SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology Guidelines

Part D: BACT Guidelines for Non-Major Polluting Facilities

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Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Abrasive Blasting – Enclosed

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse; or Cartridge Dust Collector (07-11-97)	

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Equipment or Process: Absorption Chiller

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		≤ 20 ppmv dry corrected to 3% O2 (10-20-2000)	Natural Gas (10-20-2000)	≤50 ppmv for firetube type, ≤ 100 ppmv for watertube type, dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	

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Equipment or Process: Air Stripper – Ground Water Treatment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Carbon Adsorber, Thermal Oxidizer, or Catalytic Oxidizer (10-20-2000)					

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Equipment or Process: Aluminum Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible or Pot		Natural Gas (07-11-97)	Natural Gas (07-11-97)		Natural Gas with Ingots or Non-contaminated Scrap Charge, or Baghouse (10-20-2000)	
Reverberatory, Non-Sweating < 5 MM BTU/HR		Natural Gas (1990)	Natural Gas (1990)		Same as above. (10-20-2000)	
Reverberatory, Non-Sweating ≥ 5 MM BTU/HR		Natural Gas with Low NOx Burner ≤ 60 ppmvd @ 3% O_2 (10-20-2000)	Natural Gas (1990)		Same as above. (10-20-2000)	
Reverberatory or Rotary, Sweating < 5 MM BTU/HR	Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F) or Secondary Combustion Chamber (1990)	Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Baghouse and: - Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F); or - Secondary Combustion Chamber (1990)	
Reverberatory or Rotary, Sweating ≥ 5 MM BTU/HR	Same as Above (1990)	Natural Gas with Low NOx Burner ≤ 60 ppmvd @ 3% O_2 (10-20-2000)	Natural Gas (1990)		Same as above. (1990)	

Note: Some of this equipment may also subject to 40 CFR 63, Subpart RRR – National Emission Standards for Hazardous Air Pollutantsfor Secondary Aluminum Production

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Equipment or Process: Ammonium Bisulfate and Thiosulfate Production

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Packed Column Scrubber with Heat Exchanger and Mist Eliminator (1990)	Packed Column Scrubber for NH3 (1990)

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Equipment or Process: Asbestos Machining Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Air Cleaning Equipment (40 CFR Part 61 Subpart M) (07-11-97)	

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Equipment or Process: Asphalt Batch Plant

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner ≤ 36 ppmvd @ 3% O_2 (10-20-2000)			Baghouse (1990)	

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Equipment or Process: Asphalt Roofing Line

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas (1990)	Natural Gas (1990)		Natural Gas with High Velocity Filter and Mist Eliminator (1990)	

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Equipment or Process: Asphaltic Day Tanker

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Fiberglass or Steel Wool Filter (07-11-97)	

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Equipment or Process: Auto Body Shredder

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse with Water Sprays in Hammermill (1988)	

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Equipment or Process: Ball Mill

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (07-11-97)	

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Equipment or Process: Beryllium Machining Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					High Efficiency Particulate Air Filter and Compliance with 40CFR Part 61, Subpart D (1988)	

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10-20-2000 Rev. 0
10-03-2008 Rev. 1

Equipment or Process: Boiler

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx[1)]**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas or Propane Fired, < 20 MM Btu/HR		≤ 12 ppmv dry corrected to 3% O_2[2)] (10-20-2000)	Natural Gas (10-20-2000)	≤50 ppmv for firetube type, ≤ 100 ppmv for watertube type, dry corrected to 3% O_2 (04-10-98)	Natural Gas (04-10-98)	
Natural Gas or Propane Fired, ≥ 20 MM Btu/HR		With Low-NOx Burner: ≤ 9 ppmv dry corrected to 3% O_2 With Add-On Controls: ≤ 7 ppmv dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH3, corrected to 3% O2 ≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)
Oil Fired[3)]		Compliance with AQMD Rule 1146 or 1146.1 (10-20-2000)	Sulfur Content ≤ 0.05% by Weight (10-20-2000) or .0015% by weight if purchased after May 31, 2004 (10-03-2008)	Same as above (10-20-2000)		
Landfill or Digester Gas Fired, < 75 MMBTU/Hr		≤ 30 ppmvd at 3% O_2 dry. (04-10-98)		≤ 100 ppmvd at 3% O_2 dry. (04-10-98)	≤ 0.1 gr/scf at 12% CO_2 (Rule 409) (04-10-98)	

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1) Rules 1146 and 1146.1 require that boilers rated >2 and <75 MMBtu/hr meet 9 ppm NOx beginning 1/1/2012 for some categories, that natural gas-fired boilers rated at ≥75 MMBtu/hr meet 5 ppm by 1/1/2015 (except boilers at schools and universities), that natural-draft boilers rated >2 and ≤10 MMBtu/hr with unsealed combustion chambers meet 12 ppm by 1/1/2014, and that boilers firing landfill or digester gas meet 25 or 15 ppm, respectively, by 1/1/15 (all ppm are dry, corrected to 3% O2). Electric utility boilers, refinery boilers rated >40 MMBtu/hr and sulfur plant reaction boilers rated ≥5 MMBtu/hr are excluded; and there are exceptions for low-use boilers and boilers that met a 12-ppm limit prior to 9/5/08. Applicants are advised to review these rules for further details.

2) A higher NOx limit may be allowed for facilities required to have a standby fuel, where use of a clean standby fuel is not possible and an ultra low-NOx burner is not available.

3) See Clean Fuels Policy in Part C of the BACT Guidelines. Oil firing is only allowed as a standby fuel, and where use of a clean standby fuel is not possible.

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Equipment or Process: Brakeshoe Debonder

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner or Secondary Combustion Chamber with ≥0.3 Second Retention Time at ≥1,400°F Achieved within 15 Minutes of Primary Burner Ignition (07-11-97)	Natural Gas (07-11-97)	Natural Gas (07-11-97)		Natural Gas (07-11-97)	

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Equipment or Process: Brass Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible, ≤ 300 Lbs/Hr Process Rate		Natural Gas (1990)	Natural Gas (1990)		Natural Gas, Charge Clean Metal Only and Maintain Slag Cover Over Entire Melt Surface (1990)	
Crucible, > 300 Lbs/Hr Process Rate		Low-NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas, with Baghouse (1990)	
Reverberatory or Rotary, Non-Sweating		Natural Gas and Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Reverberatory or Rotary, Sweating	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1990)	Natural Gas with Low NOx Burner (1990)	Natural Gas (1990)	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1990)	Natural Gas with Baghouse (1990)	
Tilting Induction, ≤ 300 Lbs/Hr Process Rate					Charge Clean Metal Only and Slag Cover Maintained Over Entire Melt Surface (1988)	
Tilting Induction, > 300 Lbs/Hr Process Rate					Baghouse (7-11-97)	

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Equipment or Process: Bulk Solid Material Handling – Other

	Criteria Pollutants					
Subcategory[3)]/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Animal Feed Mfg. – Dry Material Handling					Baghouse (07-11-97)	
Clay, Ceramics and Refractories Handling (Except Mixing)					Baghouse (1988)	
Coal, Coke and Sulfur Handling					Compliance with AQMD Rule 1158 (10-20-2000)	
Feed and Grain Handling					Baghouse (1988)	
Natural Fertilizer Handling [1)]					Baghouse or Equivalent Material Moisture (07-11-97)	
Paper and Fiber Handling					High Efficiency Cyclone with Baghouse (10-20-2000)	
Pneumatic Conveying, Except Paper and Fiber					Baghouse (1988)	
Railcar Dumper					Enclosed Dump Station and Water Spray for Wet Material (1988)	
Other Dry Materials Handling [2)]					Enclosed Conveyors and Baghouse (7-11-97)	
Other Wet Materials Handling [2)]					Water Spray or Adequate Material Moisture (1988)	

1. Includes conveying, size reduction, classification and packaging.
2. Includes conveying, size reduction and classification.
3. Also see Catalyst Manufacturing, Coffee Roasting, Non-Metallic Mineral Processing, Nut Roasting, Rendering, Pharmaceutical Operations, and Rock-Aggregate Processing for other bulk solid material handling.

