

**SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT**

STAFF REPORT

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

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Prepared by: David Yang
Assistant Air Quality Engineer

Kevin J. Williams, Ph.D.
Program Coordinator

Reviewed by: Aleta Kennard
Program Supervisor

Approved by: Brigette Tollstrup
Division Manager

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 NO_x 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 NO_x.

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 NO_x.

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.

On October 26, 2006, the District's Board of Directors adopted a revision to the SIP that fulfilled the aforementioned federal requirements, and this SIP revision was submitted by the California Air Resources Board (CARB) to EPA on July 11, 2007.

Since that time, EPA has promulgated seven new CTGs. In addition, the air districts of the Sacramento Federal Nonattainment Area submitted a letter to CARB in February of 2008 to request a voluntary "bump-up" to a classification of "severe" nonattainment, as provided by Section 181(b)(3) of the federal Clean Air Act. On February 14, 2008, CARB requested that EPA reclassify this area to "severe." It is anticipated the EPA will take action on this request by the end of 2008. A reclassification to severe nonattainment will reduce the major source emissions threshold from 50 to 25 tons per year of either VOC or NOx, imposing RACT requirements on additional sources within the District.

The purpose of this staff report is to provide sufficient analysis of the new CTG categories, and of sources which will become major sources upon reclassification to severe nonattainment, 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 new CTG source categories for which the District has no applicable rule, determine whether the District has sources in these categories.
- For new 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 these CTG source categories.
- For sources which will become major sources upon reclassification to severe nonattainment, determine the types of emission units at each source and determine which District rules apply to these sources. The RACT requirement is satisfied for a major source of VOC and/or NOx when all units that emit these pollutants are subject to District rules that have been determined to satisfy RACT. Appendix B contains the analyses for these sources.

Staff reviewed the seven new CTGs that have been promulgated by EPA, and determined which District rules are applicable to the CTG categories. RACT analyses for the four CTG categories for which the District has an applicable rule are included in Appendix A. For the three CTG categories for which the District has no applicable rule, Staff reviewed the database of permitted sources, the yellow pages, and business listings to determine whether there are any sources in these categories in Sacramento County. Staff determined that there are no CTG categories for which the District has sources but no applicable rule. Table 1 lists the new CTG categories, the applicable District rules, and the SIP status of the rules.

Table 1 – New CTG Source Categories

CTG Category	CTG Date	SMAQMD Rule No. (Most Recent Amendment)	SIP Status
Offset Lithographic and Letterpress Printing EPA 453/R-06-002	Sept. 2006	450 (3/23/00)	Adopted 12/5/96; Approved 11/13/98
Flexible Package Printing EPA 453/R-06-003	Sept. 2006	450 (3/23/00)	Adopted 12/5/96; Approved 11/13/98
Flat Wood Paneling Coatings EPA 453/R-06-004	Sept. 2006	No Sources	Not applicable
Industrial Cleaning Solvents EPA 453/R-06-001	Sept. 2006	466 (5/23/02)	Adopted 5/23/02; Not yet submitted
Paper, Film, and Foil Coatings EPA 453/R-07-003	Sept. 2007	No Sources	Not applicable
Large Appliance Coatings EPA 453/R-07-004	Sept. 2007	No Sources	Not applicable
Metal Furniture Coatings EPA 453/R-07-005	Sept. 2007	451 (10/2/97)	Adopted 11/29/83; Approved 1/24/85 Adopted 9/5/96; No EPA Action

Staff reviewed the permitting records of sources within the District to compile a list of sources which will become major sources of VOC and/or NOx upon reclassification to severe nonattainment. These sources were not included in the October 26, 2006 SIP revision, except for Cosumnes Power Plant and UC Davis Medical Center, which were included as major sources of NOx but not VOC. A bump-up to severe nonattainment will reduce the major source threshold to a potential-to-emit exceeding 25 tons per year of either VOC or NOx. Table 2 lists the sources that were not included in the October 26, 2006 SIP revision but will become major sources under a bump-up. RACT analyses of these sources are included in Appendix B.

Table 2 – New Major Sources of VOC and NOx within SMAQMD Based on a Threshold of 25 Tons per Year

Major Source	Major Pollutant(s)
Cosumnes Power Plant (SMUD)	VOC, NOx*
Grafil	NOx
Sacramento Power Authority	NOx
Silgan Can Company	VOC
UC Davis Medical Center	VOC, NOx*

* These sources were included in the October 26, 2006 SIP revision as major sources of NOx. A bump-up to severe nonattainment will make them major sources of VOC, also.

Major sources are required to meet RACT for all emission units that emit the pollutant(s) exceeding major source thresholds. Staff reviewed the emission units at each of the new major sources and determined that all applicable source categories, including those not covered by a CTG, were analyzed previously in the October 26, 2006 SIP revision.

CONCLUSION

Based on the RACT analyses performed in Appendices A and B, and the previous analyses performed for the October 26, 2006 SIP revision, 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 exceptions:

