volume reduction operation are not covered by a CTG or District rule. These units either have no cost-effective controls available, or have minimal emissions.

Annual emissions from the RDX dryers are below EPA's ACT guidance for RACT control of batch processes.

Major Source: Campbell Soup Supply Co.

Potential to Emit

VOC: 5.2 ton/yr (non-major)
NOx: 62 tons/yr (major)

Facility Description

The Campbell Soup Supply Company is a food processing facility that produces canned fruits and juices including tomato juices, tomato sauces, and soups. The plant contains five permitted emission units:

- Three natural gas-fired boilers, Cleaver Brooks model DLDH94, rated at 100 mmBtu/hr input each. These boilers can also fire on backup diesel fuel.
- One natural gas-fired boiler, Cleaver Brooks model CA28, rated at 139 mmBtu/hr input. This boiler can also fire on backup diesel fuel.
- One 136-horsepower, emergency standby diesel engine, Cummins model V-378-F2, driving an emergency water pump for fire control.

Air Pollution Controls and Emission Limits

This facility is a major source of NOx. Emissions of NOx are produced from fuel combustion in the four boilers and the emergency standby engine. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2005-03-01.

The four boilers are subject to NOx emission limits of 30 ppmv @ 3% O₂ when firing natural gas and 150 ppmv @ 3% O₂ when firing diesel fuel. The boiler can fire on diesel fuel only when natural gas is unavailable, and each boiler is limited to 168 hours per calendar year (including up to 48 hours per year for equipment and emissions testing) of operation on diesel fuel.

The emergency standby engine is limited to 40 hours per year of operation for maintenance purposes and 200 hours per year for operation for all operation (maintenance and emergency).

RACT Discussion

The four boilers are subject to Rule 411 – NOx from Boiler, Process Heaters and Steam Generators, which has been determined to satisfy the RACT requirement for this source category. The applicable NOx emission limit in Rule 411 is 30 ppmv @ 3% O₂ when firing on natural gas. When firing on diesel fuel, Rule 411 limits NOx emissions to 150 ppmv @ 3% O₂, provided that each boiler is limited to 168 hours per calendar year (including up to 48 hours per year for equipment and emissions testing) of operation on diesel fuel.

The emergency standby engine is subject to Rule 412 – Stationary Internal Combustion Engines at Major Stationary Sources of NOx, which has been determined to satisfy the RACT

requirement for this source category. However, emergency standby engines are exempt from the emission limits of Rule 412 as long as they are operated no more 100 hours per year for maintenance purposes. There is no guidance on RACT emission limits that is applicable to emergency standby engines, as such controls would not be cost effective.

Conclusion

The RACT requirements have been satisfied for the boilers and the emergency standby engine because these units are subject to SIP-approved rules that have been determined to satisfy RACT.

Major Source: Carson Cogeneration Project

Potential to Emit

VOC: 18.3 ton/yr (non-major)
NOx: 53.4 tons/yr (major)

Facility Description

The Carson Cogeneration Project is a combined cycle, cogeneration power plant with an electrical generating capacity of 171 MW. The facility also supplies up to 90,000 lb/hr of steam to a nearby chemical plant. The plant consists of the following components:

- One combined cycle gas turbine, General Electric model LM6000, rated at 42 MW (450 mmBtu/hr input), and fired with a combination of natural gas and digester gas.
- One heat recovery steam generator, incorporating a 99.9 mmBtu/hr duct burner, to produce steam from the hot turbine exhaust gas.
- One 17 MW steam turbine.
- One simple cycle peaking gas turbine, General Electric model LM6000, rated at 42 MW (450 mmBtu/hr input), and fired with a combination of natural gas and digester gas.
- One 830-horsepower, emergency standby diesel engine, Detroit Diesel model 12V-92TA, driving an emergency electrical generator.
- One cooling tower designed to circulate 22,000 gal/min of water.

Air Pollution Controls and Emission Limits

This facility is a major source of NOx. Emissions of NOx are produced from combustion of natural gas and digester gas in the two gas turbines and the duct burners, and from combustion of diesel fuel in the emergency standby engine.

The two gas turbines are equipped with selective catalytic reduction (SCR) to control NOx emissions to a permit limit of 5 ppmv @ 15% O₂. The duct burners are upstream of the SCR system, such that NOx emissions from the duct burners are also controlled to 5 ppmv @15% O₂.

The emergency standby engine applies a 4° injection timing retard in order to reduce NOx emissions. This engine is also limited to 30 hours per year of operation for maintenance purposes and 200 hours per year for operation for all operation (maintenance and emergency).

RACT Discussion

The gas turbines are subject to Rule 413 – Stationary Gas Turbines, which has been

determined to satisfy the RACT requirement for this source category. The applicable NO_x emission limit in Rule 413 is 9 ppmv @ 15% O₂.

The emergency standby engine is subject to Rule 412 – Stationary Internal Combustion Engines at Major Stationary Sources of NO_x, which has been determined to satisfy the RACT requirement for this source category. However, emergency standby engines are exempt from the emission limits of Rule 412 as long as they are operated no more 100 hours per year for maintenance purposes. There is no guidance on RACT emission limits that is applicable to emergency standby engines, as such controls would not be cost effective.

There is no EPA guidance on RACT that is applicable to the duct burners. There are, however, two New Source Performance Standards (NSPS) that apply to duct burners in combined cycle systems: Subparts Da and Db of 40 CFR Part 60. In each of these subparts, the NO_x standard for duct burners is 0.2 lb/mmBtu, which is equivalent to approximately 55 ppmv @15% O₂.