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Equipment or Process: Bulk Solid Material Ship Loading

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Non-White Commodities					Enclosed Conveyor and - Water Spray; or - Adequate Material Moisture (1988)	
White Commodities					Enclosed Conveyor and Baghouse Venting Ship Holds and Transfer Points (07-11-97)	

Notes:
1. Non-White commodities include coal, copper concentrate, sulfur, iron slag, iron ore, iron pellets, green petroleum coke and other wet commodities
2. White commodities include soda ash, salt cake, potash and other dry commodities.

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Equipment or Process: Bulk Solid Material Ship Unloading

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Bulk Cement		Shore Utility Power (1988)	Shore Utility Power (1988)		Enclosed, Self-Unloading Ship (1988)	
Other Bulk Solid Materials					Enclosed Hold and Baghouse; or Material Moisture Equivalent to an Enclosed Hold and Baghouse (1988)	

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Equipment or Process: Bulk Solid Material Storage

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Coal, Petroleum Coke, Sulfur					Enclosed Storage in Compliance with AQMD Rule 1158 (10-20-2000)	
Other Non-White Commodities					Water Spray and Chemical Additives or Charged Fog Spray (1988)	
White Commodities					Enclosed Storage and Baghouse (1988)	
Storage Tanks and Silos					Baghouse or Filtered Vent for Dry Material; Water Spray or Adequate Moisture for Wet Material (07-11-97)	
Other Open Storage					Water with Chemical Additives (1988)	

Notes:
1. Other non-white commodities include copper concentrate, iron slag, iron ore, and iron pellets.
2. White commodities include cement, gypsum, lime, soda ash, borax and flour.

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Equipment or Process: Burnoff or Burnout Furnace (Excluding Wax Furnace)

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner or Secondary Combustion Chamber with ≥0.3 Second Retention Time at ≥1,400°F Achieved within 15 Minutes of Primary Burner Ignition (07-11-97)	Natural Gas (07-11-97)	Natural Gas (07-11-97)		Natural Gas (07-11-97)	

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Equipment or Process: Calciner

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Petroleum Coke	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	44 ppmv, Dry, Corrected to 3% 0_2 (1988)	Natural Gas with Flue Gas Desulfurization (> 90% Removal Efficiency) (1988)	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	0.005 gr/dscf Corrected to 3% 0_2 (1988)	
Other		45 ppmv, Dry, Corrected to 3% 0_2 (1988)	Natural Gas (1988)		Natural Gas with Baghouse (1988)	

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Equipment or Process: Carpet Beating and Shearing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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Equipment or Process: Catalyst Manufacturing and Regeneration

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Calcining		Three-Stage NOx Reduction Scrubber (1990)	Natural Gas (1990)		Baghouse (10-20-2000)	
Reactor		NO_x Scrubber (07-11-97)				
Rotary or Spray Dryer					Baghouse (07-11-97)	
Regeneration, Hydrocarbon Removal	Flare, Firebox, or Afterburner (≥ 0.3 Second Retention Time at ≥ 1,400 °F) (07-11-97)					
Catalyst Solids Handling					Baghouse (07-11-97)	

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Equipment or Process: Charbroiler, Chain-driven (conveyorized)

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Catalytic Oxidizer (12-12-97)				Catalytic Oxidizer (12-12-97)	

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Equipment or Process: Chemical Milling Tanks

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Aluminum and Magnesium						
Nickel Alloys, Stainless Steel and Titanium		Packed Chemical Scrubber (10-20-2000)			High Efficiency Mist Eliminator (10-20-2000)	

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Equipment or Process: Chip Dryer

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400°F) (10-20-2000)	Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1989)		Natural Gas with: - Baghouse and Limestone Filter Coating; or - Baghouse and Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400°F) (1989)	

Note: This equipment may also subject to 40 CFR 63, Subpart RRR – National Emission Standards for Hazardous Air Pollutantsfor Secondary Aluminum Production

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Equipment or Process: Chrome Plating

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Decorative Chrome					Packed Scrubber and Mist Suppressant (1988) Compliance with AQMD Rule 1469 (10-20-2000)	
Hard Chrome					Packed Scrubber and Mist Suppressant (1988) Compliance with AQMD Rule 1469 (10-20-2000)	

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Equipment or Process: Circuit Board Etcher

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch Immersion Type, Subtractive Process					Packed Water Scrubber and Etchant Solution Temperature Control (10-20-2000)	
Conveyorized Spray Type, Subtractive Process					Packed Water Scrubber and Etchant Solution Temperature Control (1988)	

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Equipment or Process: Cleaning Compound Blender

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse or Wet Centrifugal Collector or Cyclone (07-11-97)	

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Equipment or Process: Coffee Roasting

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Roaster, < 110,000 BTU/Hr		Natural Gas (1988)	Natural Gas (1988)		Natural Gas (1988)	
Roaster, ≥ 110,000 BTU/Hr	Afterburner (0.3 Sec Retention Time at 1200 °F) (1990)	Natural Gas, with Heat Recovery on Afterburner Exhaust to Reduce Fuel Consumption (10-20-2000)	Natural Gas (1990)		Natural Gas with Cyclone and Afterburner (≥ 0.3 Second Retention Time at ≥ 1200 °F) (1990)	
Handling Equipment, < 1,590 Lbs/Hr All						
Handling Equipment, ≥ 1,590 Lbs/Hr All					Cyclone (1990)	

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12-5-2003 Rev. 0

Equipment or Process: Composting

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic (Ammonia)**
Co-composting[a)]	Compliance with AQMD Rule 1133.2[b)] (12-5-2003)					Compliance with AQMD Rule 1133.2[b)] (12-5-2003)

a) Co-composting is composting where biosolids and/or manure are mixed with bulking agents to produce compost.

b) Not required for design capacity <1,000 tons per year.

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Equipment or Process: Concrete Batch Plant

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Central Mixed, < 5 Cubic Yards/Batch					Water Spray (1988)	
Central Mixed, ≥ 5 Cubic Yards/Batch					Baghouse for Cement Handling and Adequate Moisture in Aggregate (1988)	
Transit-Mixed					Baghouse Venting the Cement Weigh Hopper and the Mixer Truck Loading Station; and Adequate Aggregate Moisture (07-11-97)	

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Equipment or Process: Concrete Blocks and Forms Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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Equipment or Process: Cotton Gin

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Rotary Drum Filter and Cyclone (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Crematory

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Secondary Combustion Chamber, ≥ 1500 °F (1990)	Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Secondary Combustion Chamber, ≥ 1500 °F (1990)	

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Equipment or Process: Degreaser – Other

	Criteria Pollutants					
Rating/Size	**VOC/ODC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch-Loaded or Conveyorized Cold Cleaners	Use of solvents containing 50 grams of VOC or less per liter of material (12-12-97)					
Film Cleaning Machine	Carbon Adsorber (10-20-2000)					
Solvent Spraying[1)], 1,1,1 Trichloroethane	Carbon Adsorber (1990) and Compliance with 40 CFR 63, Subpart T – National Emission Standards for Halogenated Solvent Cleaning (10-20-2000)					
Solvent Spraying[1)], Other VOCs	Compliance with AQMD Rule 1171 (10-20-2000)					

Note: Use of certain halogenated solvents is also subject to 40 CFR 63, Subpart T – National Emission Standards for Halogenated Solvent Cleaning

1) This subcategory includes solvent spray booths and remote reservoir cleaners.