- For flexible package printing, Rule 450 does not meet the CTG requirements for mandatory control equipment on printing presses with potential to emit, prior to controls, of at least 25 tons/year of VOC. Staff is proposing to correct this RACT deficiency by amending Rule 450 to require control equipment on these presses, consistent with the CTG recommendations. These amendments are scheduled for a public hearing on September 25, 2008. Following adoption, the amended rule will be submitted for inclusion in the SIP.
- For offset lithographic and letterpress printing, Rule 450 does not meet the CTG requirements for mandatory control equipment on printing presses with potential to emit, prior to controls, of at least 25 tons/year of VOC. In addition, the CTG recommends more stringent VOC content limits for fountain solutions used by offset lithographic printing sources with actual emissions of VOC of at least 15 lb/day (equivalent to 450 lb/month). Staff is proposing to correct these RACT deficiencies by amending Rule 450 to require mandatory control equipment on presses with potential to emit, prior to controls, of at least 25 tons/year of VOC and to set more stringent VOC limits, consistent with the CTG recommendations, for fountain solutions used by offset lithographic printing sources with actual emissions of VOC of at least 450 lb/month. These amendments are scheduled for a public hearing on September 25, 2008. Following adoption, the amended rule will be submitted for inclusion in the SIP.
- For metal furniture coating operations, the VOC content limits recommended in the CTG for general one-component, extreme high gloss, and extreme performance coatings are more stringent than those required by Rule 451. In addition, Rule 451 allows the use of an emission control system with an overall efficiency of 85%, whereas the CTG recommends 90% overall efficiency. Staff is proposing to correct these RACT deficiencies by amending Rule 451 to include the CTG-recommended VOC content limits for metal furniture coatings, applicable to sources with actual VOC emissions of at least 3 tons per 12-month rolling period, and to increase the overall efficiency required for emissions control equipment to 90%. These amendments are scheduled for a public hearing on September 25, 2008. Following adoption, the amended rule will be submitted for inclusion in the SIP.

As noted above, the current versions of Rules 450 and 451 do not contain requirements as stringent as the CTG recommendations in some instances. However, Staff has determined that no sources will be required to modify their operations if the CTG-recommended requirements are adopted. Current sources are either below the applicability thresholds or already comply with the

CTG requirements.

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

- Flat Wood Paneling Coatings
- Paper, Film and Foil Coatings
- Large Appliance Coatings

ENVIRONMENTAL REVIEW AND COMPLIANCE

No sources will be required to modify their operations as a result of the commitments proposed in this SIP revision. Staff has determined that current sources are either below the applicability thresholds of the new requirements or already comply with the new requirements. 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 New CTG Source Categories

Appendix B: RACT Analysis of New Major Sources under a Bump-Up to Severe Nonattainment

Appendix A

RACT Analysis of New CTG Source Categories

CTG Category	Page Number
Flexible Package Printing	8
Industrial Cleaning Solvents	11
Metal Furniture Coatings	15
Offset Lithographic and Letterpress Printing	19

Category: Flexible Package Printing

EPA RACT Guidance

Control Techniques Guidelines for Flexible Package Printing, EPA 453/R-06-003, September 2006.

Applicability

The CTG applies to flexible package printing operations, which includes printing on items such as bags, pouches, liners, and wraps utilizing paper, plastic, film, aluminum foil, metalized or coated paper or film, or any combination of these materials. The CTG provides control recommendations for reducing VOC emissions from inks, coatings, adhesives and cleaning materials. The control recommendations for inks, coatings, and adhesives apply to printing presses with potential to emit, prior to controls, of at least 25 tons/year of VOC. The control recommendations for cleaning materials apply to facilities with actual emissions, prior to controls, of at least 15 lb/day of VOC from all flexible package printing and cleaning operations.

RACT Requirements

The CTG recommends two options for reducing emissions from coatings, inks, and adhesives: emissions control equipment, and low VOC materials.

For emissions control equipment, the recommended control levels in the CTG include the following:

- 65% overall control for a press that was first installed prior to March 14, 1995 and that is controlled by an add-on air pollution control device whose first installation date was prior to the effective date of the State RACT rule.
- 70% overall control for a press that was first installed prior to March 14, 1995 and that is controlled by an add-on air pollution control device whose first installation date was on or after the effective date of the State RACT rule.
- 75% overall control for a press that was first installed on or after March 14, 1995 and that is controlled by an add-on air pollution control device whose first installation date was prior to the effective date of the State RACT rule.
- 80% overall control for a press that was first installed on or after March 14, 1995 and that is controlled by an add-on air pollution control device whose first installation date was on or after the effective date of the State RACT rule.

As an alternative to using emission control equipment, the CTG also recommends limits on the VOC content of materials that are consistent with an 80% reduction in emissions. The recommended VOC content limits are 0.8 kg VOC/kg solids applied or 0.16 kg VOC/kg material applied.

The CTG also recommends work practices to reduce emissions from cleaning materials. These recommendations are to:

- Keep cleaning materials and used shop towels in closed containers,
- Convey cleaning materials from one location to another in closed containers or pipes.

Other Federal Requirements

Subpart FFF of 40 CFR part 60, Standards of Performance for Flexible Vinyl and Urethane Coating and Printing (NSPS) 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) applies to graphic arts operations, including screening printing, flexographic printing, lithographic printing and letterpress printing, and any coating or laminating operation associated with flexible packaging material. As noted in the 2006 CTG, flexible package printing is almost entirely conducted by gravure and flexographic printing methods.

Although gravure printing is exempt from the requirements of Rule 450, there are no gravure printing operations in the District and the October 26, 2006 SIP revision included a negative declaration for gravure printing.

For flexographic printing, Rule 450 limits the VOC content of inks, adhesives, coatings, and cleaning materials to the following:

- Printing ink: 300 g/l
- Adhesives: 150 g/l
- Coatings: 300 g/l
- Cleaning materials
- General Maintenance/Repair: 72 g/l
- Press Components: 100 g/l and VOC partial pressure of 3 mm Hg at 20 °C

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 requires that all VOC materials and VOC-containing cloth, sponges, and other materials used for solvent cleaning be stored in closed containers when not in use.

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

Rule 450 is not as stringent as the 2006 CTG for Flexible Package Printing for presses with potential to emit, prior to controls, of at least 25 tons/year of VOC. The VOC limits for inks, adhesives, and coatings in Rule 450 are higher than the CTG-recommended limit of 0.16 lb VOC/kg material, and Rule 450 does not require control equipment for these sources. Staff is proposing to correct the RACT deficiency by amending Rule 450 to include the following control device requirements for presses used in flexible package printing with potential to emit, prior to controls, of at least 25 tons/year of VOC:

- 70% overall efficiency for a press that was first installed prior to March 14, 1995.
- 80% overall efficiency for a press that was first installed on or after March 14, 1995.