The duct burners fire into the hot turbine exhaust, and their emissions are therefore combined with the emissions from the turbines upstream of the emission controls. It is not feasible to operate the duct burners without operating the turbines. Therefore, the emissions from the duct burners are also subject to the NO_x limit of Rule 413, 9 ppmv @ 15% O₂. This level of control satisfies the requirements of RACT for this source type.

Conclusion

The RACT requirements have been satisfied for the gas turbines, duct burners, and the emergency standby engine because these units are subject to SIP-approved rules that have been determined to satisfy RACT.

Major Source: Chevron

Potential to Emit

VOC: >50 ton/yr (major)
NOx: 0 tons/yr (non-major)

Facility Description

The Chevron Sacramento Terminal is a bulk gasoline terminal that receives, stores and distributes diesel fuel, jet fuel and gasoline in the Sacramento area. The Chevron Sacramento Terminal also supplies these products to a large area of northern California. A pipeline from the Chevron Refinery in Richmond, California supplies the Sacramento terminal's storage tanks. Chevron is a major supplier of jet fuel in the Sacramento area, with fuel storage facilities at both Sacramento Metropolitan and Sacramento Executive airports. The Sacramento terminal supplies jet fuel to the two airports.

The majority of fuel products are received via a pipeline from the Chevron Richmond refinery and pumped into large storage tanks. The Techroline and ethanol additives for gasoline are received by tank truck and are also pumped into large storage tanks. From the storage tanks the fuel is loaded into cargo tank trucks at a loading rack equipped with vapor collection equipment vented to an absorption/carbon adsorption vapor recovery system. Vapors from the loading racks at the nearby Phillips terminal are also routed to Chevron's vapor recovery unit. The plant contains seven permitted emission units:

- A 1,772,736 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,030,092 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 54,894 gallon, fixed roof storage tank, vented to a vapor recovery system, and storing organic liquid with a vapor pressure less than 11 psi.
- A 2,023,702 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 2,028,658 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- An organic liquid loading rack, consisting of 15 gasoline loading spots with three pumps, 5 diesel loading spots with one pump, and 3 Jet A loading spots with one pump, all vented to a vapor recovery system.
- An absorption/carbon adsorption vapor recovery system, John Zink model AA-2475-12-10, with a capacity of 12,700 gallons per minute.

Air Pollution Controls and Emission Limits

This facility is a major source of VOC. Emissions of VOC are produced from working and standing losses from the storage tanks, the loading rack, and the vapor recovery system. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2002-06-01B.

The storage tanks are subject to Rule 446, Storage of Petroleum Products. Each of the tanks has a capacity greater than 40,000 gallons and stores organic liquids with a vapor pressure greater than 1.5 psi. The rule requires such tanks to be equipped with floating roofs or be vented to a control device with an overall efficiency of at least 95% by weight. Four of the tanks have internal floating roofs that comply with the rule requirements. The fixed roof tank is vented to the absorption/carbon adsorption vapor recovery system that is required to maintain an overall efficiency of at least 95% by weight.

The loading rack is subject to Rule 447, Organic Liquid Loading. The loading rack is limited to VOC emissions of 0.08 pounds per 1,000 gallons of organic liquid transferred. This requirement is met by venting the loading rack to the absorption/carbon adsorption vapor recovery system.

RACT Discussion

The VOC emission units at this facility are subject to two District rules that require controls that meet or exceed the requirements of RACT:

- Rule 446, Storage of Petroleum Products
- Rule 447, Organic Liquid Loading

There are no sources of VOC that are not controlled under one of these two rules.

Conclusion

The RACT requirements have been satisfied for the emission units at the Chevron bulk terminal, because all VOC emission units are subject to SIP-approved rules that have been determined to satisfy RACT.

Major Source: Cosumnes Power Plant (SMUD)

Potential to Emit

VOC: 30 ton/yr (non-major)
NOx: 125.6 tons/yr (major)

Facility Description

The SMUD Cosumnes Power Plant is a combined cycle power plant with an electrical generating capacity of 500 MW. The plant consists of the following components:

- Two combined cycle, natural gas-fired General Electric model 7FA gas turbines, rated at 171.2 MW (1,865 mmBtu/hr input) each.
- Two heat recovery steam generators to produce steam from the hot turbine exhaust gas.
- One 180 MW steam turbine.
- Two cooling towers, each designed to circulate 126,000 gal/min of water.

Air Pollution Controls and Emission Limits

This facility is a major source of NOx. Emissions of NOx are produced from natural gas combustion in the two gas turbines. The two gas turbines are equipped with dry low NOx combustors and selective catalytic reduction (SCR) to control NOx emissions to a permit limit of 2 ppmv @ 15% O₂.

RACT Discussion

The gas turbines are subject to Rule 413 – Stationary Gas Turbines, which has been determined to satisfy the RACT requirement for this source category. The applicable NOx emission limit in Rule 413 is 9 ppmv @ 15% O₂.

The gas turbines are also subject to the less stringent requirements of Title 40 of the Code of Federal Regulations, Part 60, Subpart GG – Standards of Performance for Stationary Gas Turbines. The applicable NOx limit from this regulation is 94 ppmv @ 15% O₂, based on a heat input rate of 11.5 kJ/w-hr.