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Equipment or Process: Degreaser –Vapor Cleaning, Volatile Organic Compounds

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch	Tier 1: Use of an automatically operated airtight or airless cleaning system that emits no more than [4.3 x $V^{0.6}$] lb/month of VOCs, where V is the cleaning chamber volume in cubic feet. Use of alternative equipment is allowed provided such equipment is subject to the same emissions limitation (lb/month of VOCs) as calculated above. Tier 2: Use of equipment that does not exceed [22 x A] lb/month of VOCs, where A is the solvent surface area in square feet, provided it is technically infeasible to use Tier 1 equipment because of part deformation, inherent part pressure, part type or geometry, soil type or amount, cleanliness sensitivity, or other reasons. (4-10-98)					
Conveyorized	Use of a conveyorized vapor degreaser that does not exceed [17 x A] lb/month of VOCs, where, A is the solvent surface area in square feet (04-10-98)					

Notes:

1. Use of certain halogenated solvents is also subject to 40 CFR 63, Subpart T – National Emission Standards for Halogenated Solvent Cleaning
2. Use of VOCs not subject to the above-described NESHAP is also subject to AQMD Rule 1122.
3. Any permit applicant may demonstrate that the Tier 1 BACT may not be technologically feasible for the applicant's permit unit. For batch-loaded vapor degreasing equipment, AQMD will consider the following three factors taken together as a whole, as well as any other technical factors presented by the applicant: a) Part Type and Geometry – In that different parts and part geometries lend themselves to different cleaning methods that may be acceptable to achieve proper cleanliness, AQMD will consider information presented by the applicant regarding the type and geometry of the part(s) proposed to be cleaned in determining what cleaning technologies are available for the part(s) in questions; b) Soil Type and Amount – In that different types and quantities of soils being cleaned from parts lend themselves to different cleaning methods, AQMD will consider information presented by the applicant regarding the soil type and soil quantity of the part(s) proposed to be cleaned in determining what cleaning technologies are available for the part(s) in question; c) Cleanliness Sensitivity – In that (i) different parts have different levels of sensitivity to cleanliness (e.g., medical and high technology device parts may need to achieve an extremely high level of cleanliness, whereas standard plumbing supplies may tolerate a lower level of cleanliness), and (ii) the integrity of certain parts may be compromised by exposure to the reduced pressure environment of airless cleaning systems; AQMD will consider information presented by the applicant regarding the cleanliness sensitivity of the part(s) proposed to be cleaned in determining what cleaning technologies are available for the part(s) in question.

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Equipment or Process: Detergent Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Solids Handling					Cyclone and Baghouse (07-11-97)	
Spray Dryer		Natural Gas with Low-NOx Burner (1988)	Natural Gas (1988)		Natural Gas with: - Cyclone and Baghouse; or - Cyclone, Scrubber and Electrostatic Precipitator (1988)	

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Equipment or Process: Drum Reclamation Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Sec. Retention time at ≥ 1400 °F) (1990)	Natural Gas (1990)	Natural Gas (1990)		Natural Gas with After-burner (> 0.3 Sec. Retention Time at ≥ 1400 °F) and Baghouse (1990)	

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10-20-2000 Rev. 0
7-9-2004 Rev. 1

Equipment or Process: Dry Cleaning

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC/ODC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Perchloroethylene	Delisted as a VOC. See AQMD Rule 1421 – Control of Perchloroethylene Dry Cleaning Operations[1] (06-13-97)					
Petroleum Solvent[2]	Closed Loop, Dry-to-Dry Machine with a Refrigerated Condenser (10-20-2000) or Evaporatively Cooled Condenser (7-9-2004)					

[1] Rule 1421 implements the federal National Emission Standard for Hazardous Air Pollutant for Perchloroethylene Dry Cleaning Facilities (40 Code of Federal Regulations [CFR] 63.320, *et seq*) and the state Airborne Toxic Control Measure (ATCM) for Emissions of Perchloroethylene from Dry Cleaning Operations (17 California of Regulation [CCR] 93109, *et seq*).

[2] This Equipment may also be subject to AQMD Rule 1102 – Dry Cleaners Using Solvent Other Than Perchloroethylene.

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Equipment or Process: Dryer – Kiln

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas (1988)	

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Equipment or Process: Dryer or Oven

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Carpet Oven		80 ppmvd, corrected to 3% O_2 (10-20-2000)	Natural Gas (1990)		Natural Gas (1990)	
Rotary, Spray and Flash Dryers[1)]		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Tray, Agitated Pan, and Rotary Vacuum Dryers		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas (1990)	
Tenter Frame Fabric Dryer		60 ppmvd Corrected to 3% 02 (10-20-2000)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	
Other Dryers and Ovens – Direct and Indirect Fired		30 ppmvd corrected to 3% 02 (04-10-98)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	

1. Dryers for foodstuff, pharmaceuticals, aggregate & chemicals.

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Equipment or Process: Electric Furnace – Pyrolyzing, Carbonizing and Graphitizing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (1988)					

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Equipment or Process: Electrical Wire Reclamation – Insulation Burn-Off Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F); Or Secondary Combustion Chamber (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	Natural Gas (1988)	Natural Gas (1988)		Natural Gas with Baghouse and: - Afterburner ((≥ 0.3 Second Retention Time at ≥ 1400 °F) or - Secondary Combustion Chamber (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Ethylene Oxide Sterilization

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Aeration	Recirculation Vacuum Pump-Seal Fluid with Fluid Reservoir Vented to: Chemical Scrubber; or Afterburner (≥ 0.3 second retention time at ≥ 1,400°F); or Catalytic Afterburner (at ≥ 280°F) (07-11-97)					
Quarantine Storage	Unvented Enclosure with Internal Circulation Through Activated Carbon Impregnated with Sulfuric Acid (1989)					

Note: Ethylene Oxide Sterilization may also be Subject to 40 CFR 63, Subpart O – Emission Standards for Ethylene Oxide Sterilization Facilities.

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10-20-2000 Rev. 0

Equipment or Process: Expanded Polystyrene Manufacturing Using Blowing Agent

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	For VOC Emissions: Incineration (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (1990)					

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Equipment or Process: Fatty Acid – Fat Hydrolyzing and Fractionation

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Condenser or Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1300 °F) (10-20-2000)					

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10-20-2000 Rev. 0

Equipment or Process: Fatty Alcohol

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 second retention time at ≥ 1,400°F) (07-11-97)					

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10-20-2000 Rev. 0

Equipment or Process: Fermentation, Beer and Wine

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All Closed Systems	Carbon Adsorber (10-20-2000)					
All Open Systems	Scrubber with Approved Liquid Waste Disposal (10-20-2000)					

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Equipment or Process: Fiberglass Operations

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Fabrication – Hand and Spray Layup	Compliance with AQMD Rule 1162 (10-20-2000)				Airless Spray Equipment and Spray Booth with Mesh Type Filter (1988)	
Panel Manufacturing	Curing Oven, Impregnation Tables and Mixing Tanks Vented to an Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 °F). Storage and Holding Tanks Vented to a Carbon Adsorber (1988)	Natural Gas Fired Curing Oven, Electrically Heated Cellophane Oven and Laminating Table (1988)	Natural Gas (10-20-2000)		Natural Gas Fired Curing Ovens, Cellophane Ovens Vented to an Electrostatic Precipitator and Panel Cutting Saw Vented to Baghouse (1988)	
Pultrusion	Styrene Suppressed Resin (1988), and Compliance with AQMD Rule 1162 (10-20-2000)					

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Equipment or Process: Fish Reduction

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Cooker	Scubber with Chlorinated Solution (≤ 20 ppmv Cl^- Outlet Conc., ≥ 0.6 Sec. Retention Time and ≤ 200 °F Outlet Temp.) (1988)					
Digestor, Evaporator and Acidulation Tank	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1200 °F) (1990)				Natural Gas with Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1200 °F) (1990)	
Dryer	Scrubber with Chlorinated Solution (≤ 20 ppmv Cl^- Outlet Conc., ≥ 0.6 Sec. Retention Time and ≤ 200 °F Outlet Temp.) (1990)				Natural Gas and Scrubber with Chlorinated Solution (≤ 20 ppmv Cl^- Outlet Conc., ≥ 0.6 Sec. Retention Time and ≤ 200 °F Outlet Temp.) (1990)	
Meal Handling						
Rendering – Presses, Centrifuges, Separators, Tanks, Etc.	Water Condenser and Vent to Dryer Firebox (1988)					

