

**SYNTHETIC MINOR APPLICATION EVALUATION REPORT
PACIFIC STEEL CASTING
APPLICATION 2399 PLANT 703 & 1603**

BACKGROUND:

Pacific Steel Casting (PSC) has chosen to apply for a Synthetic Minor Operating Permit (SMOP) to comply with the Title V permitting requirements of the Federal Clean Air Act. The Title V permitting requirements were implemented as a result of the 1990 revisions to the Federal Clean Air Act.

PSC is a steel-casting foundry located in Berkeley. For this evaluation Plants 703 and 1603 have been combined because they occupy contiguous properties (across the street from each other). The major emission resulting from this operations is precursor organic compounds (POC). A maximum of 90.0 tons of POCs are estimated to be emitted from this operation when the proposed operation limits are in place.

Except for POCs, criteria pollutant emissions are all estimated to be less than 16 tons/yr and combination HAP emissions are less than 5 tons/yr. PSC has decided to apply for the SMOP to obtain enforceable permit conditions limiting any criteria pollutant to less than 95 tons per year and their HAP emissions to less than 23 tons per year for any combination of HAPS and less than 9 tons per year for any individual HAP.

EMISSION LIMITS STRATEGY:

To obtain a synthetic minor permit, a facility must have enforceable limits that keep the potential to emit below 95 tons per year of any regulated pollutant, below 9 tons per year of any single HAP, and below 23 tons per year of any combination of HAPs. These limits include permitted and unpermitted sources.

PSC has two categories of sources. The first category consists of POC evaporating processes such as sand coating and molding operations. The second category of sources involves the combustion of fuel and particulate emissions. Estimated POC emissions are presented in Table 1. The second category includes sources such as electric arc furnaces and sand handling/processing. Estimated emissions for particulates and NO_x are presented in Table 2.

POC emissions will be tracked by calculation using District emission factors from the District's emission inventory database, production rates and usage records.

The second category of sources, particulates and NO_x, will not require limits since the estimated emissions are far below the limits.

EMISSIONS

The table below summarizes the relevant emission limits and estimated emissions before and after the application of the SMOP.

MAJOR FACILITY REVIEW THRESHOLDS & POTENTIAL TO EMIT ESTIMATES, TONS/YEAR

POLLUTANT	PM10	NOx	SO2	CO	POC	HAPs	
						Single	Total
THRESHOLDS							
Title V	100	100	100	100	100	10	25
SMOP	95	95	95	95	95	9	23
PTE							
Before SMOP	15.6	6.0	<0.1	0.1	475	1.4	3.6
After SMOP	15.6	6.0	<0.1	0.1	90	1.4	3.6

The HAPs estimates are derived from the District's emission inventory by using the District emission factors and the SMOP throughputs. The highest single HAP emission is Phenol at 1.4 tpy.

EMISSION CALCULATIONS

Emission calculations for all sources, presented in Table 1, are based on material throughputs multiplied by the respective District emission factors used in the District inventory calculations. Emission estimates for particulate and NOx emissions are presented in Table 2 and are based on AP-42 emission factors. The total POC emission limit for the plants will be 50 tons per year.

The emission estimates indicate particulate, NOx, CO, SO2 and HAP emissions are not significant at this facility.

STATEMENT OF COMPLIANCE:

This facility is in compliance with the necessary requirements in Regulation 2, Rule 6 to obtain a synthetic minor permit. PSC will be required to have enforceable permit conditions including emission limits that will keep their potential to emit under 95 tons per year of any regulated air pollutant.

CONDITIONS:

PSC, Plants 703 and 1603, have a synthetic minor operating permit. This operating permit covers all sources at the facility.

Conditions #1-4 establish the permit terms that ensure this plant is classified as a Synthetic Minor Facility under District Regulation 2, Rule 6 - Major Facility Review and ensure it is not subject to the permitting requirements of Title V of the Federal Clean Air Act as amended in 1990 and 40 CFR Part 70. All applications submitted by the applicant and all modifications to the plant's equipment after issuance of the synthetic minor permit must be evaluated to ensure that the facility cannot exceed the synthetic minor general limits below, and that sufficient monitoring, recordkeeping, and reporting requirements are imposed to ensure enforceability of the limits.

Any revision to a condition establishing this plant's status as a Synthetic Minor Facility or any new permit term that would limit emissions of a new or modified source for the purpose of maintaining the facility as a Synthetic Minor must undergo the procedures specified by Rule 2-6, Section 423. The basis for the synthetic minor conditions is an emission limit for regulated air pollutants of less than 95 tons per year, an emission limit for a single hazardous air pollutant of less than 9 tons per year, and an emission limit for a combination of hazardous air pollutants of less than 23 tons per year.