The CTG-recommended control efficiencies for control devices installed prior to the date of adoption are not applicable because there are currently no flexible package printing presses within the District that have installed control devices.

In addition, Staff is proposing to include the recommended work practice requirements to keep cleaning materials and used shop towels in closed containers, and to convey cleaning materials from one location to another in closed containers or pipes.

Staff has proposed the amendment of Rule 450 at a public hearing scheduled for September 25, 2008. Staff has determined that these amendments will not affect any existing sources within the District because current sources are either below the applicability thresholds of the new requirements or already comply with the new requirements.

Category: Industrial Cleaning Solvents

EPA RACT Guidance

Control Techniques Guidelines: Industrial Cleaning Solvents, EPA 453/R-06-001, September 2006.

Alternative Control Technique (ACT) Document – *Industrial Cleaning Solvents*, EPA 453/R-94-015, February 1994.

Applicability

The CTG and ACT apply to industries that use organic solvents for cleaning units operations, such as mixing vessels (tanks), spray booths, and parts cleaners. The CTG applies to facilities that emit at least 15 lb/day of VOC before considering controls. The cleaning activities for removal of foreign material from substrate being cleaned include activities such as wiping, flushing, or spraying. However, the CTG does not apply to specific industries with solvent cleaning operations that are covered by other source specific EPA RACT guidance (e.g., aerospace coating, lithographic/letterpress printing, etc.). In addition, the CTG does not apply to janitorial supplies used for cleaning offices, bathrooms, and other similar areas.

RACT Requirements

The CTG recommends adopting measures to control emissions of VOC from the use, storage, and disposal of industrial solvents. These measures include 1) work practice standards, 2) limitation of VOC content on the cleaning material, and 3) an optional alternative limit on the composite vapor pressure of the cleaning materials.

1. Work Practices Standards:

- Covering open containers and used applicators;
- Minimizing air circulation around cleaning operations;
- Properly disposing of used solvent and shop towels; and
- Implementing equipment practices that minimize emissions (e.g., keeping parts cleaner covered, maintaining cleaning equipment to repair solvent leaks, etc.)

2. VOC Content Limit:

Generally applicable VOC content limit of 50 grams VOC per liter (0.42 lb/gal) of cleaning material for each of the cleaning unit operation listed below, unless the emissions are controlled by an emission control system with an overall efficiency of at least 85 percent:

- Spray gun cleaning
- Spray booth cleaning
- Large manufactured components cleaning
- Parts cleaning
- Equipment cleaning
- Line cleaning
- Floor cleaning
- Tank cleaning
- Small manufacture components cleaning

3. Alternative Composite Vapor Pressure Limit:
 - 8 mm Hg at 20 °C (as a replacement for the 50 g/l VOC content limit)

4. Recommended Exclusions (Covered by Other CTGs):
 - Aerospace coatings;
 - Wood furniture coatings;
 - Shipbuilding and repair coatings;
 - Flexible packaging printing materials;
 - Lithographic printing materials;
 - Letterpress printing materials;
 - Flat wood paneling coatings;
 - Large appliance coatings;
 - Metal furniture coatings;
 - Paper film and foil coating;
 - Plastic parts coatings;
 - Miscellaneous metals parts coatings;
 - Fiberglass boat manufacturing materials;
 - Miscellaneous industrial adhesives; and
 - Auto and light-duty truck assembly coatings.

5. Recommended Exclusions (Based on Bay Area AQMD Rule 8-4 Exemptions)
 - Electrical and electronic components;
 - Precision optics;
 - Numismatic dies;
 - Stripping of cured inks, coatings, and adhesives;
 - Cleaning of resin, coating, ink, and adhesive mixing, molding, and application equipment;
 - Research and development laboratories;
 - Medical device or pharmaceutical manufacturing; and
 - Performance or quality assurance testing of coatings, inks, or adhesives.

6. Recommended Exclusions (Based on inclusion in other Bay Area AQMD Rules)
 - Architectural coating;
 - Metal container, closure, and coil coating;
 - Paper, fabric, and film coating;
 - Light and medium duty motor vehicle assembly plants;
 - Surface coating of metal furniture and large appliances;
 - Surface coating of miscellaneous metal parts and products;
 - Graphic arts printing and coating operations;
 - Coating of flat wood paneling and wood flat stock;
 - Magnet wire coating operations;
 - Aerospace assembly and component coating operations;
 - Semiconductor wafer fabrication operations;
 - Surface coating of plastic parts and products;
 - Wood products coating;

- Coating, ink, and adhesive manufacturing;
- Flexible and rigid disc manufacturing;
- Marine vessel coating;
- Motor vehicle and mobile equipment coating operations; and
- Polyester resin operations.

The ACT does not evaluate or recommend specific work practice standards or emissions limits. The ACT document 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 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 practice standards and equipment changes to reduce solvent use, and use of control devices).

Other Federal Requirements

No other Federal requirements have been established for this category.

SMAQMD Requirements

District Rule 466 (Solvent Cleaning) implements the recommendations of the CTG by specifying work practices standards and limiting VOC content for cleaning solvents. 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 requires operators performing cleaning operations to follow specific work practices standards to minimize the evaporation of solvents. Some work practice standards include cleaning within closed containers, keeping container closed during non-operation, keeping solvents stored in a closed containers, and properly disposing spent solvents. Rule 466 also specifies a VOC content limit of 50 g/liter of solvent (including water and exempt solvents) for general purposes, such as wipe cleaning and maintenance cleaning. In addition, Rule 466 includes requirements to limit VOC content for cleaning solvents used on specific substrates that are recommended for exclusion by the CTG (e.g., electrical/electronic components, medical devices and pharmaceuticals).

