

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>STATIONARY SOURCE AND COMPLIANCE DIVISION</b> Large Coating, Printing and Chemical Operations Team <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGE	1 of 8
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**PERMIT TO OPERATE  
ABRASIVE BLASTING CABINETS & DUST COLLECTOR EVALUATION**

**Applicant's Name**

**E.M.E., INC.**

**Company I.D.**

**45938**

**Mailing Address**

**P.O. BOX 4998, COMPTON, CA 90224**

**Equipment Address**

**431 E. OAKS STREET, COMPTON, CA 90221**

**Equipment Description**

**Application No.: 380560 (Operating Without Permit) P/O**

ABRASIVE BLASTING SYSTEM, NO. 2, CONSISTING OF:

1. CABINET, UNKNOWN MFG., MODEL NO. 27F3-3, 3' - 0" W. X 3' - 0" L. X 3' - 0" H.
2. ONE NOZZLE WITH MAXIMUM INTERNAL DIAMETER OF 1/4 INCH.
3. PLANT AIR WITH MAXIMUM PRESSURE AT 60 PSIG.
4. BLASTING POT, 30 POUNDS CAPACITY.
5. VENTED TO A DUST COLLECTOR AND A HEPA DUST COLLECTOR.

**Application No.: 380563 (Operating Without Permit) P/O**

ABRASIVE BLASTING SYSTEM, NO. 3, CONSISTING OF:

1. CABINET, UNKNOWN MFG., MODEL NO. 27F3-3, 3' - 0" W. X 3' - 0" L. X 3' - 0" H.
2. ONE NOZZLE WITH MAXIMUM INTERNAL DIAMETER OF 1/4 INCH.
3. PLANT AIR WITH MAXIMUM PRESSURE AT 60 PSIG.

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4. BLASTING POT, 30 POUNDS CAPACITY.
5. VENTED TO A DUST COLLECTOR AND A HEPA DUST COLLECTOR.

**Application No.: 380564 (Operating Without Permit) P/O**

ABRASIVE BLASTING SYSTEM, NO. WALK-IN #2, CONSISTING OF:

1. WALK-, UNKNOWN MODEL NO. 7X18.6X7, 7' - 6" W. X 18' - 6" L. X 7' - 0" H.
2. ONE NOZZLE WITH MAXIMUM INTERNAL DIAMETER OF 1/2 INCH.
3. PLANT AIR WITH MAXIMUM PRESSURE AT 60 PSIG.
4. BLASTING POT, 1,543 POUNDS CAPACITY.
5. VENTED TO A DUST COLLECTOR AND A HEPA DUST COLLECTOR.

**Application No.: 380565 (Operating Without Permit) P/O**

AIR POLLUTION CONTROL SYSTEM # 2CONSISTING OF:

1. DUST COLLECTOR, DUST-HOG, MODEL NO. FFBW-DC-U, WITH SIX CARTRIDGES, EACH 13.84" DIA. X 26" H., 1650 SQ. FT. TOTAL SURFACE AREA AND A PULSE JET CLEANING SYSTEM.
2. PRE-FILTER UNIT, 5' W. X 5' H. X 7' - 6" L, CONSISTING OF NINE 20" X 20" X 1" PRE-FILTERS (STAGE 1) AND NINE 20" X 20" X 12" BAG-FILTERS (STAGE 2).
3. HEPA-FILTER UNIT, CONSISTING OF EIGHT 24" X 24" X 11.5" ULPA FILTERS (STAGE 3).
4. EXHAUST SYSTEM WITH A 3 H.P. MOTOR VENTING TWO ABRASIVE BLASTING CABINETS AND WALK-IN ABRASIVE BLASTING ROOM.

<b>HISTORY</b>
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E.M.E. (Electro Machine and Engineering) is a major aerospace component manufacturer in the District. They have submitted the above permit applications with the District to permit existing two abrasive blasting cabinets, one abrasive blasting walk-in room, and a air pollution control equipment consisting of a dust collector and a three-stage filter system with HEPA filters.

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The abrasive blasters are vented to this 3-stage filter system. These three abrasive blasters are used to remove the paint from the parts which may contain chromium compounds. The 99.999% PM10 control efficiency of HEPA filters is sufficient to comply with the BACT and will provide compliance with the Rule 1401 requirements. The particulate emissions from this equipment is expected to be <0.5 lb/day. Hence, no offsets are required for this project.

EME Inc. is an aerospace component manufacturer (job-shop), where parts are surface treated and plated per customer's specifications. It has a number of permitted equipment, such as ovens, scrubber, bag-house, I. C. Engines, surface preparation tanks, chromium anodizing line, abrasive blasting equipment, spray booths, etc. under I.D. # 45938. E.M.E., Inc. is a Title V facility. The aerospace component manufacturing operation involves fabrication, cleaning, heat-treatment, coating, plating, and testing operations.