The permitted sources at plant 703 on the date of issuance of the synthetic minor permit are:

- 1 SAND SILO LOADING ELEVATOR
- 2 SAND SILO #1
- 3 SAND SILO #2
- 4 BUCKET ELEVATOR
- 5 RESIN TANK (LIQUI-BIN)
- 6 SAND HEATER
- 7 SAND COATING
- 8 COATED SAND PUG MILL
- 9 COATED SAND VIBRATING SCREEN
- 10 BUCKET ELEVATOR
- 11 COOLING TOWER, COATED SAND
- 12 BUCKET ELEVATOR
- 13 CORE MOLDING MACHINE [exempt]
- 14 CORE MOLDING MACHINE [exempt]
- 15 CORE MOLDING MACHINE [exempt]
- 16 CORE MOLDING MACHINE [exempt]
- 17 CORE MOLDING MACHINE [exempt]
- 18 CORE MOLDING MACHINE [exempt]
- 19 COATED SAND BIN
- 20 SHELL MOLDING MACHINE, SINGLE [exempt]
- 21 SHELL MOLDING MACHINE, TWIN [exempt]
- 22 SHELL MOLDING MACHINE, TWIN [exempt]
- 23 SHELL MOLDING MACHINE, TWIN [exempt]
- 24 SHELL MOLDING MACHINE, SINGLE [exempt]
- 25 ABRASIVE BLASTER, CORE AREA [exempt]
- 26 LARGE LADLE HEATER
- 27 ELECTRIC ARC FURNACE
- 28 EAF LADLE STATION W/CANOPY HOOD
- 29 SHELL MOLD POURING STATION
- 30 CAST MOLD COOLING ROOM
- 31 SHAKEOUT & TRAY SANDING
- 32 ROTOBLAST

- 33 ABRASIVE CUT-OFF SAW [exempt]
- 34 ABRASIVE CUT OFF SAW [exempt]
- 35 ABRASIVE CUT-OFF SAW [exempt]
- 36 ABRASIVE CUT-OFF SAW [exempt]
- 37 GRINDER [exempt]
- 38 GRINDER [exempt]
- 39 GRINDER [exempt]
- 40 GRINDER [exempt]
- 44 Sand Storage Silo
- 45 Lump Breaker
- 46 Flow Bin (Rejected Material)
- 47 Sand Cooler/Air Bed #1 (C-1)
- 48 Material Handling Equipment(3 hoppers,3 bucket elevs,one tr
- 49 (R-1), Thermal Recycling Unit (Sand Reclamation)
- 32000 MISCELLANEOUS MINOR SOURCES [exempt]

The permitted sources at plant 1603 on the date of issuance of the synthetic minor permit are:

- 1 Electric Arc Furnace
- 2 Ladle Heater [exempt]
- 4 Casting Mold Shake Out Station
- 5 Blast Table
- 6 Tumble Blast
- 7 New Sand Silo #1
- 9 Sand Cooler Classifier
- 10 Sand Conditioning Unit #1
- 11 Sand Conditioning Unit #2
- 12 Return Sand Bin #1
- 13 Reclaimed Sand Bin #2
- 14 Mixer Sand Bin
- 15 New Sand Receiving Bucket Elevator #1
- 16 Bucket Elevator #2 Returned Sand
- 17 Bucket Elevator #3 Reclaimed Sand
- 18 Mold Coating Operation

The following permit conditions are District conditions that do not establish this facility as a Synthetic Minor: 486 and 4292. Condition 14767 limits the throughput at Plant 703, Source 49, the Thermal Recycling Unit which limits the POC emissions from this source..

Synthetic Minor Conditions:
Condition # 20207

1. The owner/operator shall comply with the following limits:

Plant	Source #	Material	Individual Limit
703	7 Sand Coating	phenolic foundry binder	85 tpy
1603	14 Mixer Sand Bin	binder	2.5 tpy
	18 Mold Coating	mold coating	2.5 tpy

2. The owner/operator shall maintain District approved throughput logs that list the throughputs and mold coating usage in the sources specified in condition #2. Mass emissions of Precursor Organic Compounds (POC) from these sources shall be calculated using these throughputs and District approved emission factors.
- a. the year to date totals shall be derived each month by summing the totals for the previous twelve month period. The summaries shall be completed within thirty days after the end of each month. Logs of the information required to generate the necessary reports shall be retained for at least five years and be available for review during normal business hours by the District's representatives.
3. The Owner/Operator shall prepare an annual emissions report. The report shall contain the following items for the year ending June 30:
- a. Total POC emissions.