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.

SMAQMD Exemptions

District Rule 466 exempts solvent cleaning operations that are covered under the following District rules:

- 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).

Rule 466 also 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.

Conclusion

District Rule 466 establishes VOC content limits and work practice standards that are equivalent to or more stringent than the CTG guidance for RACT, and the exemptions in Rule 466 are consistent with the CTG recommendations. Rule 466 also establishes VOC content limits and work practice standards that conform to the types of management practices identified in the ACT document. Therefore, Rule 466 satisfies the RACT requirement for this source category.

Category: Metal Furniture Coatings

EPA RACT Guidance

Control Techniques Guidelines for Metal Furniture Coatings, EPA 453/R-07-005, September 2007.

Applicability

The CTG applies to each metal furniture surface coating unit at a facility where the total actual VOC emissions from all such operations, including related cleaning activities, are at least 15 lb/day (or an equivalent level such as 3 tons per 12-month rolling period) before consideration of controls.

RACT Requirements

The CTG specifies three alternative methods to reduce VOC emissions from metal furniture coatings: lower VOC limits, add-on controls, or a combination of lower VOC limits and add-on controls. The CTG also recommends work practices and application methods. Various exemptions are also recommended. Specific CTG requirements are detailed below.

Metal furniture coatings VOC content limits

COATING TYPE	VOC CONTENT: Grams/Liter (Lbs/Gal) excluding water and exempt compounds	
	AIR DRIED	BAKED
General, One-Component	275 (2.3)	275 (2.3)
General, Multi-Component	340 (2.8)	275 (2.3)
Extreme High Gloss	340 (2.8)	360 (3.0)
Extreme Performance	420 (3.5)	360 (3.0)
Heat Resistant	420 (3.5)	360 (3.0)
Metallic	420 (3.5)	420 (3.5)
Pretreatment Coatings	420 (3.5)	420 (3.5)
Solar Absorbent	420 (3.5)	360 (3.0)

Add-On Control Requirements

The CTG recommends an overall control efficiency of 90% for metal furniture coating operations.

Work Practices

- Store all VOC-containing materials and used shop towels in closed containers
- Ensure that mixing and storage containers used for VOC-containing materials are kept closed at all times except when depositing or removing these materials
- Minimize spills of VOC-containing materials
- Convey VOC-containing materials from one location to another in closed containers or pipes
- Minimize VOC emission from cleaning of storage, mixing, and conveying equipment

Application Methods

The following application methods are recommended:

- Electrostatic application
- HVLP spray
- Flow coat
- Roller coat
- Dip coat, including electrodeposition
- Other coating application methods capable of achieving a transfer efficiency equivalent or better than that achieved by HVLP spraying

Recommended exemptions

The CTG recommends the following types of coatings and coating operations be exempt from the recommended VOC content limits:

- Stencil coatings
- Safety-indicating coatings
- Solid-film lubricants
- Electric-insulating and thermal-conducting coatings
- Touch-up and repair coatings
- Coating application utilizing hand-held aerosol cans

SMAQMD Requirements

District Rule 451, Surface Coating of Miscellaneous Metal Parts and Products, sets VOC content limits for metal parts and products coatings, including metal furniture coatings, as shown in the table below:

Coating	VOC Limits g/liter, less water and exempt compounds (lbs/gallon)	
	Air Dried {CTG}	Baked {CTG}
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) {340 (2.8)}	360 (3.0) {360 (3.0)}
Extreme Performance	420 (3.5) {420 (3.5)}	420 (3.5) {360 (3.0)}
Heat Resistant	420 (3.5) {420 (3.5)}	360 (3.0) {360 (3.0)}
Metallic Iridescent	420 (3.5) {420 (3.5)}	420 (3.5) {420 (3.5)}
Non-skid	420 (3.5)	360 (3.0)
Prefabricated Architectural Component	420 (3.5)	275 (2.3)

Coating	VOC Limits g/liter, less water and exempt compounds (lbs/gallon)	
	Air Dried {CTG}	Baked {CTG}
Pretreatment wash primer	420 (3.5) {420 (3.5)}	420 (3.5) {420 (3.5)}
Silicone release coating	420 (3.5)	420 (3.5)
Solar Absorbent	420 (3.5) {420 (3.5)}	360 (3.0) {360 (3.0)}
All other coatings	340 (2.8) {1-comp. 275 (2.3), 2-comp. 340 (2.8)}	275 (2.3) {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, 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 coatings 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). Rule 451 also exempts 200 gallons per year, per stationary source, of coating applied to aluminum window and door frames, and 200 gallons per year, per stationary source, of pretreatment wash primer.

Conclusion

In the October 26, 2006 SIP Revision, Rule 451 was compared to the 1977 CTG for Surface Coating of Metal Furniture, and Staff concluded that the RACT requirements were satisfied at that time. However, Rule 451 is not as stringent as the 2007 CTG. In particular, the VOC content limits recommended in the CTG for general one-component, extreme high gloss, and extreme performance coatings are more stringent than those required by Rule 451. In addition, Rule 451 allows the use of an emission control system with an overall efficiency of 85%, whereas the CTG recommends 90% overall efficiency.