The district database shows no notices to comply or violations are issued to this company in the last two years. Also, the database shows no complaint against this facility for nuisance odors or visible emissions in the last two years.

This facility is located in an industrial area and no schools are located within 1000 feet from the property-line. With 99.999% PM10 control efficiency of the HEPA filters, this project is expected to have <1 in a million cancer risk. Also, emissions of the criteria pollutants from this project are expected to be below the threshold limits. Thus, Rule 212 public notice is not required for this project.

A Title V renewal permit for this facility was issued on July 28, 2008. The proposed project is considered a "de minimis significant permit revision" to the renewed Title V permit, as described in Regulation XXX evaluation.

**PROCESS DESCRIPTION**

The company is in a business of manufacturing of aerospace parts. Most of the company's products are aluminum parts. As a part of surface preparation activities some painted parts are shot blasted to remove the cured paint layer.

First the parts are loaded in the blasting cabinet. Then the blasting plastic bead media is directed to the components through a nozzle. This equipment is designed to recycle the blasting media, while exhausting the dust generated by the blasting process to an external baghouse and HEPA filter units.

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Hazardous metal particulate (Cr and PM10) emissions are expected from this operation. The equipment covered by this applications utilizes plastic bead media to blast paint on surfaces where the paint may not have been applied according to requirements. The errors in painting include improper masking, incorrect paint thickness, bubbles and cracks in the paint surface, etc. A maximum of 20 parts per day are processed in this equipment. The blasting cabinets and room are vented to HEPA dust collector and it is guaranteed to provide 99.999% control efficiency for the PM10 emissions.

**OPERATING HOURS**

Average: 1 hr/day, 7 day/week, 52 weeks/year  
Maximum: 1 hr/day, 7 day/week, 52 weeks/year

**EQUIPMENT SPECIFICATION**

Abrasive (Plastic Beads) Density, lbs/cu. ft.	: 105 lbs/ft <sup>3</sup>
Abrasive Emission Factor (E.F.)	: 0.021 lb/lb
No. of nozzle	: 1
Internal Dia. Of the nozzle	: 1/4"
Filter Area Ft <sup>2</sup>	: 1650 Ft <sup>2</sup>
Filter Cleaning method	: Pulse Jet cleaning
Dust Collector Efficiency (HEPA)	: 99.999% (per manufacturer)
Abrasive Blast Cabinet Volume	: 27 cubic feet
Blower exhaust flow rate	: 4400 scfm
Use Factor	: Dry 100% (i.e. 1)
Given	: PM10 = 50% of PM (Assumed)

**EMISSION CALCULATIONS**

1. Flow Rate (FR) = 746.38 lbs/hr (per manufacturer)
2. Max./Avg. Uncontrolled PM emissions (R1) (MHU)

$$PM (R1) = FR \times EF \times Use\ Factor = 746.38\ lbs/hr \times 0.021\ lb/lb \times 1(100\%) = 15.67\ lbs/hr$$

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3. Max./Avg. Uncontrolled PM10 emissions (R1) (AHU)

$$\text{PM10 (R1)} = 0.5 \times \text{PM} = 0.5 \times 15.67 = 7.84 \text{ lbs/hr.}$$

4. Controlled PM emissions (R2)

$$\text{PM (R2)} = 15.67 \times (1 - 0.9999) = 0.0002 \text{ lbs/hr.}$$

5. Controlled PM10 emissions (R2)

$$\text{PM10 (R2)} = 7.84 \times (1 - 0.9999) = 0.0001 \text{ lbs/hr.}$$

6. Exhaust Air Particulate Emission Concentration (PC)

$$\begin{aligned} &= \text{R2} / \text{Blower CFM} \times 7,000 \text{ grain/lb} / 60 \text{ min/hr} \\ &= 0.0001 / 4400 \text{ CFM} \times 7000 / 60 = 0.000002 \text{ grain/cfm} \end{aligned}$$

7. No. of air changes (AC)

$$\begin{aligned} \text{Cabinet Volume (V)} &= 27 \text{ cu.ft.} \\ \text{No. of air changes (A/C)} &= \text{Blower CFM} / V = 4400 / 27 = 163 \text{ air changes per minute.} \end{aligned}$$

8. Air-to-cloth ratio (A/C)

$$= \text{Blower CFM} / \text{Filter Area} = 4400 / 1650 = 2.66 : 1 \text{ (Adequate with added HEPA filter)}$$

**RULE 1401 EVALUATIONS:**

The applicant provided the following data on November 26, 2001 after performing an in-house experiment. A copy of the letter containing the details is in the application folder. The applicant informed the District that the above equipment is used only to remove paint from the painted parts. Only in-house painted parts are shot blasted in this equipment. Approximately 20 (maximum) parts are blasted in a day and maximum 15 sq. in. of paint is removed on a part. The average paint thickness is 0.0038". It takes 1 hour to blast maximum 20 parts.

