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

APPICATION NO. 464491 – Existing Burn-Off Furnace

BURNOFF FURNACE, FLUIDIZED BED, ALUMINUM OXIDE MEDIA, PORCEDYNE, MODEL NO. PCS-2430, 7'-0" L. X 3'-0" W. X 4'-0" H., ELECTRIC HEATING, 20 KW, WITH A DIGITAL CONTROLLER.

APPICATION NO. 464493 – Existing Afterburner

AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. AFTERBURNER, PORCEDYNE, MODEL NO. AB-20-1, 0.125 MMBTU/HR, NATURAL GAS FIRED.
2. EXHAUST SYSTEM WITH A 2 HP BLOWER, VENTING ONE BURNOFF FURNACE.

APPICATION NO. 464490 - MINOR TITLE V FACILITY PERMIT REVISION

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

PERMIT CONDITIONS

APPLICATION 464491

1. 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]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.
[RULE 1303(a)(1)-BACT]

4. PLASTIC MATERIALS CHARGED TO THIS EQUIPMENT SHALL NOT EXCEED 20.61 POUNDS PER CALENDAR MONTH.
[RULE 1303(b)(2)-OFFSET]

5. THE OPERATOR SHALL NOT CHARGE HALOGENATED COMPOUNDS TO THIS EQUIPMENT.
[RULE 1303(a)(1)-BACT]

6. THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETER(S) OR ITEM(S):

   MATERIAL SAFETY DATA SHEETS FOR ALL PLASTIC MATERIALS CHARGED TO THIS EQUIPMENT.

   POUNDS OF THE PLASTIC MATERIALS CHARGED TO THIS EQUIPMENT PER BATCH.

   NUMBER OF BATCHES PER CALENDAR MONTH.
   [RULE 3004 (a)(4)]

APPLICATION 464493

1. 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]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

3. THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE OF THE AFTERBURNER IS NOT LESS THAN 1,400 DEG F. TO COMPLY WITH THIS CONDITION THE OPERATOR SHALL INSTALL AND MAINTAIN A TEMPERATURE READING DEVICE TO ACCURATELY INDICATE THE TEMPERATURE OF THE AFTERBURNER. THE OPERATOR SHALL ALSO INSTALL AND MAINTAIN A DEVICE TO CONTINUOUSLY RECORD THE PARAMETER BEING MEASURED.
[RULE 1303(a)(1)-BACT]

4. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES OR REGULATIONS: NOX RULE 1147.
[RULE 1147]

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

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 January 9, 2007, Cambro submitted the following applications:

A/N	Type	Previous Permit No.	Equipment
464490	Plan	N/A	Minor Title V Permit Revision
464491	PO no PC	N/A	Burnoff Furnace
464493	PO no PC	N/A	Afterburner

Application No. 464490 was submitted as a plan for the minor revision of the Title V permit as specified in Rule 301.

Application No. 464491 was submitted for a new burnoff furnace. The burnoff furnace is used to burn off the residual plastic from steel injection nozzles that used in the injection molding operation. Based on the information provided, this burnoff furnace has been installed and operated. Therefore, this application is converted to Class-III (PO no PC), and a penalty fee will apply.

Application No. 464493 was submitted for a new afterburner, which is used to control organic emissions from the burnoff furnace. Based on the information provided, this afterburner has been installed and operated. Therefore, this application is converted to Class-III (PO no PC), and a penalty fee will apply.

PROCESS DESCRIPTION

Appl. No. 464491 – Burn-Off Furnace

Steel nozzles containing residual thermo plastics that used in the injection molding operation are placed in a stainless steel basket and lowered into the burn-off furnace. The burn-off furnace is heated electrically and it is a fluid bed furnace that utilizes aluminum oxide beads as its media. The nozzles are gradually heated to 850 ^{o}F, where the residual plastics are decomposed by pyrolysis and partial oxidation. The VOC emissions from the burn-off furnace are controlled by the afterburner.

Appl. No. 464494 – Afterburner

Fume generated during the plastic materials being cleaned in the burn-off furnace is controlled by the afterburner. This afterburner is fired at a fixed natural gas supplying rate. The burner is set to start before the beginning of the plastic cleaning process of the furnace, preheat the chamber to 1500 degrees F, and then continues with its operation concurrently with the burn-off furnace. The burner is set at a single firing rate for the entire cleaning cycle.

