DRAFT ENGINEERING EVALUATION REPORT
SOLUTIONS PLAN LLC DBA RHYNE DESIGN CUSTOM CABINETS
PLANT #4782
APPLICATION #31911

BACKGROUND

Solutions Plan LLC dba Rhyne Design Custom Cabinets (Applicant) operates at 380 Morris St, Ste D in Sebastopol, California. Currently, the Applicant is applying for an Authority to Construct and Permit to Operate one (1) new paint spray operation and associated solvent containment booth. The proposed source requires an Authority to Construct and Permit to Operate per BAAQMD Regulation 2-1-301 and Regulation 2-1-302, respectively. The source covered by this application for an authority to construct/permit to operate is identified as follows:

S-3 Paint Spray Operation and Associated Solvent Containment Booth

Currently, the Applicant only operates a source of emissions which has been granted a certificate of exemption by the Air District. The Applicant will apply coatings to custom wood cabinetry. The new source is located within 1,000 feet of a K-12 school and therefore this application is subject to the public notice requirements of BAAQMD Regulation 2-1-412.

EMISSIONS SUMMARY

Table 1
Annual and Daily POC Emissions for S-3

Solvent	Usage (gal/yr)	Density (lb/gal)	% POC (w/w)	BAAQMD Permit Handbook Emission Factor [1]	Annual Emissions (lb/yr)	Annual Emissions (TPY)	Highest Daily Emissions (lb/day) [2]
Rudd CrystalVar 275 Water-Clear Conversion Varnish Flat	60	8.83	41%	100%	217.21	0.109	0.84
Rudd MiraVar 275 Opaque Conversion Varnish Satin White	180	9.56	16%	100%	275.40	0.138	1.06
MiraVar 275 Opaque CV Sanding Sealer White	180	10.07	11%	100%	199.40	0.100	0.77
Acetone	180	6.59	0%	100%	0.00	0.000	0.00
				Total	**692.01**	**0.346**	**2.66**

[1] The BAAQMD Permit Handbook, Section 5.1 recommends 100% emissions of VOCs be assumed.

[2] Operating schedule is 9 hours/day, 5 days/week, and 52 weeks/year.

Table 2
Annual and Daily NPOC Emissions for S-3

Solvent	Usage (gal/yr)	Density (lb/gal)	% NPOC (w/w)	BAAQMD Permit Handbook Emission Factor [1]	Annual Emissions (lb/yr)	Annual Emissions (TPY)	Highest Daily Emissions (lb/day) [2]
Rudd CrystalVar 275 Water-Clear Conversion Varnish Flat	60	8.83	30%	100%	158.94	0.079	0.61
Rudd MiraVar 275 Opaque Conversion Varnish Satin White	180	9.56	50%	100%	860.62	0.430	3.31
MiraVar 275 Opaque CV Sanding Sealer White	180	10.07	50.0%	100%	906.35	0.453	3.49
Acetone	180	6.59	100.0%	100%	1186.56	0.593	4.56
				Total	**3112.47**	**1.56**	**11.97**

[1] The BAAQMD Permit Handbook, Section 5.1 recommends 100% emissions of VOCs be assumed.

[2] Operating schedule is 5 days/week and 52 weeks/year.

CUMULATIVE INCREASE

Table 3 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

Table 3
Plant Cumulative Emissions Increase Post 04/05/1991

Pollutant	Current Emissions (TPY)	Application Increase in Emissions (TPY)	New Total Emissions (TPY)
		S-3	
NOx	0.000	0.000	0.000
CO	0.000	0.000	0.000
POC	0.000	0.346	0.346
PM_{10}	0.000	0.000	0.000
$PM_{2.5}$	0.000	0.000	0.000
SO_2	0.000	0.000	0.000

TOXIC SCREENING ANALYSIS

As shown in Table 4, S-3 will emit ethyl benzene at a rate that exceed the chronic trigger level specified in Regulation 2, Rule 5, Table 2-5-1. Therefore, a health risk assessment is required.