Conclusion

The RACT requirements have been satisfied for the gas turbines because these units are subject to a SIP-approved rule that has been determined to satisfy RACT.

Major Source: Kiefer Landfill

Potential to Emit

VOC: 472 ton/yr (major)
NOx: 108 tons/yr (major)

Facility Description

The Kiefer Landfill is a municipal solid waste landfill owned and operated by the County of Sacramento, Department of Waste Management and Recycling. Decomposing waste within the landfill produces landfill gas that contains VOCs. A landfill gas collection system captures the landfill gas and sends it to be combusted in a flare or to be used a fuel in one of five internal combustion engines, which drive electrical generators designed to produce up to 15 MW of electricity. The Kiefer Landfill contains ten permitted emission units:

- A landfill gas collection system, consisting of perimeter well, interior wells, associated piping, and two 125-horsepower blowers (electric).
- A landfill gas flare, John Zink model ZTOF, with a maximum heat input of 150 mmBtu/hr and a maximum gas flow rate of 5,000 scfm.
- Five landfill gas-fired internal combustion engines, Caterpillar model G3616, each rated at 4,230 horsepower. Each engine drives a 3.05-MW electrical generator.
- A gasoline dispensing facility (GDF), consisting of a 2,500-gallon aboveground storage tank and one dispensing nozzle.
- A trommel screen, Wildcat Manufacturing Co. model 626 Cougar.
- A 158-horsepower diesel engine, portable (nonroad), Deutz Model BF6L914C, which drives the trommel screen.
- A green waste grinder, Peterson Pacific Corp. model HC5400.
- A 860-horsepower diesel engine, portable (nonroad), Caterpillar model 3412, which drives the green waste grinder.
- A 99-horsepower diesel engine, portable (nonroad), John Deere model 4045TF270, which provides auxiliary power to a street sweeper to operate the vacuum system and sweeping brushes.

Nonroad engines are exempt from RACT requirements because the District is preempted from establishing emission standards by Section 209(e) of the federal Clean Air Act. Therefore, there will be no further discussion of the nonroad engines.

Air Pollution Controls and Emission Limits

This facility is a major source of both VOC and NO_x. Both of these pollutants are emitted from the flare, the five landfill gas-fired engines, and the two diesel engines. VOC is also emitted from the landfill gas collection system and the gasoline dispensing facility. The emission limits and controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 96-10-03.

The landfill gas collection system consists of 59 perimeter wells and 73 interior wells with provisions for future expansion. Landfill gas is drawn through the wells and sent either to the flare or the five landfill gas-fired IC engines. The landfill gas collection system is subject to a permit requirement to maintain the methane concentration at the surface of the landfill to less than 500 ppm above background.

The flare is subject to a permit requirement to maintain at least 98% destruction efficiency for VOC, and is subject to an emission limit for NO_x of 0.06 lb/mmBtu.

The five landfill gas-fired IC engines are subject to a NO_x emission limit of 30 ppmv @15% O₂. In addition, the IC engines are required to maintain at least 98% destruction efficiency for VOC.

The gasoline dispensing facility is equipped with CARB-certified Phase I and Phase II vapor recovery systems that reduce VOC emissions by at least 95% by weight. The facility is permitted to dispense no more than 30,000 gallons of gasoline per calendar quarter.

RACT Discussion

The landfill gas collection system and flare are subject to the federal requirements of both New Source Performance Standards (NSPS, 40 CFR Part 60, Subpart WWW) and National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Part 63, Subpart AAAA). Both of these federal standards require the system to comply with the specific design and emission requirements of 40 CFR Sections 60.750 through 60.759. The NSPS and NESHAP standards are federally enforceable, and the SMAQMD has been delegated authority by U.S. EPA to enforce these standards. The landfill gas collection system is exempt from Rule 485, Municipal Landfill Gas, because rule 485 exempts sources that are subject to the NSPS.

There are no standards within the federal or SMAQMD rules that are applicable to the NO_x emissions from the flare. This is identified as a RACT deficiency, and will be remedied by submitting for inclusion in the SIP the portions of the permit that require a NO_x limit of 0.06 lb/mmBtu for the flare and the associated testing and recordkeeping requirements.

The five landfill gas-fired engines are subject to the NSPS/NESHAP requirement to maintain a destruction efficiency of at least 98% for VOC. The engines are also subject to Rule 412 – Stationary Internal Combustion Engines Located at Major Stationary Sources of NO_x. The applicable emission limits in Rule 412 are 65 ppmv NO_x and 750 ppmv VOC @15% O₂ (spark ignited, lean burn engines).

The gasoline dispensing facility is subject to Rule 448, Gasoline Transfer into Stationary

Storage Containers, and Rule 449, Transfer of Gasoline into Vehicle Fuel Tanks. These rules require CARB-certified Phase I and Phase II vapor recovery systems that reduce VOC emissions by at least 95% by weight.

Conclusion

The RACT requirements have been satisfied for the emission units at the Kiefer landfill, with the exception of NO_x emissions from the flare, because these units are subject to SIP-approved rules that have been determined to satisfy RACT, or federal NSPS and NESHAP requirements that have been determined to satisfy RACT.

