



**ENGINEERING AND COMPLIANCE**

**APPLICATION PROCESSING AND CALCULATIONS**

APPL. NO. 451584 & 463340	DATE: 10/07/09
PROCESSED BY S. JIANG	CHECKED BY D. GORDON

**EVALUATION REPORT FOR PERMIT TO OPERATE**

**Applicant's Name:** CAMBRO MANUFACTURING COMPANY Facility ID: 8309

**Mailing Address:** P.O. BOX 2000  
HUNTINGTON BEACH, CALIFORNIA 92647-2000

**Equipment Location:** 7601 CLAY AVENUE  
HUNTINGTON BEACH, CALIFORNIA 92648

**APPLICATION NO. 451584 – Existing Plasma Arc Cutter**

PLASMA ARC CUTTER, THERMAL DYNAMICS PAKMASTER 38XL, SERIAL NO. 01486903, 240 VOLTS.

**APPLICATION NO. 463340 - MINOR TITLE V FACILITY PERMIT REVISION**

REVISION OF TITLE V FACILITY PERMIT PER RULE 301(1)(7).

**PERMIT CONDITIONS**

- OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
- THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
- THE OPERATOR SHALL LIMIT THE TOTAL LENGTH OF CUTS ON STAINLESS STEEL TO NO MORE THAN 30 FEET IN ANY CALENDAR MONTH.  
[RULE 1303(b)(2)-OFFSET]
- THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETER(S) OR ITEM(S):  
  
NUMBER OF CUTS ON STAINLESS STEEL PER CALENDAR MONTH  
  
LENGTH OF EACH CUT  
  
[RULE 3004 (a)(4)]

**Periodic Monitoring:**

- THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSIONS FROM

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ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THERE IS A PUBLIC COMPLAINT OF VISIBLE EMISSIONS, WHENEVER VISIBLE EMISSIONS ARE OBSERVED, AND ON AN ANNUAL BASIS, AT LEAST, UNLESS THE EQUIPMENT DID NOT OPERATE DURING THE ENTIRE ANNUAL PERIOD. THE ROUTINE ANNUAL INSPECTION SHALL BE CONDUCTED WHILE THE EQUIPMENT IS IN OPERATION AND DURING DAYLIGHT HOURS. IF ANY VISIBLE EMISSIONS (NOT INCLUDING CONDENSED WATER VAPOR) ARE DETECTED THAT LAST MORE THAN THREE MINUTES IN ANY ONE-HOUR, THE OPERATOR SHALL EITHER:

- A. VERIFY AND CERTIFY WITHIN 24 HOURS THAT THE EQUIPMENT CAUSING THE EMISSION AND ANY ASSOCIATED AIR POLLUTION CONTROL EQUIPMENT ARE OPERATING NORMALLY ACCORDING TO THEIR DESIGN AND STANDARD PROCEDURES AND UNDER THE SAME CONDITIONS UNDER WHICH COMPLIANCE WAS ACHIEVED IN THE PAST; OR
- B. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN ACCORDANCE WITH THE REPORTING REQUIREMENTS IN SECTION K OF THIS PERMIT; OR
- C. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. STACK OR EMISSION POINT IDENTIFICATION;
- B. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
- C. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
- D. VISIBLE EMISSION OBSERVATIONS RECORDED BY A CERTIFIED SMOKE READER.

[RULE 3004 (a)(4)]



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**BACKGROUND/HISTORY**

Cambro Manufacturing Co (Cambro) manufactures plastic products for the commercial food services industry. Cambro operates two facilities in Huntington Beach. One (facility ID: 8309) is located at 7601 Clay Avenue, which is engaged in the compression molding and injection molding processes. The other one (facility ID: 119021) is located at 5801 Skylab Road, which is engaged in the rotational molding and injection molding processes. Cambro Clay Avenue facility is a Title V facility but not RECLAIM. Cambro Skylab Road facility is a Non Title V and Non RECLAIM facility.

The initial Title V Permit for Cambro Clay Avenue facility was issued on July 3, 2002 and expired on July 2, 2007. A Title V Permit Renewal application was submitted on April 25, 2007, and the proposed renewal permit will be submitted to EPA for review simultaneously with the subject applications.