This report shall be submitted to the Director of Compliance and Enforcement by July 31 of each year.

4. The owner/operator shall report non-compliance with any of the above conditions in writing to the Director of Compliance and Enforcement within 10 calendar days of discovery of non-compliance.

Bob Nishimura
Supervising Air Quality Engineer

Date

**Table 1 Pacific Steel Casting Plants 703 and 1603
POC Emissions for SMOP**

Plant	Source #	Description	Thruput Material	Emission Factor (3)	Max Potential		SMOP Limit	
					Thruput	Emission	Thruput	Emission
				(lbs/ton)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
703	7	Sand Coating	sand	5.9(3)	30660	90.4	13650	40.3
	29	Shell Mold Pouring Station	steel	0.05(4)	33288	0.8	22230	0.6
	30	Cast Mold Cooling Room	steel	0.2(4)	33288	3.3	22230	2.2
	31	Shakeout & Tray Sanding	steel	0.02(4)	33288	0.3	22230	0.2
	49	Thermal Recycling Unit	sand	0.3(4)	9984	1.5	12480	1.9
1603	18	Mold Coating				7.3(1)		5.0(2)
				Total		103.7		50.1
Notes:								
1. Permit limit of 40 lbs/day for 365 days.								
2. Permit limit of 40 lbs/day for 250 days.								
3. Emission factor from 1978 source test.								
4. Emission factors from District's emission inventory database.								

**Table 2 Pacific Steel Casting Plants 703 and 1603
Particulate and NOx Emissions for SMOP**

Plant	Source Description	Thruput Material	Unit	Thruput (3)	Particulate(1)		NOX (2)	
					Emission Factor	Emission	Emission Factor	Emission
				(units/yr)	(lbs/unit)	(ton/yr)	(lbs/unit)	(ton/yr)
703	Electric Arc Furnace	steel	ton/yr	33288	13.0	4.3	0.2	3.3
	Sand Grinding/Handling	steel	ton/yr	33288	6.0	2.0		
	Core Ovens	steel	ton/yr	33288	0.9	0.3		
	Pouring/Casting	steel	ton/yr	33288	2.8	0.9		
	Casting Cleaning	steel	ton/yr	33288	1.7	0.6		
	Charge Handling	steel	ton/yr	33288	0.4	0.1		
	Casting Cooling	steel	ton/yr	33288	1.4	0.5		
				Total		8.7		3.3
1603	Electric Arc Furnace	steel	ton/yr	26280	13.0	3.4	0.2	2.6
	Sand Grinding/Handling	steel	ton/yr	26280	6.0	1.6		
	Core Ovens	steel	ton/yr	26280	0.9	0.2		
	Pouring/Casting	steel	ton/yr	26280	2.8	0.7		
	Casting Cleaning	steel	ton/yr	26280	1.7	0.4		
	Charge Handling	steel	ton/yr	26280	0.4	0.1		
	Casting Cooling	steel	ton/yr	26280	1.4	0.4		
				Total		6.9		2.6
				Total, Both Plants		15.6		6.0
	1. Emission factors from AP-42 abated at 98% by baghouses.							
	2. Emission factor from AP-42.							
	3. SMOP limit values.							

Attachment A
Existing Permit Conditions

COND# 486

1. Operation

- a. The exhaust from Dust Collector A2 (P2 Exhaust) shall pass through a carbon adsorber at all times during pouring operations at Plant #2.
- b. At least half of the exhaust from Dust Collector A1 (P1 Exhaust) shall pass through a carbon adsorber at all times during pouring operations at Plant #2 and all of the exhaust from Dust Collector A1 (P1 Exhaust) shall pass through a carbon adsorber during periods of adverse meteorology, except when carbon adsorber CA1 is out of service for maintenance.
- c. The pressure drop across each of the carbon adsorbers shall be greater than one inch water gauge and less than nine inches water gauge.
- d. The temperature of the exhaust entering the carbon adsorbers shall not exceed 110 F.
- e. The "odor level" in the exhaust from each carbon adsorber shall not exceed 60 odor units.
- f. Pouring operations at Plant #2 shall not be initiated if carbon adsorbers CA1 and CA2 have both ceased functioning or have both been removed from service.
- g. Pouring operations at Plant #2 shall not be initiated if odor test results show that the exhaust from both carbon adsorbers CA1 and CA2 have measured odor levels which exceed 60 odor units.
- h. The exhaust from Dust Collector A2 (P2 Exhaust) shall not be bypassed to carbon adsorber CA3.