Staff is proposing to correct these RACT deficiencies by amending Rule 451 to include the following VOC content limits for metal furniture coatings, applicable to sources with actual VOC emissions of at least 3 tons per 12-month rolling period):

COATING CATEGORY	VOC CONTENT: Grams/Liter (Lbs/Gal) less water and exempt compounds	
	AIR DRIED	BAKED
General, Multi-Component	340 (2.8)	275 (2.3)
Extreme High Gloss	340 (2.8)	360 (3.0)
Extreme Performance	420 (3.5)	360 (3.0)
Heat Resistant	420 (3.5)	360 (3.0)
Metallic/Iridescent	420 (3.5)	420 (3.5)
Pretreatment Wash Primer	420 (3.5)	420 (3.5)
Solar Absorbent	420 (3.5)	360 (3.0)
All Other Coatings	275 (2.3)	275 (2.3)

Staff also is proposing to increase the overall efficiency requirement for control devices to 90%, consistent with the 2007 CTG, and to eliminate the 200 gallon/year exemptions for pretreatment wash coatings and aluminum window and door frame coatings. The proposed amendment of Rule 451 is scheduled for a public hearing on September 25, 2008. Staff has determined that these amendments will not affect any existing sources within the District because current sources are either below the applicability thresholds of the new requirements or already comply with the new requirements.

Category: Offset Lithographic and Letterpress Printing

EPA RACT Guidance

Control Techniques Guidelines for Offset Lithographic Printing and Letterpress Printing, EPA 453/R-06-002, September 2006.

Applicability

The CTG applies to offset lithographic printing and letterpress printing. The CTG provides control recommendations for reducing VOC emissions stemming from the use of fountain solutions, cleaning materials, and inks in offset lithographic printing and cleaning materials and inks in letterpress printing. The requirements for fountain solutions do not apply to offset lithographic printing operations with less than or equal to 15 pounds per day of actual VOC emissions. The requirements for control equipment do not apply to presses with potential to emit less than 25 tons of VOC per year, prior to controls.

RACT Requirements

Emissions Control Equipment for Heatset Presses

The CTG recommends the use of emissions control equipment to reduce emissions of VOC from inks used in heatset web offset lithographic and heatset letterpress printing for presses with potential to emit from the dryer, prior to controls, of at least 25 tons/year of VOC. The recommended levels of control are as follows:

- The recommended level of control for VOC emissions from heatset dryers is 90 percent control efficiency for a control device whose first installation date was prior to the effective date of a State RACT rule, which was issued after the date of this CTG.
- The recommended level of control for VOC emissions from heatset dryers is 95 percent control efficiency for a control device whose first installation date was on or after the effective date of the State RACT rule, which was issued after the date of this CTG.
- To accommodate situations where the inlet VOC concentration is so low that a 90 or 95 percent efficiency may not be achievable, it is recommended that an alternative requirement be specified for the control device outlet concentration to be no more than 20 ppmv as hexane on a dry basis.

Fountain Solution VOC Content Limits

The CTG recommends VOC limits for fountain solutions used in offset lithographic printing for sources where the total actual emissions of VOC from all offset lithographic printing operations at the stationary source are at least 15 lb/day (or an equivalent level), prior to control. The recommended limits are:

- Heatset Web Offset Lithographic Printing: 1.6% alcohol by weight (or 3% if chilled)
- Sheet-fed Offset Lithographic Printing: 5% alcohol by weight (or 8.5% if chilled)
- Coldset Web Offset Lithographic Printing: 5% percent alcohol substitute by weight and no alcohol in the fountain solution

Cleaning Materials VOC Limits

The CTG recommends VOC limits for cleaning materials used in offset lithographic printing and letterpress printing for sources where the total actual emissions of VOC from all offset lithographic printing operations at the stationary source are at least 15 lb/day (or an equivalent level), prior to control. The recommended limits are:

- Cleaning materials with a VOC composite vapor pressure less than 10 mm Hg at 20 °C, or
- Cleaning materials containing less than 70% VOC by weight.

The CTG also recommends work practices that require cleaning materials and used shop towels to be kept in closed containers.

SMAQMD Requirements

District Rule 450 (Graphics Arts Operations) applies to graphic arts operations, including screening printing, flexographic printing, lithographic printing and letterpress printing, and any coating or laminating operation associated with flexible packaging material. The following requirements of Rule 450 are applicable to offset lithographic printing and letterpress printing:

- Printing ink: 300 g/l
- Adhesives: 150 g/l
- Coatings: 300 g/l
- Cleaning materials
 - General Maintenance/Repair: 72 g/l
 - Blanket/Roller Washes: 300 g/l or VOC partial pressure of 10 mm Hg at 20 °C
 - Metering Rollers/Printing Plates: 300 g/l or VOC partial pressure of 25 mm Hg at 20 °C
 - Other Components: 100 g/l and VOC partial pressure of 3 mm Hg at 20 °C

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 requires that all VOC materials and VOC-containing cloth, sponges, and other materials used for solvent cleaning be stored in closed containers when not in use.

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

Rule 450 is not as stringent as the 2006 CTG for Offset Lithographic Printing and Letterpress Printing. For heatset presses with potential to emit from the dryer, prior to controls, of at least 25 tons/year of VOC, the CTG recommends control equipment with an overall efficiency of 90-95%. Rule 450 does not require emission control equipment on these presses and the material VOC limits in Rule 450 do not provide an equivalent level of emission reduction. For offset lithographic printing sources with actual emissions of VOC of at least 15 lb/day, the CTG recommends more stringent limits on the VOC content of fountain solution than required by Rule 450.

Staff is proposing to correct the RACT deficiencies by amending Rule 450 to include the following control device requirements for presses used in heatset web offset lithographic printing and heatset web letterpress printing with potential to emit, prior to controls, of at least 25 tons/year of VOC:

90% overall efficiency if permit application is deemed complete prior to (date of adoption)
95% overall efficiency if permit application is deemed complete after (date of adoption).

Staff is proposing requirements, consistent with the CTG, for fountain solutions used by offset lithographic printing operations with actual VOC emissions of at least 450 pounds per calendar month. The proposed requirements are shown in the table on the following page.