Material To Be Burned Out

Polycarbonate:	62%
Polyethylene :	12%
SAN (Styrene Acrylonitrille):	10%
Polypropylene:	7%
Ultem (Polyetherimide):	4%
Other (ABS, Polyacetal, Nylon)	5%

According to the facility, no PVC and/or halogenated compounds is to be burned in the furnace.

Emissions

VOC emissions are generated by decomposition of the plastics in the burn-off furnace. The VOC emissions are controlled by the afterburner.

NOx emissions are generated when burning SAN, Ultem, ABS and/or Nylon. The NOx emissions are not controlled.

Combustion emissions are expected from the 0.125 MMBtu/hr natural gas fired afterburner.

EMISSION CALCULATIONS

Application No. 464491 – Burn-off Furnace:

Operating Schedule (Max):	8 hrs/day, 2 day/wk, 52 wk/yr
Process Rate (Max):	100 lbs/batch, 8 hrs/batch, 9 batches/month
Max. Residual Plastic Content in steel nozzles:	2.29%

Max. Residual Plastics to be charged to the furnace per month:
(100 lbs/batch) (2.29%) (9 batches/month) = **20.61 lb/month**

Assumption:
All residual thermo plastic will evaporate as VOC
Afterburner control efficiency = 95%
All nitrogen element contained in the residual plastics will be converted to NO_2 in the afterburner

VOC emissions
R1= (100 lbs/batch) (2.29%) / (8 hr/batch) = 0.286 lbs/hr, or 2.29 lb/day
R2 = (0.286 lbs/hr) (1 – 95%) = 0.014 lb/hr, or 0.11 lb/day

NSR 30 days average:
(20.61 lb/month) (1 – 95%) / (30 days/month) = **0.034 lbs/day**

NOx emissions:

Oxidation of SAN (10% of total): $4C_8H_8 \cdot C_3H_3N + 59O_2 \rightarrow 44CO_2 + 22H_2O + 4NO_2$
(1 lb SAN will form 0.29 lbs NO_2)

Oxidation of Ultem (4% of total): $C_{37}H_{24}O_6N_2 + 42O_2 \rightarrow 37CO_2 + 12H_2O + 2NO_2$
(1 lb Ultem will form 0.155 lbs NO_2)

Oxidation of ABS (5% of total): $4C_8H_8 \cdot C_4H_6 \cdot C_3H_3N + 81O_2 \rightarrow 60CO_2 + 34H_2O + 4NO_2$
(1 lb ABS will form 0.218 lbs NO_2)

Total Process NOx Emissions:

R1=R2= (0.286 lbs/hr) (10% · 0.29 + 4% · 0.155 + 5% · 0.218) = 0.0132 lbs/hr, or 0.105 lb/day

NSR 30 days average:
(0.105 lb/batch) (9 batches/month) / (30 days/month) = **0.032 lb/day**

The emissions are summarized as follows:

Burn-Off Furnace		HOURLY (lbs/hr)	DAILY (lbs/day)	30DAY AVE. (lbs/day)	30 DAY NSR (lbs/day)	ANNUAL AVE. (lbs/yr)
R1	VOC	0.286	2.29	0.69	1	247.10
R2	VOC	0.014	0.11	0.03	0	12.36
R1=R2	NOX	0.013	0.11	0.03	0	11.40

Application No. 464493 - Afterburner:

Retention time at normal operating temperature: 0.7 sec at 1,500 ^oF
Burner rating: 0.125 MMBTU/hr
Operating Schedule (Max.): 24 hrs/day; 7 days/week; 52 weeks/yr

Emission Factors

Emission $_{\mathbf{ROG,SOX,PM10}}$ (lb/MMBtu) = $EF_{ROG,SOX,PM10}\left(\frac{lb}{MMscf}\right) x \frac{1MMscf}{1050MMBtu}$

Emission Factor Summary - Natural Gas

Pollutant	Emission Factor (AQMD Default) lb/mmscf	Emission Factor (for this report) lb/MMBtu
VOC	7	0.00667
SOx	0.6	0.000571
PM10	7.5	0.00714
NOx	130	0.12381
CO	35	0.03333

