

DRAFT
Engineering Evaluation
Cibo
Plant No. 23937; Application No. 28808
1201 Bridgeway, Sausalito, CA 94965

BACKGROUND

Cibo has applied for a Permit to Operate for the following equipment:

- S-1 Coffee Roaster, Giesen W6, 66,200 BTU/hr, Abated by A-1**
- A-1 Wet Cyclone Abatement, VortX Eco Filter**

Cibo operates a restaurant, coffee bar, and a coffee roasting facility. The above equipment is located at 1201 Bridgeway, Sausalito, CA 94965.

This is an existing unpermitted source. The initial operation date was in 2013. Late fees and four years of back fees were charged and paid in full.

There will be no afterburner. Enforcement and Compliance division confirmed that there is no compliance verification, no complaint, and no notice of violation for this equipment at current location. The District agreed that this facility to have no afterburner on site.

This source is located within 1,000 feet of a school: Tilden Preparatory School (1050 Bridgeway, Sausalito, CA 94965); therefore, this application requires Public notification per District's Regulation 2-1-412. A public notice was prepared and will be sent out to home address of the students of the school and to each address within a radius of 1,000 feet of the source.

EMISSION CALCULATIONS

Basis:

- Maximum Operating Rate: 39.6 lbs/hr
- Hours of Operation: 2,080 hr/yr (*Operating Schedule: 8 hours/day, 5 days/week, and 52 weeks/year*)
- Coffee Throughput: 82,368 lbs/yr
- Roaster Firing Rate: 0.066 MMBtu/hr
- Yearly Fuel Throughput: 137.7 MMBtu/yr
- Heat Capacity: 1050 MMBtu/MMscf Natural Gas

Emission factors for NO_x and CO are based on results from a source test conducted on Bay Area Coffee. Source Test NTV-718 conducted on 9/2/09 shows that the maximum NO_x emissions are 0.670 lb/ton and the maximum CO emissions are 1.261 lb/ton. To calculate emissions from S-1, Coffee Roaster, the estimated emission rate was raised to a conservative 1.5 lb/ton for CO since S-1 is not abated by an afterburner.

Emission factors for PM₁₀, and POC are taken from AP-42 Table 9.13.2-1 and Table 9.13.2-2 for coffee roasting operations without thermal oxidizers.

The emission factor for SO_x was based on a source test conducted on Kraft, Inc. District Test 99126, conducted on 12/17/98, reported a limit of 0.021 lb/ton for SO_x. For the purpose of calculating emissions from S-1, the limit was raised to a conservative 0.05 lb/ton.

Formaldehyde and acetaldehyde emission factors are also derived from Source Test NTV-718 conducted on Bay Area Coffee. They are adjusted to account for the lack of an afterburner.

For clarity, the emission factors are summarized in Table 1.

Table 1. Emission Factors for S-1 Coffee Roaster

Pollutant	Emission Factors [lb/ton]	Sources of Emission Factors
NO _x	1.261	Bay Area Coffee NTV-718
CO	1.5	Bay Area Coffee NTV-718
POC	0.86	AP-42 Batch Roaster (highest unabated EF for POC) Section 9.13.2
PM ₁₀	0.66	AP-42 Continuous Roaster (highest unabated EF for PM ₁₀) Section 9.13.2
SO _x	0.05	Kraft Source Test Result, District Test 99126 12/17/98
Formaldehyde	0.108	Bay Area Coffee NTV-718 (adjusted for no control)
Acetaldehyde	0.048	Bay Area Coffee NTV-718 (adjusted for no control)

Table 2. Emissions from S-1 Coffee Roaster

Pollutant	Annual Emissions [lb/yr]	Daily Emissions [lb/day]	Annual Emissions [TPY]
NOX	51.9	0.142	0.026
CO	61.8	0.169	0.031
POC	35.4	0.097	0.018
PM10	27.2	0.074	0.014
SOX	2.1	0.006	0.0010

Table 3. Toxic Air Contaminants Emissions from S-1 Coffee Roaster

	Annual Emissions [lbs/year]	Trigger Level [lbs/year]	Hourly Emissions [lbs/hour]	Trigger Level [lbs/hour]
Formaldehyde	4.45E+00	1.40E+01	1.52E-03	1.20E-01
Acetaldehyde	1.98E+00	2.90E+01	6.77E-04	1.00E+00

Compliance with Regulation 6-1-310 Particulate Weight Limitations

Regulation 6-1-310, Particulate Weight Limitation, states that any source may not emit matter in excess of 0.15 grain/dscf of exhaust gas volume.

Using the Environmental Protection Agency EPA "F_d" factor method from 40 CFR Part 60 test methods. F_d for natural gas is 8,710 dscf/MMBTU (from Method 19)

Annual PM₁₀ Emissions: (27.2 lb PM₁₀/year x 7000 grain/lb) / (365 days * 24 hrs) = 21.74 grains/hr

F_d factor method: 8710 dscf/MMBTU x 66,200 BTU/hr = 576.60 dscf/hr

S1: 21.74 grains/hr / 576.60 dscf/hr = 0.038 grains/dscf

Therefore, S-1 does not emit matter in excess of 0.15 grain/dscf and complies with Regulation 6-1-310.

PLANT CUMULATIVE EMISSIONS

Cibo located at 1201 Bridgeway in Sausalito is an existing unpermitted source. There are no existing emissions at this plant. Table 4 summarizes the cumulative increase in criteria pollutant emissions that will result from the operation of S-1.