The RACT deficiency noted for NO_x emissions from the flare will be remedied by submitting for inclusion in the SIP the portions of the permit that require a NO_x limit of 0.06 lb/mmBtu for the flare and the associated testing and recordkeeping requirements. This NO_x emission limit for the flare is equivalent to the most stringent limits in effect in other California districts. Both San Luis Obispo County APCD Rule 426 and Ventura County APCD Rule 74.17.1 require enclosed flares to meet a NO_x limit of 0.06 lb/mmBtu. This emission limit is considered to meet or exceed the requirements of RACT.

Major Source: Procter & Gamble

Potential to Emit

VOC: 444.9 ton/yr (major)
NOx: 11.6 tons/yr (non-major)

Facility Description

The Procter & Gamble Manufacturing Company (Procter & Gamble) Sacramento site is a complex industrial facility with many emission units and fugitive sources. It processes oils, such as coconut and palm kernel oil, to make a number of products. Products include fatty alcohols, glycerine, fatty acids, and fatty esters. Incoming oil is converted into methyl esters and glycerine. The glycerine is processed to remove some of the residual fatty materials and water. Crude esters are sent to distillation where methyl ester is separated into various fractions. Distilled esters are hydrogenated into fatty alcohol. The resulting crude alcohol is distilled and separated into various fractions. Another process in the plant converts fatty esters into fatty acids. This involves both reaction and purification steps. The plant sometimes processes intermediates shipped to and from other plants. The site contains emission sources generated from the oleochemical process as well as miscellaneous support equipment.

Procter & Gamble uses two centrifuge systems (each consisting of a centrifuge, slurry tank and effluent tank) to separate catalyst from fatty alcohol. Air, methanol vapor, and small amounts of entrained fatty alcohol are pulled from each tank under a slight vacuum, combined in a single vent header, and drawn through the methanol absorber. The methanol absorber consists of a packed-column unit where the methanol is absorbed by temperature controlled water. The resulting alcohol/methanol/water mixture is pumped to an oil/water separator to recover the fatty alcohol. The methanol/water mixture is then recovered back into the manufacturing process.

The Procter & Gamble facility contains the following permitted emission units:

- A storage tank farm, consisting of 50 fixed-roof, organic liquid storage tanks ranging in capacity from 3,087 gallons to 1,115,685 gallons, and loading racks for tanker truck and railcars.
- A physically refined oil process, consisting of: 4 fixed-roof, organic liquid storage tanks ranging in capacity from 375 gallons to 42,346 gallons; activated carbon and bleaching earth filter vessels; mixing tanks; and condensers.
- A fatty acids manufacturing process, consisting of: 17 fixed-roof, organic liquid storage tanks ranging in capacity from 3,672 gallons to 20,383 gallons; reactor vessels; stills; strippers; and condensers.
- A methyl ester/glycerine manufacturing process, consisting of: 44 fixed-roof, organic liquid storage tanks ranging in capacity from 185 gallons to 455,557 gallons; reactor vessels; centrifuges; absorbers; and condensers.
- A fatty alcohol manufacturing process, consisting of: 42 fixed-roof, organic liquid storage tanks ranging in capacity from 288 gallons to 41,018 gallons; reactor vessels; stills; strippers; absorbers; and condensers.
- A methanol absorber unit.

- A thermal fluid heater, Foster Wheeler model AV-5125-A, 32 mmBtu/hr, fired on natural gas.
- A hydrogen heater, Foster Wheeler, 4.4 mmBtu/hr, fired on natural gas.
- A methanol knockout drum.
- A fire pit that sprays a water mist into vented flammable gases.
- Two seal vent tanks.
- Two 65-gallon, packed bed methanol scrubbers.
- A physically refined oil process heater, GTS Energy model NUK600, 3.75 mmBtu/hr, fired on natural gas.
- A 209-hp standby diesel engine, Detroit Diesel model DDFP-04AT, used for fire pumping.

Air Pollution Controls and Emission Limits

This facility is a major source of VOC, which is emitted from organic liquid storage tanks, loading racks, reactors, stills, strippers, condensers, and process vents. In addition, fugitive VOC emissions result from the wastewater collection system and equipment leaks. Because the facility is not a major source of NO_x, emissions of NO_x are not discussed further. The emission limits and controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2004-02-01.

Organic liquid storage tanks are subject to the requirements of Rule 446, Storage of Petroleum Products, and Rule 464, Organic Chemical Manufacturing Operations. Rule 446 requires any organic liquid storage tanks with a capacity greater than 40,000 gallons and storing liquids with a vapor pressure greater than 1.5 psi to be equipped with VOC control devices such as internal or external floating roofs or other vapor recovery system with a recovery efficiency of at least 95% by weight. Rule 464 requires all storage tanks with a capacities between 55 gallons and 40,000 gallons and storing liquids with a vapor pressure greater than 1.5 psi to be equipped with pressure/vacuum valve. In addition, Rule 464 requires process tanks containing organic liquid with a vapor pressure greater than 0.5 psi and with uncontrolled emission greater than 15 pounds per day of VOC to be vented to a VOC capture and control system with a combined efficiency of at least 85% by weight and a control efficiency of at least 90% by weight. Process equipment in this category is also subject to the Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF).

Rule 464 requires all distillation columns, crystallizers, evaporators, and centrifuges which emit more than 15 pounds per day of uncontrolled VOC to be vented to a VOC capture and control system with a combined efficiency of at least 85% by weight and a control efficiency of at least 90% by weight. Separation devices containing organic liquids with a vapor pressure greater than or equal to 0.5 psi and with uncontrolled emission greater than 15 pounds per day of VOC must be vented to a VOC capture and control system with a combined efficiency of at least 85% by weight and a control efficiency of at least 90% by weight. Dryers and other production equipment with uncontrolled VOC emissions of 330 pounds per day or more of VOC must be vented to a VOC capture and control system with a combined efficiency of at least 85% by weight and a control efficiency of at least 90% by weight. Process equipment in this category is also subject to the Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF).