The proposed amendment of Rule 450 is scheduled for a public hearing on September 25, 2008. Staff has determined that these amendments will not affect any existing sources within the District because current sources are either below the applicability thresholds of the new requirements or already comply with the new requirements.

MATERIAL TYPE	VOC Content Limits Including water and exempt compounds	
	Current Limits (g/l) (The specified limits remain in effect until limits are replaced by limits listed in the subsequent column.)	Effective (One Year After Date Of Adoption) (% by weight)
Heatset Web Offset Lithography		
Fountain Solutions Containing Alcohol		
1. Chilled Using Refrigerated Chiller	100	3
2. Non-Chilled	80	1.6
Fountain Solutions Containing No Alcohol		
1. Chilled Using Refrigerated Chiller	100	5
2. Non-Chilled	80	5
Coldset Web Offset Lithography		
Fountain Solutions Containing Alcohol		
1. Chilled Using Refrigerated Chiller	100	(*See below)
2. Non-Chilled	80	(*See below)
Fountain Solutions Containing No Alcohol		
1. Chilled Using Refrigerated Chiller	100	5
2. Non-Chilled	80	5
Sheet-fed Offset Lithography with maximum sheet size greater than 11 X 17 inches or total solution reservoir greater than 1 gallon		
Fountain Solutions Containing Alcohol		
1. Chilled Using Refrigerated Chiller	100	8.5
2. Non-Chilled	80	5
Fountain Solutions Containing No Alcohol		
1. Chilled Using Refrigerated Chiller	100	5
2. Non-Chilled	80	5
All Other Presses (includes offset lithographic presses exempt pursuant to Section 110.9)		
1. Chilled Using Refrigerated Chiller	100	10
2. Non-Chilled	80	8

* Staff is proposing that effective one year after date of adoption, fountain solutions containing alcohol shall not be used in coldset web offset lithography printing operations.

Appendix B

Analysis of New Major Sources under a Bump-Up to Severe Nonattainment

Major Source	Page Number
Cosumnes Power Plant (SMUD)	24
Grafil	26
Sacramento Power Authority	29
Silgan Can Company	31
UC Davis Medical Center	33

Major Source: Cosumnes Power Plant (SMUD)

Potential to Emit

VOC: 30 ton/yr (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 both NOx and VOC. Emissions of NOx and VOC are produced from natural gas combustion in the two gas turbines. Best Available Control Technology for NOx was applied to these units in the 2002 permit evaluation. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2006-19-01.

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. The permit also requires that the VOC emission be limited to 1.4 ppmv @ 15% O₂.

RACT Discussion

The gas turbines are subject to Rule 413 – Stationary Gas Turbines, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirement for NOx 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.

There are no District rules that limit the emissions of VOC from gas turbines. However, Staff is not aware of any cost effective control that can be applied to VOC emissions from 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 for NO_x have been satisfied for the gas turbines because these units are subject to a SIP-approved rule that has been determined to satisfy RACT. However, there are no applicable RACT requirements to control VOC emissions from the gas-fired turbines.

Major Source: Grafil

Potential to Emit

VOC: 14.7 ton/yr (non-major)
NOx: 26.1 tons/yr (major)

Facility Description

Grafil, Inc. manufactures carbon fibers at its facility in Sacramento, California. The carbon fiber is used by Grafil's customers to manufacture finished products such as sporting goods, satellites, helicopter rotor blades, drive shafts, pumps, valves and CNG tanks.

Grafil, Inc. manufactures the carbon fiber from polyacrylic fiber. The carbon fiber is processed in two parallel production lines, designated as Line 31 and Line 32. The two production lines operate independently of each other. The carbon fiber produced from these lines receives a surface treatment by a water based nylon coating in a third processing line.

High quality continuous polyacrylic fiber wound on spools are received and stored in the precursor warehouse. During processing, spools are transferred from the storage area and batch loaded to the feed end of each production line. Fiber is unwound from many spools simultaneously and processed through a sequence of production steps in Lines 31 and 32. These production steps include, in order:

1. Surface oxidation in atmospheric ovens
2. Tar removal in low temperature furnaces
3. Carbonization in high temperature furnaces
4. Surface treatment of the fiber with a solution that promotes good adhesion with polymer matrix systems, a necessary requirement for some end users.

This facility consists of the following emission units:

At Carbon Fiber Process Line No. 31:

- (6) Electric Oxidation ovens, (4) end cap hoods, (2) rodding point hoods and low temperature rodding exhaust vented to a John Zink Thermal Oxidizer rated at 9.18 mmBtu/hr (Outside Thermal Oxidizer No. 1).
- Electric low temperature furnace and (1) Electric high temperature furnace vented to a Zeeco Thermal Oxidizer rated at 2.4 mmBtu/hr (Inside Thermal Oxidizer No. 2).
- Inside Thermal Oxidizer No. 2 vented to JM Construction Model 120 JMCE 100T Baghouse with air flow rate at 1,200 cfm (Baghouse No. 1).

At Carbon Fiber Process Line No. 32:

- (6) Electric Oxidation ovens, (4) end cap hoods, (2) rodding point hoods and low temperature rodding exhaust vented to a John Zink Thermal Oxidizer rated at 9.18 mmBtu/hr (Outside Thermal Oxidizer No. 3).
- Electric low temperature furnace and (1) Electric high temperature furnace vented to a John Zink Thermal Oxidizer rated at 1.0 mmBtu/hr (Inside Thermal Oxidizer No. 4).

- Inside Thermal Oxidizer No. 4 vented to JM Construction Model 120 JMCE 100T Baghouse with air flow rate at 1,500 cfm (Baghouse No. 1).