On December 22 and 30, 2005, and November 28, 2006, Cambro submitted the following applications:

<u>A/N</u>	<u>Type</u>	<u>Previous Permit No.</u>	<u>Equipment</u>
451584	PO no PC	N/A	Plasma Arc Cutter (Thermal Dynamics)
463340	Plan	N/A	Minor Title V Permit Revision

**Application No. 451584** was submitted for an existing portable Thermal Dynamics plasma arc cutter. This plasma arc cutter is used for cutting steel (including stainless steel) for mold repairs.

**Application No. 463340** was submitted as a plan for the Minor Revision of the Title V permit as specified in Rule 301.

**PROCESS DESCRIPTION**

*GENERAL*

The plasma arc cutting unit is used by Cambro’s maintenance department when they are required to cut steel (including stainless steel) plates up to 1/16 inch thick and 12 inch in length. A maximum 30 cuts per month is made using each of the two plasma arc cutters. Plasma is a combination of gas and air, which has been heated to an extremely high temperature and ionized so that the mixture gas/air becomes electrically conductive. An electrode is located inside the tip of the torch. The torch tip has a small orifice which constricts the arc. The compressed gas/air flows through the arc where it is heated to the plasma range. Since the gas/air cannot expand due to the constriction of the tip, the gas/air is force through the orifice and emerges in the form of a highly compressed air stream. The heat formed by the arc and the plasma melts the metal, and the air stream forces the molten metal form the cut.

*EMISSION SOURCES*

Plasma arc cutting unit is capable of PM emissions and other Toxic Air Contaminants.

This facility operates 24 hrs/day, 7 days/wk, and 52 wks/yr.

**ENGINEERING AND COMPLIANCE****APPLICATION PROCESSING AND CALCULATIONS**

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**EMISSION CALCULATIONS**

The company uses the plasma arc cutter to cut #304 stainless steel plates.

*Given:*

Operating Schedule: 1 hr/day, 6 days/wk, 52 wks/yr  
Width of the cut: 1/8 inch  
Thickness: 1/16 inch  
Length of the cut (Max.): 12 inches  
Max. no. of cuts per month: 30

**PM Emission Calculations****#304 Stainless Steel Properties:**Density = 0.29 lb/in<sup>3</sup>

Chromium content = 19%

Nickel content = 10%

**Assumptions:**

Emission factors are from Joe Tramma's memo dated 3/25/91;

1. PM emission factor (steel pipe) = 0.027 lb/lb metal melted
2. PM emission factor (steel plate) = 0.145 lb/lb metal melted
3. CR<sup>+6</sup> emission factor = 0.00022 lb/lb of CR in metal melted

Weight of melted material per cut = (12 in) (1/8 in) (1/16 in) (0.29 lb/in<sup>3</sup>)  
= 0.0272 lb/cut

Monthly melted material (Max.) = (0.0272 lb/cut) (30 cuts/month)  
= 0.816 lb/month

**Total PM Emissions:**

30-day ave. = (0.816 lb/month) (0.145 lb/lb) / (30 days/month) = 0.0039 lb/day

R1=R2 = (0.816 lb/month) (0.145 lb/lb) / (26 days/month) / (1 hr/day) = 0.00455 lb/hr

**Total PM10 Emissions:**

Assume PM = PM10

30-day ave. = 0.0039 lb/day

R1=R2 = 0.00455 lb/hr



**ENGINEERING AND COMPLIANCE**

**APPLICATION PROCESSING AND CALCULATIONS**

APPL. NO. 451584 & 463340	DATE: 10/07/09
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Total CR<sup>+6</sup> Emissions:

$$R1=R2 = (0.816 \text{ lb/month}) (19\% \text{ CR}) (0.00022 \text{ lb/lb}) / (26 \text{ days/month}) / (1 \text{ hr/day}) = 1.3 \times 10^{-6} \text{ lb/hr}$$

Total Nickel Emissions:

$$R1=R2 = (0.00455 \text{ lb/hr}) (10\% \text{ Nickel}) = 4.55 \times 10^{-4} \text{ lb/hr}$$

**EMISSION SUMMARY**

The emissions are summarized for the plasma arc cutter, as follows:

A/N 451584		HOURLY (lbs/hr)	DAILY (lbs/day)	30DAY AVE. (lbs/day)	30 DAY NSR (lbs/day)	ANNUAL AVE. (lbs/yr)
R1=R2	PM	4.55E-03	4.55E-03	3.94E-03	0	1.42
R1=R2	PM10	4.55E-03	4.55E-03	3.94E-03	0	1.42
R1=R2	CR <sup>+6</sup>	1.30E-06	1.30E-06	1.13E-06	0	4.06E-04
R1=R2	Nickel	4.55E-04	4.55E-04	3.94E-04	0	0.14

Daily (lbs/day) = (Hourly, lbs/hr) (1 hr/day)

Annually (lbs/yr) = (daily, lbs/hr) (6 day/wk) (52 wk/yr)

**HEALTH RISK ASSESSMENT- Tier I Analysis:**

Excel program results show ASI is greater than 1, Tier II analysis is required.

**HEALTH RISK ASSESSMENT- Tier II Analysis:**

Excel program results show MICR's are less than one (1) in a million, HIA and HIC are less than one; therefore, no further analysis is required.

**RULES AND REGULATIONS EVALUATION**

**Rule 212:** **Standards for Approving Permits** – The facility is not located within 1,000 feet of a K-12 school. In addition, each of the two arc cutters does not cause an individual cancer risk greater than, or equal to, one in ten (10) million. A Public Notice is not required.

Section (c)(3)(A)(i)

Equipment	MICR	Limit	Trgger Public Notice
Plasma arc cutter	3.88E-07	10E-06	NO



**ENGINEERING AND COMPLIANCE**

**APPLICATION PROCESSING AND CALCULATIONS**

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Section (g)

Item	Lb/dy daily maximum	Allow limit-lb/dy	Trigger Public notice
NOx	+0	40	No
ROG	+0	30	No
CO	+0	220	No
PM10	+0.0039	30	No
SOx	+0	60	No

**Rule 401:** **Visible Emissions** – Compliance is expected from well maintained and properly operated equipment.

**Rule 402:** **Public Nuisance** – The potential for public nuisance from the operation of this equipment is minimal. The facility is located in a commercial/industrial area.

**Rule 1303(a):** **BACT**

The increase of PM10 emissions from the operation of the plasma arc cutter is 0.0039 lb/day. BACT is not required.

**Rule 1303(b)(1):** **Modeling**

**Appl. No. 451584 – Thermal Dynamics plasma arc cutter**

The NOx, CO and PM10 emissions from this equipment are below the rule limits (specified in the table A1). Therefore, no further screening analysis is required.

	Allowed lb/hr	Actual lb/hr	Compliance
NOx	0.068	0	Yes
CO	3.7	0	Yes
PM10	0.41	0.0039	Yes

**Rule 1303(b)(2):** **Offsets:** Offsets are not required for this facility since the criteria contaminant emissions will not exceed the limits in table A (rule 1304(d))

	VOC (lb/day)	PM10 (lb/day)	NOX (lb/day)	CO (lb/day)	SOX (lb/day)
<b>Current NSR (PTE)</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>7</b>	<b>0</b>
<b>A/N 451584</b>	<b>0</b>	<b>+0.0039</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total PTE</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>7</b>	<b>0</b>
<b>Threshold limit</b>	<b>22</b>	<b>22</b>	<b>22</b>	<b>159</b>	<b>22</b>
<b>Offset required</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Rule 1401:** Compliance is expected. Excel program results show MICR's are less than one (1) in a million, HIA and HIC are less than one in Tier II Screening Analysis.



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**APPLICATION PROCESSING AND CALCULATIONS**

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**Reg XXX: Title V Permit**

Cambro Manufacturing Co (Facility ID: 008309) has an active Title V permit. The initial Title V Permit for Cambro Clay Avenue facility was issued on July 3, 2002 and expired on July 2, 2007. A Title V Permit Renewal application was submitted on April 25, 2007, and the proposed renewal permit will be submitted to EPA for review simultaneously with the subject applications.

Based on the above evaluation, each arc cutter will result in very small emission increases of CR<sup>+6</sup> and nickel. Therefore, application No. 451584 is considered Minor Permit Revision of Title V Facility Permit and it is subject to a 45-day EPA review prior to final revision of the Title V Facility Permit (Application No. 463340).

**CONCLUSION AND RECOMMENDATIONS**

Based on this evaluation, it is expected that the subject equipment will be operated in compliance with all applicable District Rules and Regulations. The Permit to Operate is recommended to be issued.