Table 4
TAC Emissions From Wipe Cleaning

Material	% (w/w)	Usage (gal/yr)	Density (lb/gal)	Throughput (lb/yr)	Throughput (lb/hr)	BAAQMD Permit Handbook Emission Factor [1]	Chronic (lb/yr)	Acute (lb/hr)
	Ethyl Benzene						Ethyl Benzene	Ethyl Benzene
Rudd CrystalVar 275 Water-Clear Conversion Varnish	1.0%	60	8.83	529.79	0.23	100%	5.30	2.26E-03
Rudd MiraVar 275 Opaque Conversion Varnish Satin White	1.0%	180	9.56	1721.24	0.74	100%	17.21	7.36E-03
MiraVar 275 Opaque CV Sanding Sealer White	1.0%	180	10.07	1812.69	0.77	100%	18.13	7.75E-03
Acetone	0.0%	180	6.59	1186.56	0.51	100%	0.00	0.00E+00
						Total	**40.64**	**1.74E-02**
						Trigger (Table 2-5-1)	**33.00**	**N/A**
						Trigger Exceeded?	**Yes**	**No**

[1] The BAAQMD Permit Handbook, Section 5.1 recommends 100% emissions of VOCs be assumed.

BEST AVAILABLE CONTROL TECHNOLOGY

In accordance with Regulation 2-2-301, 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, SO_2, or PM_{10}.

At a maximum daily emissions rate of 2.77 lbs of POC per day, BACT is not triggered for POC.

At a maximum daily emissions rate of 11.97 lbs of NPOC per day, BACT is triggered for NPOC.

Per Regulation 2-2-206, BACT is determined by using the BACT/TBACT Workbook as a guidance document, or on a case-by-case basis, using the more stringent of:

1. The most effective emission control device or technique which has been successfully utilized for the type of equipment comprising such a source; or
2. The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or
3. Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or
4. The most effective emission control limitation for the type of equipment comprising such a source which the EPA states is contained in an approved implementation plan of any state.

BACT Analysis

The first step in the BACT analysis is to determine what level of emissions control has been achieved in practice for the source at issue. When considering this, the BAAQMD consulted BACT clearinghouses and guidelines published by US EPA, CARB, and other Air Districts. We are unaware of any wood coating operations of a similar size and throughput that are operating under any more stringent standards than compliance with BAAQMD Regulation 8, Rule 32. We consider compliance with this regulation to be achieved in practice.

The second step in the BACT analysis is to determine whether there is any more stringent level of control, beyond what has been achieved in practice, that is technologically feasible and cost-effective for the source under review. Typical technologies used to control NPOC from contained spray booths are carbon adsorbers and thermal oxidizers (also called afterburners). These technologies are considered to be technologically feasible for NPOC control of greater than or equal to 90% by weight.

A study that has evaluated the additional costs and emission reduction benefits that would be involved in implementing carbon adsorbers and thermal oxidizer technologies has shown that the cost would greater than the BAAQMD's BACT cost-effectiveness threshold of $17,500 per ton of VOC reduction for wood coating operations that have uncontrolled emissions that are less than 7,404 lb per year[1]. Between POC and NPOC emissions, the proposed wood coating operation has

[1] See Sacramento Metropolitan Air Quality Management District BACT Determination No. 277 (November 19, 2020), available at: http://www.airquality.org/StationarySources/Documents/Coatings%20-%20Wood%20Paint%20Spray%20Booth%20BACT%20277%20278.pdf

a potential to emit 3,804 lb per year. These control technologies are therefore not considered to be cost-effective for a wood coating operation of this size.

The BAAQMD therefore identifies compliance with Regulation 8, Rule 32 to be BACT for this operation. The applicant is expected to comply.

STATEMENT OF COMPLIANCE

Air District Rules

Regulation 2-1-310 (*Applicability of CEQA***)**

California Environmental Quality Act (CEQA): District Regulation 2-1-310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with CEQA requirements, except for ministerial projects under section 2-1-311 or projects exempt from CEQA under Section 2-1-312. The engineering review for this project requires a BACT determination. Therefore, there is discretionary engineering judgement that triggers CEQA.

The BAAQMD has determined that this permit action is exempt from CEQA because it constitutes an addition to the existing facility operations that will not result in an increase of more than 50 percent of the floor area of the existing facility operations or more than 2,500 square feet [2-1-312.9, CEQA Guidelines § 15301(e)(1)].

Regulation 2-1-412 (*Public Notice, Schools & Overburdened Communities***)**

A new or modified source located (i) within 1,000 feet of the outer boundary of a K-12 school site which results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants* or (ii) within an Overburdened Community as defined in Regulation 2-1-243 that requires a Health Risk Assessment (HRA) pursuant to Regulation 2-5-401 shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule 1 General Requirements*.

There is an increase in emissions of a toxic air contaminant from a new or modified source and the facility is less than 1000 feet from Analy High School. The facility is not located in an overburdened community. A public notice is required.