The wastewater collection system is also subject to Rule 464. All wastewater collection and transport devices containing wastewater with a VOC concentration of 500 ppm by weight or greater and with a flow rate of 1 liter per minute or greater, or with a VOC concentration of 10,000 ppm by weight or greater at any flow rate, are equipped with solid, vapor-tight, full contact fixed covers. Wastewater operations are also subject to the Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF).

Loading racks are subject to requirements under Rule 464. Loading operations involving transfer of organic liquids with a vapor pressure greater than 0.5 psi must be equipped with a vapor balance system or a VOC capture and control system with a combined efficiency of at least 85% by weight and a control efficiency of at least 90% by weight. Process equipment in this category is also subject to the Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF).

Fugitive emissions from equipment leaks are subject to the requirements of Rule 443, Leaks from Synthetic Organic Chemical and Polymer Manufacturing. Affected components include flanges, valves, pumps, compressors, open-ended lines, sampling connections, and pressure relief devices. Rule 443 requires an quarterly inspection and repair program to minimize the emissions of VOC from leaking components. A leak is defined as a liquid drip of greater than 3 drops per minute; a reading of 10,000 ppm or greater above background on a portable hydrocarbon detection instrument; or a visible mist. Fugitive emissions are also subject to the Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF).

RACT Discussion

The VOC emission units at Procter & Gamble are subject to three District rules and a NESHAP that, in combination, require controls that meet or exceed the requirements of RACT:

- Rule 443, Leaks from Synthetic Organic Chemical and Polymer Manufacturing
- Rule 446, Storage of Petroleum Products
- Rule 464, Organic Chemical Manufacturing Operations
- Miscellaneous Organic NESHAP (40 CFR Part 63, Subpart FFFF)

The District has been delegated enforcement authority for the NESHAP. Full compliance is required by May 10, 2008.

There are no District rules that limit the emissions of VOC from the gas-fired combustion equipment. However, Staff is not aware of any cost effective controls that can be applied to VOC emissions from the combustion of natural gas, nor is there any federal guidance for such controls. The combustion process itself is inherently efficient in destroying VOC.

Conclusion

The RACT requirements have been satisfied for the emission units at Procter & Gamble, because all VOC emission units are subject to SIP-approved rules and/or the NESHAP that have been determined to satisfy RACT. There are no applicable RACT controls for VOC emissions from the gas-fired combustion equipment.

Major Source: Sacramento Cogeneration Authority

Potential to Emit

VOC: 16.8 ton/yr (non-major)
NOx: 99.4 tons/yr (major)

Facility Description

The Sacramento Cogeneration Authority is a combined cycle, cogeneration power plant with an electrical generating capacity of 171 MW. The facility also supplies up to 90,000 lb/hr of steam to a nearby chemical plant. The plant consists of the following components:

- Two combined cycle, natural gas-fired General Electric model LM6000 gas turbines, rated at 42 MW (450 mmBtu/hr input) each.
- Two heat recovery steam generators, each incorporating an 83.2 mmBtu/hr duct burner, to produce steam from the hot turbine exhaust gas.
- One 45 MW steam turbine.
- One simple cycle, natural gas-fired General Electric model LM6000 gas turbine, rated at 42 MW (450 mmBtu/hr input).
- One 108.7 mmBtu/hr auxiliary boiler to provide steam when the combined cycle turbines are not operating.
- One cooling tower designed to circulate 48,850 gal/min of water.

Air Pollution Controls and Emission Limits

This facility is a major source of NOx. Emissions of NOx are produced from natural gas combustion in the three gas turbines, the duct burners, and the auxiliary boiler. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 97-12-01.

The three gas turbines are equipped with water injection and selective catalytic reduction (SCR) to control NOx emissions to a permit limit of 5 ppmv @ 15% O₂. The duct burners are upstream of the SCR systems, such that NOx emissions from the duct burners are also controlled to 5 ppmv @15% O₂.

The auxiliary boiler is equipped with ultra low NOx rapid mix burners to control NOx emissions to a permit limit of 9 ppmv @ 3% O₂. However, when the boiler is operating at less than 25% of full load, the unit is permitted to emit 30 ppmv @ 3% O₂ due to technological limitations of the burner at low loads.

RACT Discussion

The gas turbines are subject to Rule 413 – Stationary Gas Turbines, which has been determined to satisfy the RACT requirement for this source category. The applicable NOx emission limit in Rule 413 is 9 ppmv @ 15% O₂.

The gas turbines are also subject to the less stringent requirements of Title 40 of the Code of Federal Regulations, Part 60, Subpart GG – Standards of Performance for Stationary Gas Turbines. The applicable NOx limit from this regulation is 96 ppmv @ 15% O₂, based on a heat input rate of 11.3 kJ/w-hr.

The auxiliary boiler is subject to Rule 411 – NOx from Boilers, Process Heaters, and Steam Generators, which has been determined to satisfy the RACT requirement for this source category. The applicable NOx emission limit in Rule 411 is 30 ppmv @ 3% O₂.