The amount of paint removed from 20 parts per day (maximum) is 1.14 in<sup>3</sup>. (15 x 20 x 0.0038)

The dried paint weighs about 13 lbs. per gallon (231 in<sup>3</sup>),

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Hence, for 1.14 in<sup>3</sup> paint removed = 0.064 lbs/day = 0.02918 kg/day

Maximum Hex. Chrome in paint = 12000 mg/kg. (0.012 kg/kg)

Hex. Chrome per day = 0.02918 X 0.012 = 0.00035 kg/day

Hex. Chrome per day (R1) = 0.00035 kg/day = 0.000772 lb/day

The efficiency of the HEPA filters is 99.999%.

Hex. Chrome per day (R2) = 0.000772 X (1 - 0.99999) = 0.0000000772 lb/day

0.0000000772 lb/day X 365 = 0.0000282 lbs/yr. from one unit

0.0000282 X 3 (blasting units) = 0.0000846 lbs/yr. from three units under this project

The hourly emissions are same as daily emissions. The emission level of hex. Chromium from this project is well below the Tier 1 screening level of 0.000224 lbs/yr for a 25 meter receptor. This equipment is expected to comply with the Rule 1401 requirements of less I in a million cancer risk.

### RULES/REGULATIONS EVALUATIONS

▫ **RULE 212, PUBLIC NOTIFICATION**

√ **SECTION 212(c)(1):**

This section requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. This source is not located within 1,000 feet from the outer boundary of a school. Therefore, public notice will not be required by this section.

√ **SECTION 212(c)(2):**

This section requires a public notice for all new or modified facilities which have on-site emission increases exceeding any of the daily maximums as specified in subdivision (g). As shown in the following table, the emission increases from this project are below the daily maximum limits specified by Rule 212(g). Therefore, these applications will not be subject to this section.

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LB/DAY	CO	NOX	PM <sub>10</sub>	ROG	Lead	SOX
<b>MAX. LIMIT</b>	220	40	30	30	3	60
<b>INCREASES</b>	0	0	0	0	0	0

▼ **SECTION 212(c)(3):**

As discussed in the evaluation report above, the cancer risk from this project is expected to be less than 1 in a million. Therefore, public notice will not be required under this section.

▼ **SECTION 212(g):**

This section requires a public notice for all new or modified sources which undergo construction or modifications resulting an emissions increase exceeding any of the daily maximum specified in the table below. As shown in the following table, the emission increases from this project are below the daily maximum limits specified by Rule 212(g). Therefore, public notice will not be required by this section.

LB/DAY	CO	NOX	PM <sub>10</sub>	ROG	Lead	SOX
<b>MAX. LIMIT</b>	220	40	30	30	3	60
<b>INCREASES</b>	0	0	0	0	0	0

▣ **RULES 401 & 402, VISIBLE EMISSIONS & NUISANCE**

AQMD database has no records of any visible emissions or nuisance complaints against this company.

▣ **RULES 404 & 405, PARTICULATE MATTER CONCENTRATION & WEIGHT**

Compliance with these provisions is expected with 0.0005 grains/scf particulate concentration.

**REGULATION XIII**

▣ **RULE 1303(a), BEST AVAILABLE CONTROL TECHNOLOGY (BACT)**

(b) **PM10 EMISSIONS**

With the use of a three stage filter system with HEPA filter to control the PM10 emissions, this equipment will comply with the BACT requirements.

▣ **RULE 1303(b)(1), MODELING**

No detailed modeling analysis required due to less than 0.41 lbs/hr PM10 emissions.

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▫ **RULE 1303 (b)(2), EMISSION OFFSETS**

The PM10 emissions from this project is expected to be less than 0.5 lbs/day (0.0001 lbs/day X 3= 0.0003 lbs/day). Hence, emission offsets are not required for this project.

▫ **RULE 1401, NEW SOURCE REVIEW OF CARCINOGENIC AIR CONTAMINANTS**

As discussed in this evaluation report, this equipment is expected to comply with the rule requirements.

**REGULATION XXX**

**PLEASE REFER TO SEPARATE REG XXX EVALUATION**

This proposed project is the 2<sup>nd</sup> permit revision to the Title V renewal permit issued to this facility on July 28, 2008. This revision consists of two projects which were evaluated separately.

**RECOMMENDATION**

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “de minimis significant permit revision”, it is exempt from the public participation requirements under Rule 3006 (b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V permit will be issued to this facility.