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Equipment or Process: Flare

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Digestor Gas or Landfill Gas from Non-Hazardous Waste Landfill	Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1400 °F, Auto Combustion Air Control, Automatic Shutoff Gas Valve and Automatic Re-Start System (1988)	0.06 lbs/MM Btu (1988)		Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1400 °F, and Auto Combustion Air Control (1988)	Knockout Vessel (1988)	
Landfill Gas from Hazardous Waste Landfill	Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1500 °F, Auto Combustion Air Control, Automatic Shutoff Gas Valve and Automatic Re-Start System (1988)	0.06 lbs/MM Btu (1988)		Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1500 °F, and Auto Combustion Air Control (1988)	Knockout Vessel (1988)	

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Equipment or Process: Flow Coater, Dip Tank and Roller Coater

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 36 lbs/day VOC	Compliance with Regulation XI (10-20-2000)					
≥ 36 lbs/day VOC	Coating with Lower VOC Content than Required by Applicable Rules, and Emissions from Coating Area, Flash Off Area, Drying Area , and Oven Vented to Control Device Achieving ≥ 90% Overall Efficiency (1988) Or Super Clean Materials with ≤ 5% VOC by Weight (10-20-2000)					

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Equipment or Process: Foundry Sand Mold – Cold Cure Process

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All			Packed Column Scrubber with pH of Solution Maintained at a Minimum of 8.0 (1988)			

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Equipment or Process: Fryer – Deep Fat

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 2 MM Btu/hr	Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	Natural Gas (1990)	Natural Gas (1990)		Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	
≥ 2 MM Btu/hr	Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	Natural Gas (1990)	Natural Gas (1990)		Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F), and Electrostatic Precipitator or High Efficiency Mist Eliminator (10-20-2000)	

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10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Fugitive Emission Sources at Natural Gas Plants and Oil and Gas Production Fields

	Criteria Pollutants					
Subcategory/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Compressors, Centrifugal Type	Seal System with a Higher Pressure Barrier Fluid (04-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)					
Compressors, Rotary Type	Enclosed Seal System Connected to Closed Vent System (04-10-98); and Compliance with AQMD Rule 1173					
Pressure Relief Valves	Connected to Closed Vent System or Equipped with Rupture Disc if Applicable (4-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)					
Pumps – In Heavy Liquid Service	Single Mechanical (4-10-1998); and Compliance with AQMD Rule 1173 (12-5-2003)					
Pumps – In Light Liquid Service	Sealless Type if Available and Compatible, or Double or Tandem Seals and Vented to Closed Vent System (4-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)					
Sampling Connections	Closed-Purge, Closed-Loop, or Closed-Vent System (4-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)					
Valves, Fittings, Diaphragms, Hatches, Sight-Glasses, Open-Ended Pipes and Meters in VOC Service	Compliance with AQMD Rule 1173 (12-5-2003)					

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12-5-2003 Rev. 1

Equipment or Process: Fugitive Emission Sources at Organic Liquid Bulk Loading Facilities

	Criteria Pollutants					
Subcategory/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Compressors, Centrifugal Type	Seal System with a Higher Pressure Barrier Fluid; < 500 ppmv by USEPA Method 21 with Quarterly I&M Program[1)] (04-10-98)					
Compressors, Rotary Type	Enclosed Seal System Connected to Closed Vent System; < 500 ppmv by USEPA Method 21 with Quarterly I&M Program[1)] (04-10-98)					
Connectors[2)] in Gas, Vapor or Light Liquid VOC Service	< 500 ppmv by USEPA Method 21 with Quarterly I&M Program[1)] (04-10-98)					
Open Ended Valves and Pipes	Compliance with AQMD Rule 1173 where Applicable (10-20-2000)					
Pressure Relief Valves	Connected to Closed Vent System or Equipped with Rupture Disc if Applicable (4-10-98); and Compliance with AQMD Rule 1173 (10-20-2000)					
Process Valves – Gate, Globe and Ball	Compliance with AQMD Rule 1173, where Applicable (10-20-2000)					
Pumps – In Heavy Liquid Service	Single Mechanical; < 1000 ppmv by USEPA Method 21 with Quarterly I&M (4-10-1998)					
Pumps – In Light Liquid Service	1. Sealless Type if Available and Compatible, or 2. Double or Tandem Seals and Vented to Closed Vent System; < 1000 ppmv by USEPA Method 21 with Approved AQMD I&M; <1000 ppmv by USEPA Method 21 with Approved AQMD I&M (4-10-98)					
Sampling Connections	Closed-Purge, Closed-Loop, or Closed-Vent System (4-10-98)					

1) Quarterly I&M shall be consistent with AQMD Rule 1173 and other applicable requirements except that leaks between 500 and 1000 ppmv must be repaired within 14 days after detection.
2) Connectors include flanges, screwed or other joined fittings

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3) 10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Fugitive Emission Sources, Other Facilities

	Criteria Pollutants					
Subcategory/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Compressors, Fittings, Open Ended Pipes, Pressure Relief Devices, , Valves, Pumps, Sampling Connections, Diaphragms, Hatches, Sight-Glasses and Meters in VOC Service	Compliance with Rule 1173, where Applicable by Rule (12-5-2003)					

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10-20-2000 Rev. 0

Equipment or Process: Galvanizing Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas with Baghouse with Lime Coating (1988)	
Continuous Sheet Metal Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas with Packed Column Scrubber Serving the Caustic, Acid Pickling Tanks and/or Metal Preparation Tanks (1988, 2000)	
Continuous Wire Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas with Noncombustible Covering on Molten Metal Surface, Baghouse, and Packed Column Scrubber Serving the Metal Preparation Tanks (1988, 2000)	

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10-20-2000 Rev. 0

Equipment or Process: Garnetting Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse or Rotary Drum Filter (1988)	

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10-20-2000 Rev. 0
12-3-2004 Rev. 1

Equipment or Process: Gas Turbine

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas Fired, < 3 MWe		9 ppmvd @ 15% O_2 (10-20-2000)		10 ppmvd @ 15% O_2 (10-20-2000)		9 ppmvd ammonia @ 15% O_2 (10-20-2000)
Natural Gas Fired, ≥ 3 MWe and < 50 MWe		2.5 ppmvd @ 15% O_2 x efficiency (%)[1)] / 34% (6-12-98)		10 ppmvd @ 15% O_2 (6-12-98)		5.0 ppmvd ammonia @ 15% O_2 (10-20-2000)
Natural Gas Fired, ≥ 50 MWe	2.0 ppmvd (as methane) @ 15% O_2, 1-hour avg. OR 0.0027 lbs/MMBtu (higher heating value) (10-20-2000)	2.5 ppmvd @ 15% O_2, 1-hour rolling avg. OR 2.0 ppmvd @ 15 %O_2, 3-hour rolling avg. x efficiency (%)[1)] / 34% (10-20-2000)		6.0 ppmvd @ 15% O_2, 3-hour rolling avg. (10-20-2000)		5.0 ppmvd ammonia @ 15% O_2 (10-20-2000)
Emergency		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	
Landfill or Digester Gas Fired		25 ppmv, dry, corrected to 15 %O_2 (1990)	Compliance with Rule 431.1 (10-20-2000)	130 ppmv, dry, corrected to 15 %O_2 (10-20-2000)	Fuel Gas Treatment for Particulate Removal (1990)	

Notes: 1) The turbine efficiency correction for NOx is limited to 1.0 as a minimum. The turbine efficiency is the demonstrated percent efficiency at full load (corrected to the higher heating value of the fuel) without consideration of any downstream heat recovery (12-3-2004).