There is no EPA guidance on RACT that is applicable to the duct burners. There are, however, two New Source Performance Standards (NSPS) that apply to duct burners in combined cycle systems: Subparts Da and Db of 40 CFR Part 60. In each of these subparts, the NOx standard for duct burners is 0.2 lb/mmBtu, which is equivalent to approximately 55 ppmv @15% O₂.

The duct burners fire into the hot turbine exhaust, and their emissions are therefore combined with the emissions from the turbines upstream of the emission controls. It is not feasible to operate the duct burners without operating the turbines. Therefore, the emissions from the duct burners are also subject to the NOx limit of Rule 413, 9 ppmv @ 15% O₂. This level of control satisfies the requirements of RACT for this source type.

Conclusion

The RACT requirements have been satisfied for the gas turbines, duct burners, and the auxiliary boiler because these units are subject to SIP-approved rules that have been determined to satisfy RACT.

Major Source: Santa Fe Pacific Pipeline

Potential to Emit

VOC: 90.1 tons/yr (major)
NOx: 8.1 tons/yr (non-major)

Facility Description

The Santa Fe Pacific Pipeline (SFPP) bulk terminal was constructed and placed into service in 1957. The terminal receives refined fuels via SFPP's 10" and 12" pipelines. These fuels are held temporarily in storage tanks and then loaded into tank trucks to resupply surrounding retail gas stations and public/private businesses. Additional product can be transferred by 3" and 4" pipelines to the properties that were formally McClellan Air Force Base and Mather Air Force Base but are now non-military airports. The petroleum products stored and dispensed at the terminal are not owned by SFPP. SFPP only provides storage tank capacity and tank truck loading equipment for the amounts and types of petroleum products requested by the companies that use its services.

The plant contains 15 permitted emission units:

- A 1,985,424 gallon, external floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,985,298 gallon, external floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,978,326 gallon, external floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,986,390 gallon, external floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 547,092 gallon, external floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,079,862 gallon, external floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 193,284 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 809,802 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,515,318 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 1,216,992 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A 808,710 gallon, internal floating roof storage tank, storing organic liquid with a vapor pressure less than 11 psi.
- A loading rack consisting of 2 gasoline loading spots with 4 pumps and 2 diesel loading spots with 2 pumps, and vented to a vapor recovery system.

- A loading rack consisting of 2 gasoline loading spots with 3 pumps, 2 diesel loading spots with 1 pump, and 1 transmix loading spot with 1 pump, and vented to a vapor recovery system.
- A loading rack consisting of 2 gasoline loading spots with 2 pumps, 2 diesel loading spots with 2 pumps, and 1 Jet A loading spot with 1 pump, and vented to a vapor recovery system.
- A vapor collection refrigeration/thermal oxidizer system with a capacity of 800 cubic feet per minute, consisting of a refrigerated condenser, Edwards model DEC-3600, and a thermal oxidizer, John Zink model S76300.

Air Pollution Controls and Emission Limits

This facility is a major source of VOC. Emissions of VOC are produced from working and standing losses from the storage tanks, the loading racks, and the vapor recovery system. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2002-04-02.

The storage tanks are subject to Rule 446, Storage of Petroleum Products. Each of the tanks has a capacity greater than 40,000 gallons and stores organic liquids with a vapor pressure greater than 1.5 psi. The rule requires such tanks to be equipped with floating roofs or be vented to a control device with an overall efficiency of at least 95% by weight. Six of the tanks have external floating roofs that comply with the rule requirements. The other five tanks have internal floating roof that comply with the rule requirements.

The loading racks are subject to Rule 447, Organic Liquid Loading. The loading racks are limited to VOC emissions of 0.08 pounds per 1,000 gallons of organic liquid transferred. This requirement is met by venting the loading racks to the absorption/carbon adsorption vapor recovery system.

RACT Discussion

The VOC emission units at this facility are subject to two District rules that require controls that meet or exceed the requirements of RACT:

- Rule 446, Storage of Petroleum Products
- Rule 447, Organic Liquid Loading

There are no sources of VOC that are not controlled under one of these two rules.

Conclusion

The RACT requirements have been satisfied for the emission units at the SFPP bulk terminal, because all VOC emission units are subject to SIP-approved rules that have been determined to satisfy RACT.

Major Source: UC Davis Medical Center

Potential to Emit

VOC: 29 tons/yr (non-major)
NOx: 91 tons/yr (major)

Facility Description

The University of California, Davis (UC Davis) operates the UC Davis Medical Center in Sacramento. The UC Davis Medical Center is a health care provider for the community and a teaching hospital for the UC Davis School of Medicine. The university established the Medical Center in 1973 to support the clinical and research missions of the then new UC Davis School of Medicine. Licensed for 528 beds and fully accredited, UC Davis Medical Center is the region's dominant Level I comprehensive adult and pediatric trauma center.

Electrical power for the facility is generated from an onsite co-generation central power plant. The electrical generation plant uses a natural gas fueled gas turbine to generate electricity and captures the heat emitted by the gas turbine to produce steam for heating and cooling. In addition, four large and eight small natural gas fueled boilers provide steam when the gas turbine capacity is exceeded or the gas turbine is out of service. Emergency electrical power is provided by eight diesel fueled internal combustion engines driving electrical generators. Emergency water pumping for fire fighting is provided by one internal combustion engine driving a fire pump.