Continuous Emission Monitoring System for HCN (1 Primary and 1 backup analyzer) monitors both Process Line No. 31 and Process Line No. 32.

- Interscan Model LD28 CEM with range of 0-100 ppm HCN.

Other Equipment:

- Cleaver Brooks Model Promethean CBI-200-150-150 natural gas-fired boiler rated at 6.12 mmBtu/hr.
- Cleaver Brooks Model Promethean 4WI-NT-100 natural gas-fired boiler rated at 4.8 mmBtu/hr.
- Chrysler Model LH318 Internal Combustion Engine, emergency backup, spark-ignited with propane fuel, rated at 187 hp.
- John Deere Model JU6H-UF30/6068T emergency backup diesel engine, rated at 140 hp.

Air Pollution Controls and Emission Limits

The facility is a major source of NO_x. Emissions of NO_x are produced by the thermal oxidizers, boilers and internal combustion engine. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2006-01-01.

The four thermal oxidizers are emission control devices which capture and destroy VOC emissions from the processing lines. The boilers are equipped with low NO_x burners and are limited by permit to a NO_x emission limit of ppmvd @ 3% O₂.

The propane-fueled emergency standby engine is limited to no more than 100 hours per year of operation for maintenance purposes and 200 hours per year for operation for all purposes (maintenance and emergency). The diesel-fueled emergency standby engine is limited to no more than 50 hours per year of operation for maintenance purposes and 200 hours per year for operation for all purposes (maintenance and emergency).

RACT Discussion

Thermal oxidizers are emission control devices which are used to reduce VOC emissions. There is no EPA guidance on RACT that is applicable to NO_x emissions from thermal oxidizers. There are no New Source Performance Standards (NSPS) or District rules that apply to NO_x emissions from this source category. Additionally, no other air districts in California have a specific rule to reduce NO_x emissions from thermal oxidizers.

The two boilers are subject to Rule 411, NO_x from Boilers, Process Heaters and Steam Generators, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirement for this source category. For the boiler rated at 6.12 mmBtu/hr, the applicable NO_x emission limit in Rule 411 is 15 ppmvd @ 3% O₂. For the boiler rated at 4.8 mmBtu/hr, the applicable NO_x emission limit in Rule 411 is 30 ppmvd @ 3% O₂.

The emergency standby engines are subject to Rule 412 – Stationary Internal Combustion Engines

at Major Stationary Sources of NO_x, which was demonstrated in the October 26, 2006 SIP revision 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.

Conclusion

The RACT requirements have been satisfied for the boilers and the internal combustion engines because these units are subject to rules that have been determined to satisfy RACT.

There is no District rule limiting the emissions of NO_x from thermal oxidizers. Thermal oxidizers are emissions control equipment used to reduce emissions of VOC and there is no federal guidance or other California district rules that apply to NO_x emissions from this source category.

Major Source: Sacramento Power Authority

Potential to Emit

VOC: 20.0 ton/yr (non-major)
NOx: 49.9 tons/yr (major)

Facility Description

Sacramento Power Authority (SPA) is a cogeneration plant which generates electricity for the Sacramento Municipal Utility District (SMUD) and supplies up to 250,000 pounds per hour of process steam to Campbell Soup Company. The cogeneration plant consists of a combined cycle unit, its associated emission control equipment and a cooling tower.

The cogeneration plant consists of the following components:

- Siemens V84.2 combined cycle, gas-fired turbine unit, which generates approximately 103 MW (nominal) of electric power.
- Heat Recovery Steam Generator (HRSG) includes a 200 mmBtu/hr HHV duct burner system.
- One Selective Catalytic Reduction (SCR) system used to control the NOx emissions from gas turbine unit and the duct burner unit.
- One Oxidation Catalyst System used to primarily control Carbon Monoxide (CO) and secondarily to control Reactive Organic Compound (ROC) on the combustion turbine.
- One Cooling Tower designed to circulate 45,000 gallons per minute 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 gas turbine and the duct burners. Best Available Control Technology for NOx was applied to these units in the initial permit evaluation. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 98-14-01.

The combustion turbine generator is equipped with a selective catalytic reduction (SCR) to control NOx emissions to a permit limit of 3 ppmvd @ 15% O₂. An oxidation catalyst system is operating to reduce CO and VOC emissions. A low-NOx duct burner is also used to limit NOx emissions from the HRSG.

RACT Discussion

The gas turbine is subject to Rule 413 – Stationary Gas Turbines, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirement for this source category. The applicable NOx emission limit in Rule 413 is 9 ppmv @ 15% O₂.

The gas turbine is 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.

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 turbine 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 and duct burners because these units are subject to SIP-approved rules that have been determined to satisfy RACT.

Major Source: Silgan Can Company

Potential to Emit

VOC: 36.3 tons/yr (major)

NOx: 20.8 tons/yr (non-major)

Facility Description

Silgan Can Company manufactures steel cans for the food canning industry. Silgan produces both two-piece and three-piece cans. The three-piece can manufacturing process produces minimal air pollutant emissions and is exempted from the District's permitting requirements. The two-piece can manufacturing process produces the majority of the facility's emissions.

The two-piece can manufacturing process is also known as the Drawn and Ironed (D and I) can manufacturing process. It begins with the receipt of steel coil stock. The coil is unwound, fed through the lubricator, and finally fed through the cupping press. The formed cups are fed to the bodymakers where, through a punch and ring assembly, the can body is formed by the draw and ironing technique with an integral bottom. Lubrication oils are applied to facilitate the mechanical action and act as a coolant.

Following this operation, the cans enter the trimmer where excess metal around the can rim is removed to give a uniform height to the can body. After trimming, the unfinished can is transported to the washer where the lubricator oils are removed. The can body is then treated by a flow coating application of a water borne enamel. This is referred to as the wash coating. After the wash coating, the enameled can body enters the wash coat oven.