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10-20-2000 Rev. 0
Equipment or Process: Glass Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Decorator Glass		Natural Gas with Low NOx Burner (10-20-2000); Cullet in Raw Material Charged > 80% (1988)			Baghouse (10-20-2000)	
Flat Glass		Natural Gas with Heating Modifications: - Excess Oxygen in Ports < 5% - Cullet in Raw Material Charged > 15% - Hot Spot Temperature < 2,700 °F (1988)	Process Modification: Sulfur Content of Batch Charged < 0.25% by Weight of Total Batch (1988)		Baghouse (10-20-2000)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Incinerator – Hazardous Waste

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Automatic Combustion Air Control, ≥ 2 Sec. Retention Time and ≥ 1800 °F (1988)	Natural Gas Supplemental Fuel with Selective Non-catalytic Reduction (1988)	Natural Gas Supplemental Fuel and Spray Dryer with Lime Injection (1988)	Automatic Combustion Air Control, ≥ 2 Sec. Retention Time and ≥ 1800 °F (1988)	0.002 gr/dscf at 12% CO_2 (1988)	

Note: The equipment may also be subject to 40 CFR 264, Subpart O--Incinerators

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10-20-2000 Rev. 0

Equipment or Process: Incinerator – Infectious Waste

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
≤ 300 lbs/hr	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)	Natural Gas as Auxiliary Fuel (1988)	Natural Gas as Auxiliary Fuel with Wet Scrubber (1988)	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)		
> 300 lbs/hr	Same as Above	Same as Above	Same as Above	Same as Above	0.04 gr/dscf Corrected to 12% CO_2, with Enclosed Automatic Feed and Ash Removal System (1988)	

Note: The equipment may also be subject to 40 CFR 60, Subpart Ec--Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction Is Commenced After June 20, 1996

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10-20-2000 Rev. 0
7-9-2004 Rev. 1

Equipment or Process: Incinerator – Non-Infectious, Non-Hazardous Waste

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
≤ 300 lbs/hr	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1600 °F} (1988)	Natural Gas as Auxiliary Fuel (1988)	Natural Gas as Auxiliary Fuel with Wet Scrubber (1988)	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1600 °F) (1988)	Natural Gas as Auxiliary Fuel with Enclosed Automatic Feed and Flyash Removal System (1988)	
> 300 lbs/hr and < 750 lbs/hr	Same as Above	Same as Above	Same as Above	Same as Above	0.04 gr/dscf Corrected to 12% CO_2, with Enclosed Automatic Feed and Ash Removal System (1988)	
≥ 750 lbs/hr	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)	Same as Above	Same as Above	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)	Same as Above	

Note: The equipment may also be subject to 40 CFR 60, Subpart CCCC--Standards of Performance for New Stationary Sources: Commercial and Industrial Solid Waste Incineration Units.

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10-20-2000 Rev. 0
7-14-2006 Rev. 1

Equipment or Process: I.C. Engine, Portable

		Criteria Pollutants					
Subcategory/	**Rating/Size**	**VOC**	**NOx**	**NOx + NMHC[1)]**	**SOx**	**CO**	**PM**
Compression-Ignition[2)]	50 ≤ HP < 100			Tier 2: 7.5 grams/kW-hr (5.6 grams/bhp-hr) Tier 3 (After 12/31/2007): 4.7 grams/kW-hr (3.5 grams/bhp-hr) (7-14-2006)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	Tier 2 or Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (7-14-2006)	Tier 2 or Tier 3: 0.40 grams/kW-hr (0.30 grams/bhp-hr) and CARB ATCM for portable diesel engines[3)] (7-14-2006)
	100 ≤ HP < 175			Tier 2: 6.6 grams/kW-hr (4.9 grams/bhp-hr) Tier 3 (After 12-31-2006): 4.0 grams/kW-hr (3.0 grams/bhp-hr) (7-14-2006)		Tier 2 or Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (7-14-2006)	Tier 2 or Tier 3: 0.30 grams/kW-hr (0.22 grams/bhp-hr) and CARB ATCM for portable diesel engines[3)] (7-14-2006)
	175 ≤ HP < 750			Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr): (7-14-2006)		Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (7-14-2006)	Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) and CARB ATCM for portable diesel engines[3)] (7-14-2006)
	≥750 HP			Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (7-14-2006)		Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (7-14-2006)	Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) and CARB ATCM for portable diesel engines[3)] (7-14-2006)

(Continued on Next Page)

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Spark Ignition	All	1.5 grams/bhp-hr, or 240 ppmvd as methane @ 15% O2 (4-10-1998)	1.5 grams/bhp-hr, or 80 ppmvd @ 15% O2 (4-10-1998)			2.0 grams/bhp-hr, or 176 ppmvd @ 15% O2 (4-10-1998)	

Notes:

1) NMHC + NOx means the sum of non-methane hydrocarbons and oxides of nitrogen emissions.
2) Limits with an associated "after" date are required for an engine for which the application is deemed complete after that date. Limits without an associated "after" date are required now. The engine must be certified by U.S. EPA or CARB to meet the Tier 2 or 3 emission requirements of 40 CFR Part 89 – Control of Emissions from New and In-use Nonroad Compression-Ignition Engines shown in the table– or otherwise demonstrate that it meets the Tier 2 or 3 emission limits. If, because of the averaging, banking, and trading program, there is no new engine from any manufacturer that meets the above standards, then the engine must meet the family emission limits established by the manufacturer and approved by U.S. EPA. The CARB Air Toxic Control Measure (ATCM) for Portable Diesel Engines (see http://www.arb.ca.gov/diesel/peatcm/peatcm.htm) requires in-use portable diesel engines to be certified to Tier 1, 2 or 3 by 1/1/2010. All exceptions allowed in the ATCM are also allowed in this guideline.
3) The CARB ATCM also requires in-use portable diesel engines to meet fleet-average PM standards beginning 1/1/2013. The PM limits in the table apply only to filterable PM.

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10-20-2000 Rev. 0
6-6-2003 Rev. 1
12-3-2004 Rev. 2
7-14-2006 Rev. 3
10-3-2008 Rev. 4

Equipment or Process: I.C. Engine, Stationary, Emergency [1)]

		Criteria Pollutants					
Subcategory/	**Rating/Size**	**NMHC or VOC**	**NOx**	**NOx + NMHC[2)]**	**SOx**	**CO**	**PM**
Compression Ignition, Fire Pump [3) 4) 7)] (Continued on next page)	50 ≤ HP < 100			<u>Tier 2:</u> 7.5 grams/kW-hr (5.6 grams/bhp-hr) <u>Tier 3 (After 12/31/2010):</u> 4.7 grams/kW-hr (3.5 grams/bhp-hr) (10-03-2008)	Diesel fuel sulfur content ≤ 0.05% by weight (4-10-98) On or after June 1, 2004 the user may only purchase diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	<u>Tier 2 or Tier 3:</u> 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) <u>Tier 2 or Tier 3:</u> 0.40 grams/kW-hr (0.30 grams/bhp-hr) (10-03-2008)

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Compression Ignition, Fire Pump [3) 4) 7)] (continued)	100 ≤ HP < 175			Tier 2: 6.6 grams/kW-hr (4.9 grams/bhp-hr) Tier 3 (After 12/31/2009): 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008)	Same as above	Tier 2 or Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) Tier 2 or Tier 3: 0.30 grams/kW-hr (0.22 grams/bhp-hr) (10-03-2008)
	175 ≤ HP < 750			Tier 2: 6.6 grams/kW-hr (4.9 grams/bhp-hr) Tier 3 (After 12/31/2008): 4.0 grams/kW-hr (3.0 grams/bhp-hr): (10-03-2008)		Tier 2 or Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) Tier 2 or Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
	≥750 HP			Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (10-03-2008)		Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
Compression-Ignition, Other[3) 4) 7)] (continued on next page)	50 ≤ HP < 100			Tier 3: 4.7 grams/kW-hr (3.5 grams/bhp-hr) (10-03-2008)	Same as above	Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) Tier 3: 0.40 grams/kW-hr (0.30 grams/bhp-hr) (10-03-2008)