The facility contains 22 permitted emission units:

- A gas turbine, General Electric model LM 2500, with an input capacity of 260 mmBtu/hr, fired on natural gas. The turbine is equipped with water injection and selective catalytic reduction (SCR) for NOx control, and an oxidation catalyst for CO control.
- Four 34.1 mmBtu/hr boilers, Johnston Boiler Company model PFTA750-4LG-150S, fired with natural gas as primary fuel and diesel as a backup fuel.
- Five 2,876-hp diesel engines, Caterpillar model 3516B DITA SC 140F, driving emergency backup electrical generators.
- Eight 0.4 mmBtu/hr boilers, Bryan model MOD-400S-100-G, fired on natural gas, used for hot water heating.
- A 750-hp diesel engine, Cummins model KTTA19G2, driving an emergency backup electrical generator.
- A 156-hp diesel engine, Caterpillar model FM/ULI/3208 DINA, driving a water pump for fire fighting.
- A 890-hp diesel engine, Caterpillar model 3412, driving an emergency backup electrical generator.
- A 68-hp diesel engine, Cummins model 4B3.9-G, driving an emergency backup electrical generator.
- A gasoline dispensing facility, consisting of two 10,000 gallon underground gasoline tanks, one 10,000 gallon underground diesel tank, and 3 dispensing nozzles. The dispensing facility is equipped with Phase I and Phase II vapor recovery.

Air Pollution Controls and Emission Limits

This facility is a major source of NO_x. Emissions of NO_x are produced the gas turbine, 12 boilers, and 9 diesel engines. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2005-16-01

The gas turbine is equipped with water injection and SCR to control NO_x emissions to a permit limit of 5 ppmv @ 15% O₂.

The four 34.1 mmBtu/hr boilers are equipped with low NO_x burners that control NO_x emissions to a permit limit of 30 ppmv NO_x @ 3% O₂ when firing on natural gas and 40 ppmv NO_x @ 3% O₂ when firing on diesel fuel. These boilers can fire on diesel fuel only when natural gas is unavailable, and each boiler is limited to 168 hours per calendar year (including up to 48 hours per year for equipment and emissions testing) of operation on diesel fuel. The eight 0.4 mmBtu/hr boilers have permitted emissions of 100 pounds of NO_x per million cubic feet of natural gas.

Four of the 2,876-hp emergency standby diesel engines are limited to 50 hours per year of operation for maintenance purposes and 750 hours per year for operation for all operation (maintenance and emergency). The other 2,876-hp emergency standby diesel engine is limited to 50 hours per year of operation for maintenance purposes and 200 hours per year for operation for all operation.

The 750-hp, 156-hp, 890-hp, and 68-hp emergency standby diesel engines are limited to 40 hours per year of operation for maintenance purposes and 200 hours per year for operation for all operation.

The gasoline dispensing facility is equipped with CARB-certified Phase I and Phase II vapor recovery systems that reduce VOC emissions by at least 95% by weight. The facility is permitted to dispense no more than 30,000 gallons of gasoline per calendar quarter.

RACT Discussion

The gas turbine is subject to Rule 413 – Stationary Gas Turbines, which has been determined to satisfy the RACT requirement for this source category. The applicable NO_x emission limit in Rule 413 is 9 ppmv @ 15% O₂.

The four 34.1 mmBtu/hr boilers are subject to Rule 411 – NO_x from Boiler, Process Heaters and Steam Generators, which has been determined to satisfy the RACT requirement for this source category. The applicable NO_x emission limit in Rule 411 is 30 ppmv @ 3% O₂ when firing on natural gas. When firing on diesel fuel, Rule 411 limits NO_x emissions to 150 ppmv @ 3% O₂, provided that each boiler is limited to 168 hours per calendar year (including up to 48 hours per year for equipment and emissions testing) of operation on diesel fuel.

The eight 0.4 mmBtu/hr boilers are exempt from the requirements of Rule 411 because they have input ratings less than 1 mmBtu/hr. The eight boilers have a combined potential to emit

(uncontrolled) of less than 8 lb/day. Although, EPA's "Bluebook" (*Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations*, May 25, 1988, revised January 11, 1990) does not address NO_x, it does establish a de minimus level for VOC emissions from coating operations of 15 lb/day actual emissions. Adapting this guidance for NO_x emissions, the eight boilers are considered to be a de minimus source of NO_x.

The emergency standby engines are subject to Rule 412 – Stationary Internal Combustion Engines at Major Stationary Sources of NO_x, which has been determined to satisfy the RACT requirement for this source category. However, emergency standby engines are exempt from the emission limits of Rule 412 as long as they are operated no more 100 hours per year for maintenance purposes. There is no guidance on RACT emission limits that is applicable to emergency standby engines, as such controls would not be cost effective.

The gasoline dispensing facility is subject to Rule 448, Gasoline Transfer into Stationary Storage Containers, and Rule 449, Transfer of Gasoline into Vehicle Fuel Tanks. These rules require CARB-certified Phase I and Phase II vapor recovery systems that reduce VOC emissions by at least 95% by weight.

Conclusion

The RACT requirements have been satisfied for the emission units at the UC Davis Medical Center, because all VOC and NO_x emission units are subject to or exempt from SIP-approved rules that have been determined to satisfy RACT.

Appendix D

Permit to Operate 17359 for the Kiefer Landfill Flare

Permit Description

The permit being submitted for inclusion in the SIP is the local District permit for the air pollution control landfill gas flare (currently P/O 17359). Permit conditions that have been left blank do not pertain to the NO_x 0.06 lbs/mmBtu limit on the flare permit. A copy of the permit is attached to this document.