After the oven, the can body goes to the flanger where the rim of the can body is flanged. The can then goes to the beader where concentric rings are impressed on the side wall of the can. The can body is then passed to the test area to approve the integrity of the container.

The next step of the process is to apply a water-borne inside enamel to the inside can body. This coating is similar in composition to the washcoat enamel. This coating is applied in an enclosed machine, where overspray and solvent flash-off is captured and ducted to the thermal oxidizer. The cans are then conveyed in a covered conveyor to the inside bake oven. Both ovens, the spray machine manifold, and the covered conveyor are vented to the thermal oxidizer.

The following is a list of equipment used at Silgan Can Company:

- Drawn and Ironed Can Manufacturing Process consisting of:
 1. Various bodymaking equipment
 2. Washcoat application equipment
 3. Inside spray coating equipment (vented to thermal oxidizer)
- Cincinnati Machinery Model WCS-C46S Natural Gas-Fired Washcoat Oven with heat input rated at 6.4 mmBtu/hr (vented to thermal oxidizer)
- Somerset Ross Natural Gas-Fired Inside Bake Oven with heat input rated at 14 mmBtu/hr (vented to thermal oxidizer)

- Somerset Ross Model RI-3-15000-95 Thermal Oxidizer

Air Pollution Controls and Emission Limits

This facility is a major source of VOC, which is emitted from the two-piece can manufacturing process. Best Available Control Technology for NO_x was applied to these units in the initial permit evaluation. The controls discussed below are subject to federally enforceable permit conditions under Title V Permit No. 2005-15-01.

The emissions from the washcoat oven, inside bake oven, and non-fugitive VOC emissions from the D and I can manufacturing line are vented to the thermal oxidizer to control the VOC emissions. The thermal oxidizer has a collection efficiency of at least 90% and destruction efficiency of at least 95%.

The facility is also subject to District Rule 452, Can Coating. This rule requires the facility to use coatings that meets the VOC content limits for specific coating categories. Alternatively, emission control equipment may be used instead of VOC content limits, provided that the control device efficiency is 95% or more, 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.

RACT Discussion

The two-piece can manufacturing process is subject to Rule 452, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirements for this source category. Potential emissions of VOC from the use of lubrication oils are not regulated by Rule 452, but there is no federal RACT guidance and no California district rules that address such emissions.

Conclusion

The RACT requirements have been satisfied for this facility because the two-piece can manufacturing process is subject to a SIP-approved rule that has been determined to satisfy RACT.

Major Source: UC Davis Medical Center

Potential to Emit

VOC: 29 tons/yr (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 25 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 31.5 mmBtu/hr boilers, Johnston Boiler Company model PFTA750-4LG-150S, fired with natural gas as primary fuel and diesel as a backup fuel.
- A 2 mmBtu/hr boiler, Fulton model PHW 2000, fired with natural gas only
- 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.
- An 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 157-hp diesel engine, John Deere model 4045H275H, 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 for both NO_x and VOC. Emissions of NO_x and VOC are produced from the gas turbine, 13 boilers, and 10 diesel engines. VOC is also emitted from the gasoline dispensing facility. 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 31.5 mmBtu/hr boilers are equipped with low NO_x burners that control NO_x emissions to a permit limit of 9 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 2 mmBtu/hr boiler has permitted emissions of 100 pounds of NO_x per million cubic feet of natural gas, and is limited to an annual fuel usage of 40,000 therms. 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 and the 157-hp emergency standby diesel engine are 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 250,000 gallons of gasoline per calendar quarter.

RACT Discussion

The gas turbine is subject to Rule 413 – Stationary Gas Turbines, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirement for NO_x for this source category. The applicable NO_x emission limit in Rule 413 is 9 ppmv @ 15% O₂.

The four 31.5 mmBtu/hr boilers are subject to Rule 411 – NO_x from Boiler, Process Heaters and Steam Generators, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirement for this source category. The applicable NO_x emission limit in Rule 411 is 9 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 2 mmBtu/hr boiler is exempt from NO_x emission limits under Rule 411 because it has been limited by permit to use no more than 40,000 therms of fuel.

The eight 0.4 mmBtu/hr boilers are exempt from the requirements of Rule 411 because they have heat input ratings less than 1 mmBtu/hr. No California district has a rule requirement applicable to existing boilers of this size. However, South Coast AQMD Rule 1146.2, Ventura County APCD Rule 74.11.1, and San Joaquin Valley Unified APCD Rule 4308 contain NO_x emission standards that are applicable to all new units at the time of sale or installation. The District's Board of Directors will consider adoption of similar requirements in Rule 414 at a public hearing in September of 2009.

There are no District rules that limit the VOC emissions from the gas-fired boilers and turbine. 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. Rule 411 contains CO emission limits that ensure efficient fuel combustion for boilers.

The emergency standby engines are subject to Rule 412 – Stationary Internal Combustion Engines at Major Stationary Sources of NO_x, which was demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirement for this source category, and includes emission limits for NO_x and nonmethane hydrocarbons. 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.

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, both of which were demonstrated in the October 26, 2006 SIP revision to satisfy the RACT requirements for this source category. 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 for NO_x have been satisfied for the gas turbine, boilers, and emergency standby engines at the UC Davis Medical Center, because all emission units are subject to or exempt from SIP-approved rules that have been determined to satisfy RACT for NO_x. There are no applicable controls for VOC emissions from the gas-fired boilers and turbine.

The RACT requirement for VOC has been satisfied for the gasoline dispensing facility and engines because they are subject to SIP-approved rules that have been determined to satisfy RACT for VOC. There are no applicable RACT controls for VOC emissions from the gas-fired boilers and turbine.