2. Maintenance

- a. Whenever the exhaust from a carbon adsorber exceeds 60 odor units, at least one section of the carbon in that adsorber shall be replaced.
- b. Whenever the pressure drop across a carbon adsorber is less than one inch water gauge or greater than nine inches water gauge, that carbon adsorber shall be removed from service for maintenance.
- c. Sufficient carbon inventory must be kept on site to completely replace the carbon in at least two carbon adsorber sections. Whenever the carbon in an adsorber is replaced, the replenishment of the standby supply of carbon shall be completed within seven calendar days.

3. Testing And Monitoring

- a. At least 1 odor control test shall be performed on each carbon adsorber within the first week of operation.
- b. For one year after the start-up of the carbon adsorption system, each carbon unit must be tested for odor removal at least once every two weeks.
- c. When a carbon bed shows deterioration of odor removal such that the odor level at the outlet of the bed is greater than 25 odor units, then that carbon bed shall be tested for odor control every day of pouring operations at Plant #2 until a carbon section in that adsorber is replaced
- d. For each required odor control test under 3a, 3b and 3c, test samples shall be taken during the time of expected peak odor generation.
- e. For each carbon adsorber, the inlet temperature and the pressure drop shall be monitored continuously during all periods of operation.
- f. Odor evaluation shall be conducted in accordance with the Odor Evaluation Technique set forth in Attachment #1.

4. Reporting

- a. Upon start-up of the Carbon Adsorption system, reports of all odor test results shall be summarized and sent to the District on a monthly basis for the first three months, on a quarterly basis for the next nine months, and annually thereafter unless the provisions of 4n are triggered.
- b. Upon issuance of a Violation Notice for public nuisance, the APCO may, at his discretion, re-trigger the monthly and quarterly reporting requirements of 4a.
- c. Any breakdown of the carbon adsorber system which results in any exhaust from Dust Collector A2 (P2 exhaust) or all of the exhaust from dust collector A1 (P2 exhaust) bypassing the carbon adsorbers, shall be reported to the District within 24 hours of the breakdown.
- d. All data which is required to be collected under these conditions shall be maintained for a period of two years and shall be available for inspection upon reasonable notice by the APCO or his designated representative.

ODOR EVALUATION TECHNIQUE

Two grab samples shall be taken from each of the upstream and downstream carbon adsorber plenums by 100 ml pre-conditioned glass syringes through the sampling ports provided.

Each pair of samples shall be taken in quick succession to approach simultaneous sampling of the inlet and outlet conditions. Odor concentration shall be determined by dilution to the detection threshold with odor-free air as follows. A small measured quantity of the odor sample shall be transferred by using a reconditioned small (1 ml) syringe into a clean 100 ml syringe that contains about 10 ml of odor-free air. This syringe shall then be filled rapidly to the 100 ml mark with odor-free air. The initial volume of odor sample is thus diluted for a final volume of 100 ml. Therefore, if the sample transferred was 1 ml, for example, the dilution ratio would be 100 to 1. The dilution ratio shall be cut in half by doubling the size of the sample transferred into the 100 ml clean air syringe until a detection level is found. The procedure shall then be repeated with the second pair of grab samples. The average of the two determinations shall be recorded as a control record. When the control limit of 60 D/T is reached a panel of three people shall be used and the average of their individual detection levels shall determine the value to be recorded.

COND# 4292

Application No: 4612 Plant No: 703

Conditions For: *** S-22 and S-23**

1. The odorous emissions from S-22 and S-23 shall be collected, to the maximum extent possible using a District approved system, and vented under negative pressure to carbon adsorber CA-3 module in Carbon Adsorption Unit A-7 at all times when they are operational.
2. The pressure drop across carbon adsorber CA-3 shall be greater than one inch water gauge and less than nine inches water gauge.
3. The temperature of the exhaust entering the carbon adsorber CA-3 shall not exceed 110°F.
4. The "odor level" in the exhaust from carbon adsorber CA-3 shall not exceed 60 odor units.
5. Whenever the exhaust from carbon adsorber CA-3 reaches 60 odor units, the carbon in that adsorber shall be replaced.