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Compression-Ignition, Other[3) 4) 7)] (continued)	100 ≤ HP < 175			Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008)	Same as above	Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) Tier 3: 0.30 grams/kW-hr (0.22 grams/bhp-hr) (10-03-2008)
	175 ≤ HP < 300			Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr): (10-03-2008)		Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
	300 ≤ HP < 750			Tier 3 [5)]: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (7-14-2006)		Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (7-14-2006)	Compliance with Rule 1470 (12-3-2004) Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (7-14-2006)
	≥750 HP			Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (10-03-2008)		Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with Rule 1470 (12-3-2004) Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
Spark Ignition [6)]	All	VOC: 1.5 grams/bhp-hr (10-20-2000)	1.5 grams/bhp-hr (10-20-2000)		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	2.0 grams/bhp-hr (10-20-2000)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)

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1) An emergency engine is an engine which operates as a temporary replacement for primary mechanical or electrical power sources during periods of fuel or energy shortage or while a primary power source is under repair. This includes fire pumps, emergency electrical generation and other emergency uses.

2) NMHC + NOx means the sum of non-methane hydrocarbons and oxides of nitrogen emissions.

3) AQMD restricts operation of emergency compression-ignition engines to 50 hours per year, or less if required by Rule 1470, for maintenance and testing and a maximum of 200 hours per year total operation. For engines used to drive standby generators, operation beyond 50 hours per year for maintenance and testing is allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage provided that the electrical grid operator or electric utility has ordered rotating outages in the control area where the engine is located or has indicated that it expects to issue such an order at a certain time, and the engine is located in a control area that is subject to the rotating outage. A new stationary compression-ignition engine will also be subject to a proposed federal New Source Performance Standard--Title 40, Part 60, Subpart IIII of the Code of Federal Regulations.

4) Limits with an associated "after" date are required for an engine for which the application is deemed complete after that date. Limits without an associated "after" date are required now. The engine must be certified by U.S. EPA or CARB to meet the Tier 1, 2 or 3 emission requirements of 40 CFR Part 89 – Control of Emissions from New and In-use Nonroad Compression-Ignition Engines shown in the table– or otherwise demonstrate that it meets the Tier 1, 2 or 3 emission limits. If, because of the averaging, banking, and trading program, there is no new engine from any manufacturer that meets the above standards, then the engine must meet the family emission limits established by the manufacturer and approved by U.S. EPA. The PM limits apply only to filterable PM.

5) A USEPA settlement with certain engine manufacturers caused Tier 3 engines to become available one year earlier than the date specified in Part 89 for engines in the 300 hp to <750 hp size range.

6) AQMD restricts operation of emergency spark-ignition engines to 50 hours per year for maintenance and testing and a maximum of 200 hours per year total operation. For emergency spark-ignition engines used to drive standby generators, operation beyond 50 hours per year for maintenance and testing is allowed only during emergencies resulting in an interruption of service of the primary power supply or during Stage II or III electrical emergencies declared by the electrical grid operator. Operators are allowed to use emergency spark-ignition engines as part of an interruptible electric service program. An interruptible electric service program is a program in which the facility receives payment or reduced rates in return for a requirement to reduce its electric load on the grid when requested to do so by the utility, the grid operator, or other organization.

7) Since some requirements are based upon the California Airborne Toxic Control Measure for Stationary Compression Ignition Engines, applicants are referred to Title 17, Section 93115.3 of the California Code of Regulations for possible exemptions.

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10-20-2000 Rev. 0
7-9-2004 Rev. 1
12-3-2004 Rev. 2

Equipment or Process: I.C. Engine, Stationary, Non-Emergency

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 2064 bhp	0.15 grams/bhp-hr (4-10-98)	0.15 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	0.60 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000) Compliance with Rule 1470. (12-3-2004)	
≥ 2064 bhp	25 ppm @ 15% O_2 (7-9-2004)	9 ppmvd @ 15% O_2 (7-9-2004)	Same as Above (10-20-2000)	33 ppmvd @ 15% O_2 (5-8-98)	Same as Above (7-9-2004)	Ammonia: 10 ppmvd @ 15% O_2 (7-9-2004)
Landfill or Digester Gas Fired	0.8 grams/bhp-hr (4-10-98)	0.60 grams/bhp-hr (4-10-98)	Compliance with Rule 431.1 (10-20-2000)	2.5 grams/bhp-hr (4-10-98)		

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Equipment or Process: Jet Engine Test Facility

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Experimental High Altitude Testing					Venturi Scrubber with Water Spray in Exhaust (1988)	
Experimental Sea Level (Low Altitude) Testing						
Performance Testing						

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Equipment or Process: Landfill Gas Gathering System

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with AQMD Rule 1150.1 - Control of Gaseous Emissions from Municipal Solid Waste Landfills (10-20-2000)					

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Equipment or Process: Latex Manufacturing - Reaction

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Catalytic Incinerator and Caustic Scrubber (1988)					

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Equipment or Process: Lead Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Pot or Crucible, Non-Refining Operations		Natural Gas (1990)	Natural Gas (1990)		Natural Gas and Melt only Sows, Pigs, Ingots or Clean Scrap (1990)	
Pot or Crucible, Refining Operations		Natural Gas (1990)	Natural Gas with Scrubber; or Natural Gas with Sulfur Free Refining Agents (1990)		Natural Gas with Baghouse (1990)	
Reverberatory, Secondary Melting Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas with Scrubber (1990)		Natural Gas with Baghouse (1990)	

Note: Some secondary lead smelting operations must also compy with the National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart X.

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Equipment or Process: Lead Oxide Manufacturing – Reaction Pot Barton Process

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas (1988)	Natural Gas (1988)		Natural Gas with Baghouse (1988)	

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Equipment or Process: Liquid Transfer and Handling

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Marine, Loading	For VOC Emissions: Vapor Collection System Vented to Incinerator (1990)					
Tank Truck and Rail Car Bulk Loading, Class A (AQMD Rule 462)	Compliance with AQMD Rule 462 (0.08 Lbs/1000 Gals) (10-20-2000)					For Ammonia: Bottom Loading with Vapor Collection System Vented to Packed Column Scrubber (10-20-2000)
Tank Truck and Rail Car Bulk Loading, Classes B and C (AQMD Rule 462)	Bottom Loading with Vapor Collection System Vented to: - Incinerator; or - Compression/absorption with Tail Gas Vented to Incinerator; or - Refrigeration System; or - Carbon Adsorption system and Compliance with AQMD Rule 462 (10-20-2000)					Same as Above

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Equipment or Process: Metal Heating Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner ≤ 50 ppmvd at 3% O_2, dry. (10-20-2000)	Natural Gas(1990)			Natural Gas(1990)

Note: This category includes metal aging, annealing, forging, heat treating, and homogenizing.

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Equipment or Process: Metallizing Spray Gun

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Water Wash Spray Booth or Scrubber (1988)	

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Equipment or Process: Mixer, Blender or Mill

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Dry					Baghouse (07-11-97)	
Wet	Carbon Adsorber; or Refrigerated Condenser; or Afterburner (VOC Emissions Only); or Vapor Recovery (07-11-97)				Baghouse if Dry Ingredients are Added (07-11-97)	Packed Column Scrubber (07-11-97)

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Equipment or Process: Nitric Acid Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Catalytic Reduction Furnace (07-11-97)				

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Equipment or Process: Non-Metallic Mineral Processing – Except Rock or Aggregate

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse for Enclosed Operations Water Fog Spray for Open Operations (1988)	

Notes:
1. Non-metallic Minerals are minerals such as rock salt, sodium compounds, pumice, gilsonite, talc and pyrophyllite, boron, barite, fluorspar, feldspar, diatomite, perlite, vermiculite, mica, carbon black, silicon and kyanite.
2. This category includes conveying, size reduction and classification.