AQMD Default emission factors for a natural gas fired boiler were taken from "General Instruction Book for the AQMD 2006-2007 Annual Emission Reporting Program", Appendix A- Table 1):

The calculated afterburner combustion emission results are indicated below:

Afterburner		Hourly (lbs/hr)	Daily (lbs/day)	Annually (lbs/yr)	30 day ave. (lbs/day)	30 day NSR (lbs/day)
R1=R2	**VOC**	0.001	0.02	7.28	0.02	0
R1=R2	**SOx**	0.0001	0.00	0.62	0.00	0
R1=R2	**PM10**	0.001	0.02	7.80	0.02	0
R1=R2	**NOX**	0.0155	0.371	135.20	0.371	0
R1=R2	**CO**	0.004	0.10	36.40	0.10	0

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, there are no TAC's emissions for this project which will cause an individual cancer risk greater than, or equal to, one (1) in a million. A Public Notice is not required.

ROG emissions increase: 0.03 lb/day
NOx emissions increase: 0.03 lb/day

Section (g)

Item	Lb/dy daily maximum	Allow limit-lb/dy	Trigger Public notice
NOx	+0.03	40	No
ROG	+0.03	30	No
CO	+0	220	No
PM10	+0	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 1147: **NOx Reductions from Miscellaneous Sources**

Application A/N 464493 - Afterburner

(c)(1) – this afterburner is subject to NOx emission limit of 60 ppm or 0.073 lb/mmBtu by July 1, 2026. The compliance date of July 1, 2026 is determined by the following:

(c)(2) – the purchasing invoice of the afterburner is dated on 12/28/06. The P/C application date is 1/9/07 and it was converted to PO no PC based on a phone conversation on 8/15/07. Therefore, compliance date for this afterburner is July 1, 2021 based on Table 2.

(c)(6) – since the afterburner NOx emissions are estimated to be 0.37lb/day, which is less than one (1) lb/day, additional five years are allowed for the compliance date. Therefore, the compliance date is July 1, 2026.

(c)(7) – On or after January 1, 2010, the operator shall perform combustion system maintenance in accordance with the manufacturer's schedule and specifications as identified in the manual and other written materials supplied by the manufacturer or distributor. Condition No. 4 is added to ensure the compliance with this rule.

(c)(8) – This afterburner is operating at one firing rate. Therefore, on or after January 1, 2011, the operator shall install and maintain in service a non-resettable, totalizing, fuel or time meter for this afterburner. Condition No. 4 is added to ensure the compliance with this rule.

Rule 1303(a): **BACT**

Application A/N 464491 – Burn-off Furnace
The uncontrolled VOC emission is 2.29 lb/day, which is greater than one (1) lb/day. Therefore, BACT is required. For the burn-off furnace, BACT for VOC emissions is afterburner or secondary combustion chamber with a retention time of greater than or equal to 0.3 seconds at a temperature of 1,400 deg F or higher. Since the subject burn-off furnace is equipped with such afterburner, BACT requirement is complied. A copy of the BACT guideline is attached at the end of this evaluation.

Application A/N 464493 - Afterburner
There is currently no BACT guideline for an afterburner. Therefore, no BACT limits will be imposed on the afterburner.

Rule 1303(b)(1): Modeling

Application A/N 464491 – Burn-off Furnace

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	0.013	Yes
CO	3.7	0	Yes
PM10	0.41	0	Yes

Application A/N 464493 - Afterburner
The afterburner is exempted based on Rule 1304(a)(5).

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)
Current NSR (PTE)	**1**	**0**	**3**	**7**	**0**
A/N 464491	**+0.03**	**0**	**+0.03**	**0**	**0**
A/N 464493	**+0.02**	**+0.02**	**+0.37**	**+0.1**	**+0**
Total PTE	**1**	**0**	**3**	**7**	**0**
Threshold limit	**22**	**22**	**22**	**159**	**22**
Offset required	**0**	**0**	**0**	**0**	**0**

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, the burn-off furnace will result in very small emission increases of VOC and NOx. Therefore, application Nos. 464491 and 464493 are considered a Minor Permit Revisions 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. 464490).

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.