Additional Conditions to be Included in the Permit:

California Health and Safety Code Section 42301.10 states "In any district that has a permit system established pursuant to Section 42300, the air pollution control officer may include, in any permit issued to a Title V source, emission limits, standards, and other requirements that ensure compliance with all federal Clean Air Act "applicable requirements," as that term is defined in regulations adopted by the Environmental Protection Agency pursuant to Title V, including those requirements specified in an applicable implementation plan as defined by Section 7602 (q) of Title 42 of the United States Code, and Parts C (42 U.S.C. Sec. 7470 et seq.) and D (42 U.S.C. Sec. 7501 et seq.) of Title I of the Clean Air Act.

42 U.S.C. Section 7602(q) refers to 42 U.S.C. Section 7410 which includes the general SIP requirements. The RACT SIP is an update to the General SIP. Pursuant to Health and Safety Section 42301.10 the Air Pollution Control officer may include any additional conditions that are needed to meet the RACT SIP requirements.

The following conditions will be added to the permit at its next update: 1) the NO_x limit under Condition #6 shall remain in effect regardless of the permit expiring or reissuance of the permit; 2) the emission limit satisfies the RACT requirement; 3) require copies of the source test results to be available at the facility for 5 years; and 4) the specific source test method that will be used to determine compliance with the NO_x limit.

Specific Conditions to Be Added:

RACT DETERMINATION

28. This permit incorporates a Reasonably Available Control Technology (RACT) determination as required by Title I provisions of the Clean Air Act Amendments.
29. The expiration date shown on this permit is for state purposes. For Federal enforcement purposes the RACT provisions of this permit that are approved by U.S. Environmental Protection Agency (EPA) shall remain in effect as part of the State Implementation Plan (SIP) until replaced pursuant to 40 CFR 51 and approved by the EPA.

Specific Conditions to be Amended:

- The following will be added to existing Condition 16 under the "At all times" column.
- 16.F. Records of sources test plans and results to determine compliance with the NO_x limit in Condition #6 shall be maintained for a minimum of 5 years.

The following will be added to Condition #27.

27.F. Compliance with the NOX limit shall be determined using one of the following source test methods:

- 1) ARB Method 100;
- 2) EPA Method 7E; or
- 3) Any other method approved by the U.S. Environmental Protection Agency, the California Air Resources Board, and the Air Pollution Control Officer.

SACRAMENTO METROPOLITAN


AIR QUALITY
MANAGEMENT DISTRICT

PERMIT TO OPERATE

Kiefer Landfill
Department of Waste Management and Recycling
County of Sacramento
9850 Goethe Road
Sacramento, CA 95827

Equipment Location: 12701 Kiefer Boulevard and Grantline Road, Sacramento

PERMIT NO.	EQUIPMENT DESCRIPTION
17359	Air Pollution Control Landfill Gas Flare, , enclosed type,

SUBJECT TO THE FOLLOWING CONDITIONS:

GENERAL REQUIREMENTS

1. The equipment shall be properly maintained.

2.

3.

4.

Date Issued: 08-07-2006

Larry Greene
SMAQMD Air Pollution Control Officer

by: Bruce Nixon

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

EMISSION LIMIT REQUIREMENTS

5.

6. Emissions from the Landfill Gas Flare shall not exceed the following:

Pollutant	Maximum Allowable Emissions
NOx	0.06 lb/MMBTU (high heating value)

7.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

8. A.

B.

EQUIPMENT OPERATION REQUIREMENTS

9.

10. A sampling port, or other method approved by the SMAQMD Air Pollution Control Officer, shall be installed at the inlet gas line to the Landfill Gas Flare. The sampling port shall be located so that an accurate volume flow measurement can be performed.

11. Landfill Gas Flare exhaust sample ports shall be permanent, accessible and located and constructed as per applicable U.S. EPA, CARB and U.S. OSHA requirements.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

12.

13.

14.

15

RECORDKEEPING AND REPORTING REQUIREMENTS

16.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

17.

18.

19.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

20. . The files shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks or on microfiche.

Frequency	Information to be recorded
At all times	C. All required maintenance performed on the air pollution control and monitoring equipment.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

EMISSION REDUCTION CREDIT (ERC) REQUIREMENTS

21. -----

22.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

23.

24.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

26.

EMISSION TESTING REQUIREMENTS

27. An emission test shall be conducted each calendar year to demonstrate compliance with Condition Nos. 6,
- A. Submit a source test plan to the SMAQMD Air Pollution Control Officer for approval at least 30 days before the source test is to be performed.
 - B. Notify the SMAQMD Air Pollution Control Officer at least 7 days prior to the source test date.
 - C. Submit the source test report to the SMAQMD Air Pollution Control Officer within 60 days from the completion of the source test.
 - D. The source test shall be conducted at the exhaust of the landfill gas flare (except for hydrogen sulfide test which shall use the inlet) and shall include a test for:
 - 1.
 - 2. Nitrogen oxides, NOx
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
 - E.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
PERMIT TO OPERATE

Your application for this air quality Permit to Operate was evaluated for compliance with Sacramento Metropolitan Air Quality Management District (SMAQMD), state and federal air quality rules.

ATTACHMENT A

Kiefer Landfill
County of Sacramento