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10-20-2000 Rev. 0

Equipment or Process: Nut Roasting

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Roaster		Natural Gas (1988)			Afterburner (≥ 0.3 second Retention Time at ≥ 1,400°F) (10-20-2000)	
Handling Equipment					Baghouse (10-20-2000)	

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10-20-2000 Rev. 0

Equipment or Process: Oil and Gas Production

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Combined Tankage	All Tanks Vented to: - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox (1988)					
Wellhead	All Wellheads Vented to : - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox (10-20-2000)					

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10-20-2000 Rev. 0

Equipment or Process: Open Spraying – Spray Gun

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with Regulation XI (10-20-2000)				Compliance with Regulation XI (10-20-2000)*	

* The open spraying must be conducted in a spray booth where feasible.

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10-20-2000 Rev. 0

Equipment or Process: Perlite Manufacturing System

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (10-20-2000)		Baghouse (1988)	

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10-20-2000 Rev. 0
7-9-2004 Rev. 1

Equipment or Process: Pharmaceutical Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Operations Involving Solvents	Afterburner (≥0.3 second Retention Time at ≥1,400°F), Refrigerated Condenser, or Carbon Adsorber (07-11-97)					
Solids Handling					Baghouse (07-11-97)	
Solids Storage Tanks					Baghouse or Vent Filter (07-11-97)	

Note: This equipment may also be subject to AQMD Rule 1103 and 40 CFR 63 Subpart GGG – National Emission Standards Pharmaceuticals Production. (7-9-2004)

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10-20-2000 Rev. 0

Equipment or Process: Phosphoric Acid - Thermal Process

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Fiber Mist Filter, Electrostatic Precipitator, or Packed Scrubber with Mist Eliminator (07-11-97)	

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10-20-2000 Rev. 0

Equipment or Process: Phthalic Anhydride

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Afterburner (≥0.3 Second Retention Time at ≥1,400°F) or Water Cooled Condenser (07-11-97)	

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10-20-2000 Rev. 0

Equipment or Process: Plasma Arc Metal Cutting Torch

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
> 30 KVA Electrical Input					Water Table and Nozzle Water Shroud; or Electrostatic Precipitator (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Polyester Resin Operations - Molding and Casting

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with AQMD's Rule 1162 and Use of Aqueous Emulsion Cleaner or Acetone for Clean-Up to Maximum Extent Possible (1988/10-20-2000)					

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10-20-2000 Rev. 0

Equipment or Process: Polystyrene Extruder

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Electrostatic Precipitator or Fiber Mist Filter (07-11-97)	

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10-20-2000 Rev. 0

Equipment or Process: Polystyrene Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Water Cooled Condenser (07-11-97)					

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10-20-2000 Rev. 0

Equipment or Process: Powder Coating Booth

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 37 Lbs/Day Throughput					Pocket or Bag-Type Filters (10-20-2000)	
≥ 37 Lbs/Day Throughput					Powder Recovery System with a Cyclone Followed by a Baghouse or Cartridge Dust Collector or HEPA Filters (≥ 99% efficiency) (1988/10-20-2000)	

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10-20-2000 Rev. 0

Equipment or Process: Precious Metal Reclamation

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Incineration		Natural Gas (1988)	Natural Gas (1988)		Natural Gas with Baghouse and: - Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F); or -Secondary Combustion Chamber (≥ 0.3 sec. Retention Time at ≥ 1400° F) (1988)	
Chemical Recovery and Chemical Reactions		3-Stage NOx Reduction Scrubber (07-11-97)				

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10-20-2000 Rev. 0
12-5-2003 Rev. 1
7-14-2006 Rev 2

Equipment or Process: Printing (Graphic Arts)

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Flexographic	Inks with ≤ 1.5 Lbs VOC/Gal, Less Water and Less Exempt Compounds (1990) Compliance with AQMD Rules 1130 and 1171 (12-5-2003)					
Letterpress	Compliance with AQMD Rules 1130 and 1171 (12-5-2003)					
Lithographic or Offset, Heatset	Low VOC Fountain Solution (≤ 8% by Vol. VOC); Low Vapor Pressure (≤ 10 mm Hg VOC Composite Partial Pressure[1)]) or Low VOC (≤ 100 g/l) Blanket and Roller Washes; Oil-Based or UV-Curable Inks; and Compliance with AQMD Rules 1130 and 1171 (7-14-2006)				Oven Venting to an Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 ^{0}F; 95% Overall Efficiency) (10-20-2000)	
Lithographic or Offset, Non-Heatset	Same As Above					
Rotogravure or Gravure—Publication and Packaging	Compliance with AQMD Rules 1130 and 1171 (10-20-2000)					
Screen Printing and Drying	Compliance with AQMD Rules 1130.1 and 1171 (12-5-2003)					

(Continued on Next Page)

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

1) VOC COMPOSITE PARTIAL PRESSURE is the sum of the partial pressures of the compounds defined as VOCs. VOC Composite Partial Pressure is calculated as follows:

$$PPc = \sum_{i=1}^{n} \frac{\frac{(W_i)(VP_i)}{MW_i}}{\frac{Ww}{MWw} + \frac{We}{MWe} + \sum_{i=1}^{n} \frac{W_i}{MW_i}}$$

Where:

PPc	=	VOC composite partial pressure at 20°C in mm Hg
Wi	=	Weight of the "i"th VOC compound in grams
MWi	=	Molecular weight of "i"th VOC compound in grams per gram-mole
VPi	=	Vapor pressure of the "i"th VOC compound at 20°C in mm Hg
Ww	=	Weight of water in grams
MWw	=	Molecular weight of water in grams per gram-mole
We	=	Weight of exempt compound in grams
MWe	=	Molecular weight of exempt compound in grams per gram-mole

For multiple exempt compounds: $We / MWe = \sum_{j=1}^{n} Wej / MWej$

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10-20-2000 Rev. 0
10-03-2008 Rev. 1

Equipment or Process: Process Heater – Non-Refinery

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx [1)]**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas or Propane Fired, < 20 MM Btu/nr		≤ 20 ppmv dry corrected to 3% O_2 [2)] (10-20-2000)	Natural Gas (10-20-2000)	≤50 ppmv for firetube type, ≤ 100 ppmv for watertube type, dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	
Natural Gas or Propane Fired, ≥ 20 MM Btu/hr		With Low-NOx Burner: ≤ 9 ppmv dry corrected to 3% O_2 With SCR or LTO: ≤ 7 ppmv dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	Same as above. (10-20-2000)	Natural Gas (10-20-2000)	With SCR: ≤ 5 ppmvd NH3, corrected to 3% O2 With LTO: ≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)

1) Rules 1146 and 1146.1 require that boilers rated >2 and <75 MMBtu/hr meet 9 ppm NOx beginning 1/1/2012 for some categories, that natural gas-fired boilers rated at ≥75 MMBtu/hr meet 5 ppm by 1/1/2015 (except boilers at schools and universities), that natural-draft boilers rated >2 and ≤10 MMBtu/hr with unsealed combustion chambers meet 12 ppm by 1/1/2014, and that boilers firing landfill or digester gas meet 25 or 15 ppm, respectively, by 1/1/15 (all ppm are dry, corrected to 3% O2). Electric utility boilers, refinery boilers rated >40 MMBtu/hr and sulfur plant reaction boilers rated ≥5 MMBtu/hr are excluded; and there are exceptions for low-use boilers and boilers that met a 12-ppm limit prior to 9/5/08. Applicants are advised to review these rules for further details.