6. For carbon adsorber CA-3, the inlet temperature and the pressure drop shall be monitored continuously during all periods of operation.
7. These conditions apply only to the operation of S-22 and S-23. Permit Conditions which apply to the operation of Carbon Adsorption Unit A-7 due to S-28 through S-32 are still fully in effect and enforceable.
8. Pacific Steel Casting shall maintain daily records, in a District approved log, to confirm compliance with conditions number 2, 3 and 4. These records shall be retained for a period of two years from date of first entry. The logs shall be kept on site and made available to the District Staff upon request.

COND# 14767

Plant # 703
Application 16879
Source 44-49
03-20-97

1. Operation of Sources 44-49 shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued. In no event shall the minimum operating temperature of Source 49's thermal recycling fluidized bed be less than 1400 degrees F.
2. Sources 44-49 shall be abated at all times by A-10 Pulse Jet Bag House Dust Collector. All associated abatement equipment shall be in good operating condition and operated in accordance with the manufacturer's recommendation when the sand recycling system (Sources 44-49) is in operation.
3. The collection efficiency of A-10 shall be at least 95% when Sources 44-49 are operating.
4. Formaldehyde emissions from Source 49 shall not exceed 0.04 pounds per day.
5. The total sand throughput for Source 49 shall be a maximum of 9,984 tons per consecutive twelve month period or 2 tons per hour maximum. If these amounts are exceeded the permit holder shall notify the District in advance.
6. In order to demonstrate compliance with permit condition #5, the permit holder shall maintain the following records in a logbook:
 - a. Monthly, and annual usage logs of the quantity of foundry sand throughput in Sources 44-49.
7. In order to demonstrate compliance with permit condition #3 and 4, the permit holder shall conduct a source test of the sand recycling system for PM10 and formaldehyde emissions, within 30 days of start-up. The District's Source Test Section shall review and pre-approve all source test procedures, as well as the installation and location of testing ports, instrumentation, and platforms. After the above approval is received, the owner/operator shall notify the District Permit Services Division and the Source Test Section at least two weeks prior to performing any source test. Source test results shall be submitted to the Source Test Section and the Permit Services Division within 30 days of completing the test.

8. To determine compliance with condition #1, Source 49 shall be equipped with continuous temperature measuring and recording instrumentation consisting of at least one temperature probe in the thermal incinerator and at least one recording device, which will continuously record temperature. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date of last entry.
9. Should the operation of Source 49 and any or all associated equipment (Sources 44-48) be determined by the District to cause nuisance odors, the permit holder shall immediately cease operation of the entire sand recycling system (Sources 44-49). In the event that this occurs, the operation of the sources shall be prohibited until all odor problems are resolved by the permit holder. Resolution of any odor problems may require the permanent shut down of sources 44-48 or the permanent venting of all emissions to existing carbon adsorption units located at Pacific Steel Casting.

**Addendum to Permit Condition # 14767
Plant # 703
Source # 49
Application # 16879
04-04-97**

Source 49 - Thermal Recycling Unit "Allowable Temperature Excursions"

The minimum temperature requirement of Condition 14767 shall not apply during an "Allowable Temperature Excursion" below the minimum temperature, provided that the controller set temperature is at or above the minimum temperature requirement. An Allowable Temperature Excursion is one of the following:

- a. A temperature excursion not exceeding 20 °F; or
- b. A temperature excursion for a period or periods aggregating less than or equal to 15 minutes in any hour; or
- c. A temperature excursion for a period or periods aggregating more than 15 minutes in any hour, provided that both of the following criteria are met. Only twelve such excursions are allowed per calendar year:
 - i. the excursion does not exceed 50 degrees F; and
 - ii. the duration of the excursion does not exceed 24 hours. Two or more excursions greater than 15 minutes in duration occurring during the same 24- hour period shall be counted as one excursion toward the 12 excursion limit.

For each Allowable Temperature Excursion that exceeds 20 °F and 15 minutes in duration, the Permit Holder shall keep sufficient records to demonstrate that they meet the qualifying criteria described above. Records shall be retained for a minimum of two years from the date of entry, and shall be made available to the District upon request. Records shall include at least the following information:

- a. Thermal oxidizer controller set temperature;
- b. Starting date and time, and duration of each Allowable Temperature Excursion;
- c. Minimum temperature during each Allowable Temperature Excursion;
- d. Number of Allowable Temperature Excursions per month, and total number for the current calendar year; and
- e. All strip charts or other temperature records.