Table 4. Cumulative Emissions Increase in tons/year

Pollutant	Existing Emissions [TPY]	New Emissions [TPY]	Total Emissions [TPY]
NOX	0.000	0.031	0.026
CO	0.000	0.031	0.031
POC	0.000	0.018	0.018
PM10	0.000	0.014	0.014
SOX	0.000	0.0010	0.0010

TOXIC RISK SCREENING

According to Chapter 9.13.2 of AP-42, Coffee Roasting, the roaster is the main source of gaseous pollutants, including aldehydes and acrolein. However, the California Air Resources Board (CARB) has invalidated the source test method for acrolein. Until CARB approves a new test method and acrolein emissions are estimated from factors developed using the new test method, the District is not evaluating risk for acrolein. There are no California Air Toxic Emission Factors (CATEF) factors for the aldehydes from coffee roasting.

According to Regulation 2, Rule 5, the chronic trigger level and acute trigger level for formaldehyde are 14 lb/yr and 0.12 lb/hr, respectively. The chronic trigger level for acetaldehyde is 29 lb/yr and 1 lb/hour, respectively. Formaldehyde and acetaldehyde emissions from S-1 are summarized in Table 3. The emissions do not exceed the trigger levels. Therefore, a health risk screen is not required.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO_x, CO, SO₂ or PM₁₀.

Based on the emission calculations above, BACT is not triggered for any pollutant since the maximum daily emissions of each pollutant does not exceed 10 pounds/ day.

OFFSETS

Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/year of POC or NO_x per Regulation 2, Rule 2, Section 302. Based on the calculations above, offsets are not required for this application.

New Source Performance Standards (NSPS)

S-1 is not affected by any subpart of 40 CFR Part 60.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

S-1 is not affected by any subpart of 40 CFR Part 63.

STATEMENT OF COMPLIANCE

Regulation 1 - General Provisions and Definitions

§1-301: This section prohibits discharging emissions in quantities that cause injury, detriment, nuisance or annoyance. The facility is expected to comply with this requirement.

Regulation 2, Rule 1 – General Requirements

This application is considered to be ministerial under the District's CEQA guidelines (Regulation 2-1-311) and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 11.3.

Permits - General Requirements, Regulation 2, Rule 1

This source is located within 1,000 feet of a school: Tilden Preparatory School (1050 Bridgeway, Sausalito, CA 94965); therefore, this application requires Public notification per District's Regulation 2-1-412. A public notice was prepared and will be sent out to home address of the students of the school and to each address within a radius of 1,000 feet of the source.

Regulation 3 - Fees

This regulation requires payment of filing, initial, late, back and permit fees. The facility is expected to comply with this requirement.

Particulate Matter and Visible Emissions, Regulation 6, Rule 1

Section 301 prohibits for more than 3 minutes per hour, visible emissions as dark or darker than Ringelmann 1 or equivalent opacity. This facility is expected to comply with this standard. Section 305 prohibits emissions of visible particles from causing a nuisance on property other than the operator's. This operation is expected to comply with this standard. Section 310 limits emissions to less than 0.15 gr/dscf. The facility is expected to comply with this standard. Section 311 limits emissions based on process weight. The facility is expected to comply with the process weight limitations contained in this section at all emission points.

Odorous Substances, Regulation 7

If the standards in this rule become applicable, then the facility is expected to comply with these standards.

PERMIT CONDITIONS

S-1 will be subject to permit conditions #26716 as shown below.

CONDITION #26716 -----

1. The owner/operator shall not roast more than 82,368 pounds of green coffee beans at Coffee Roaster, S-1 in any consecutive 12-month period. [Basis: Cumulative Increase]
2. The owner/operator shall not emit from any source for period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1.0 on the Ringelmann Chart of of such opacity as to obscure an observer's view to an equivalent or greater degree. [Basis: Regulation 6-1]
3. The owner/operator shall monitor the water flow manually every time S-1 is operated. [Basis: Cumulative Increase]
4. Operation of S-1 shall not emit emissions in sufficient quantities as to cause a public nuisance under Regulation 1-301 [Basis: Regulation 1-301]
5. The permit to operate is contingent upon compliance with Regulation 1-301, Standard for Public Nuisance, Regulation 7, Odorous Substances. Upon receipt of a violation for either of these regulations, the Air Pollution Control Officer may require the owner/operator to submit, within 60 days of notification by the APCO, a permit application for an Authority to Construct additional emission control. [Basis: Regulation 1-301, 7-301, 7-302, 7-303]
6. To demonstrate compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including the following information:

- a. Monthly records of the quantity of green coffee beans roasted at S-1 Coffee Roasters.
- b. Monthly usage records shall be totaled for each consecutive 12-month period.
- c. Records of continuous temperature measurements of the exhaust stack whenever S-1 Coffee Roaster is roasting coffee beans.

All records shall be retained onsite for two years from the date of entry, and made available for inspection by District staff upon request. These record-keeping requirements shall not replace the record keeping requirements contained in any applicable District Regulations. [Basis: Cumulative Increase]

RECOMMENDATION

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1,000 feet of a school, which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct for the following source:
recommend that the issuance of an Authority to Construct for the following source:

S-1 Coffee Roaster, Giesen W6, 66,200 BTU/hr, Abated by A-1
A-1 Wet Cyclone Abatement, VortX Eco Filter

Prepared by: _____
 Flora Chan
 Air Quality Engineer

Date: _____