2) A higher NOx limit may be allowed for facilities required to have a standby fuel, where use of a clean standby fuel is not possible and an ultra low-NOx burner is not available.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Reactor with Atmospheric Vent [a)]

	Criteria Pollutants					
Rating/Size	**VOC/ODC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	- Carbon Adsorber; or - Afterburner (VOC Only); or - Refrigerated Condenser; or - Scrubber with Approved Liquid Waste Disposal (VOC only) (1990)					

a) Also see “Resin Manufacturing” and “Surfactant Manufacturing”. (12-5-2003)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Rendering

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Processing Equipment[1)]					Vent to Afterburner or Boiler Fire Box (≥ 0.3 sec. Retention Time at ≥ 1200 °F) (1988)	
Meal Grinding and Handling System					Enclosed Grinding and Screening Operation with Mechanical Conveyors Transporting Meal (1988)	
Tanks and Miscellaneous Equipment					Maintain Internal Temperature Below 140 °F (1988)	

1) Processing equipment includes crax pressing, filtering, centrifuging, evaporators, cookers, dryers, and grease and blood processing.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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12-5-2003 Rev. 0

Equipment or Process: Resin Manufacturing

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Continuous Polystyrene Process	Compliance with AQMD Rule 1141: ≤0.12 Pounds VOC per 1000 Pounds Completed Resin Product from Vacuum Devolatilizer and Styrene Recovery Systems (12-5-2003)					
Liquid-Phase, High-Density Polyethylene Slurry Process	Compliance with AQMD Rule 1141: ≥98% Reduction from Reactors, Recycle Treaters, Thinning Tanks, Blending Tanks and Product Finishing Section (12-5-2003)					
Liquid-Phase Polypropylene Process	Compliance with AQMD Rule 1141: ≥98% Reduction From Organic Resin Reactors, Slurry Vacuum Filter System, Diluent Recovery Section and Product Finishing Section (12-5-2003)					
Other Resin Manufacturing	Compliance with AQMD Rule 1141: ≤0.5 Pounds VOC per 1000 Pounds Completed Resin Product, or ≥95% Reduction from Resin Reactors, Thinning Tanks and Blending Tanks (12-5-2003)					

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10-20-2000 Rev. 0

Equipment or Process: Rock – Aggregate Processing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse Venting Jaw Crushers, Cone Crushers, and Material Transfer Points Adjacent to and after these Items; and Water Sprays at Other Material Transfer Points (1990)	

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10-20-2000 Rev. 0

Equipment or Process: Rocket Engine Test Cell

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Chemical Packed Scrubber (1988)			Chemical Packed Scrubber and Water Spray in Exhaust with Steam Ejectors (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Rubber Compounding – Banbury Type Mixer

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Sand Handling System with Shakeout and/or Muller in System

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Sewage Treatment Plants

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Carbon Adsorber or Scrubbing System, Covers for Primary Raw Sewage Processing, and Digester Gas Incineration or Recovery (1988)		Ferrous Chloride Injection and Caustic Scrubber for Hydrogen Sulfide Removal (1988)			

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Smokehouse

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1990)	Steam Heated Smokehouse and Electrically Heated Smoke Generator (1990)		Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1990)	Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1990)	

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10-20-2000 Rev. 0

Equipment or Process: Solder Leveling –Hot Oil or Hot Air

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Electrostatic Precipitator (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Solvent Reclamation

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Refrigerated or Water Cooled Condenser (07-11-97)					

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Equipment or Process: Spray Booth

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Automotive, Down-Draft Type, < 660 Lbs/Month of VOC Emissions	Compliance with Applicable AQMD Regulation XI Rules (10-20-2000)				Dry Filters or Waterwash (1990)	
Other Types, < 1170 Lbs/Month of VOC Emissions	Compliance with Applicable AQMD Regulation XI Rules (10-20-2000)				Same as Above (1990)	
Automotive, Down-Draft Type, ≥ 22 Lbs/Day of VOC Emissions	- Compliance with Applicable AQMD Regulation XI Rules, and VOC Control System with ≥ 90% Collection Efficiency and ≥ 95% Destruction Efficiency, or - Use of Super Clean Materials (< 5% VOC by weight): or - Use of Low-VOC Materials Resulting in an Equivalent Emission Reduction (10-20-2000)				Same as Above (1990)	
Other Types, ≥ 1170 Lbs/Month of VOC Emissions	Same as Above (10-20-2000)				Same as Above (1990)	

Note: The sum of all VOC emissions from all spray booths within the same subcategory applied for in the previous two years at the same facility are considered toward the emission threshold.

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Equipment or Process: Steel Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Electric Arc					Baghouse (1988)	
Induction, ≤ 300 Lb. Capacity					Charge Only Ingots or Clean Returns, or Baghouse (10-20-2000)	
Induction, > 300 Lb. Capacity					Baghouse (07-11-97)	

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Equipment or Process: Storage Tanks - Liquid

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Asphalt					Cool Gases to < 120 °F and Vent to a Fiberglass or Steel Wool Filter. (07-11-97)	
External Floating Roof, VP ≤ 11 psia	Category A Tank Seals and Compliance with Rule 463 (10-20-2000)					
Fixed Roof,	Vapor Recovery System with an Overall System Efficiency of ≥ 95% (7-11-97)					
Fuming Sulfuric Acid					Scrubber Followed by Fiber Mist Filter; or Water Spray Followed by Fiber Mist Filter (1988)	
Grease or Tallow					Maintain Temperature ≤ 140 °F (1988)	
Internal Floating Roof	Category A Tank Seals and Compliance with Rule 463 (10-20-2000)					
Sulfuric Acid			Caustic Scrubber and Mist Eliminator (1988)			
Underground, > 250 Gallons	≥ 95% Removal Efficiency for VOC (1990)					

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12-5-2003 Rev. 0

Equipment or Process: Surfactant Manufacturing

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with AQMD Rule 1141.2[a)]: ≤0.5 Pounds per 1000 Pounds of Surfactant Product, or ≥95% (Wt.) Reduction From All Surfactant Manufacturing Equipment Vented to Atmosphere (12-5-2003)					

a) Does not apply to soap manufacturing operations or facilities that only blend and package surfactants.

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10-20-2000 Rev. 0

Equipment or Process: Tank – Grease or Tallow Processing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Water Cooled or Atmospheric Condenser and Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200 °F) (1990)	

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10-20-2000 Rev. 0

Equipment or Process: Tire Buffer

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Cyclone and Water Spray at Rasp (07-11-97)	

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10-20-2000 Rev. 0

Equipment or Process: Vegetable Oil Purification

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Scrubber and Barometric Condenser (1988)					

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Equipment or Process: Vinegar Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Scrubber with AQMD- and Sanitation District-Approved Liquid Disposal (1988)					

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10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Wastewater System

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Oil/Water Separator	Cover and Vent to Vapor Disposal System (1988); and Compliance with AQMD Rule 1176 (12-5-2003)					
Other Equipment	Compliance with AQMD Rule 1176 if Applicable by Rule[a)] (12-5-2003)					

a) Not required for sanitary sewer system.

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10-20-2000 Rev. 0

Equipment or Process: Wax Burnoff Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low Nox Burner (1988)]	Natural Gas (1988)		Natural Gas with Afterburner or Secondary Combustion Chamber (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Wood Processing Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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12-5-2003 Rev. 0

Equipment or Process: Woodworking

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Pneumatic Conveyance System					Compliance with AQMD Rule 1137[a]: Baghouse with No Visible Emissions Except During Startup and Shutdown (12-5-2003)	

a) Not required if system vents solely to stand-alone control device or into a closed room.

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10-20-2000 Rev. 0

Equipment or Process: Zinc Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible or Pot		Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Ingot and/or Clean Scrap Charge Only, or Baghouse (1988/2000)	
Reverberatory, Non-Sweating Operations		Natural Gas (1990)	Natural Gas (1990)		Same as Above (10-20-2000)	
Reverberatory, Sweating Operations		Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Baghouse and: Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F); or Secondary Combustion (≥ 0.3 sec. Retention Time at ≥ 1400° F); (1990)	
Rotary, Sweating Operations		Natural Gas (1990)	Natural Gas (1990)		Same as Above (1990)	

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