Regulation 2-2-301 (*Best Available Control Technology Requirement***)**

Best Available Control Technology (BACT): Per Regulation 2-2-301 BACT is required for new or modified sources with potential emissions of 10.0 pounds per day or more of POC, NPOC, NO_X, PM_{10}, or SO_2.

Referencing Table 2, S-3 will emit greater than 10 lbs/day of NPOC; therefore, S-3 is subject to BACT requirements.

Regulation 2-2-302 (*Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides***)**

Under Section 2-2-302, POC and NOx emission offsets are required for new or modified sources at a facility which emits or will be permitted to emit 10 tons per year or more on a pollutant specific basis.

S-3 will emit no more than (0.346) TPY POC; therefore, the facility will emit no more than (0.000 + 0.346) TPY = (0.346) TPY POC during any calendar year. The facility is not subject

to offsets requirements from Regulation 2-2-302 because the facility does not have the potential to emit more than 10 tons per year of POC or NOx.

Regulation 2-2-303 (*Offset Requirements, $PM_{2.5}$, PM_{10}, and Sulfur Dioxide***)**
The facility will not have the potential to emit more than 100 tons per year of any criteria pollutant. **The facility is not a "Major Facility" as defined in Regulation 2-1-203 and is not subject to PM_{10} or SO2 offsets under Regulation 2-2-303.**

Regulation 2-5 (*New Source Review of Toxic Air Contaminants)*
Under section 2-5-110, *Exemption Low Emission Levels*, a project (and each new or modified source included in this project) shall not be subject to this rule if, for each toxic air contaminant, total project emissions are below the acute and chronic trigger levels listed in Table 2-5-1 Toxic Air Contaminant Trigger Levels. For the purposes of Regulation 2-1-316, a source shall not be subject to the Section 2-5-401 HRA requirements of this rule if, for each toxic air contaminant, the emissions from the source are below the acute and chronic trigger levels listed in Table 2-5-1
The proposed emissions from the operation of S-3 listed in Table 4 exceed the chronic trigger level for ethyl benzene. An HRA was performed. Results from the HRA indicate that the maximum project cancer risk is 0.069 in a million and the project maximum chronic hazard index is 0.000018. In accordance with the District's Regulation 2-5-301, this source does not require TBACT because each estimated source cancer risk and hazard index is less than 1.0 in a million and 0.20, respectively. Because this project is not located within an overburdened community, S-3 must comply with the project cancer risk limit of 10 in a million. Since the estimated project cancer risk does not exceed 10 in a million and project chronic hazard indices do not exceed 1.0, this project complies with the District's Regulation 2-5-302 project risk requirements.

Regulation 8-1-320 (*Surface Preparation; Clean-Up; Coating, Ink, Paint Removal*).
Effective August 1, 1988 a person shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, clean-up, or coating, ink, or paint removal.
The Owner Operator is expected to comply with this requirement.

Regulation 8-1-321 (*Closed Containers*).
Effective August 1, 1988 a person shall not store spent or fresh organic compounds to be used for surface preparation, clean-up, or coating, ink, or paint removal, in open containers.
The Owner Operator is expected to comply with this requirement.

Regulation 8-4-302 (*Solvents And Surface Coating Requirements*). A person shall not use solvents or apply surface coatings unless one or more of the following requirements are satisfied:

302.1 A person shall not emit more than 4,533 kg (5 tons) of volatile organic compounds (VOC) from any source during any calendar year; or

302.2 Emissions are controlled by an approved emission control system with an overall abatement efficiency of 85% on a mass basis. If reduction is achieved by incineration, at least 90% by weight of the organic compound emissions shall be oxidized to carbon dioxide; or

302.3 The coating operation uses a coating with a VOC content less than or equal to 420 grams per liter (3.5 lb/gal) of coating as applied.

S-3 complies with 8-4-302.1 because S-3 will emit no more than (0.346) TPY VOC during any calendar year

Regulation 8-4-313 (*Surface Preparation Standards***)**

Effective June 1, 2003, no person shall use a solvent with a VOC content that exceeds 50 g/l (0.42 lbs/gal), as applied, for surface preparation in any operation subject to this Rule unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an overall abatement efficiency of at least 85 percent.

The Owner Operator is expected to comply with this requirement.

Regulation 8-4-312 (*Solvent Evaporative Loss Minimization*).

Unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%, any person using organic solvent for surface preparation and cleanup or any person mixing, using or disposing of organic solvent:

312.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.

312.2 Shall not use organic solvent for the cleanup of spray equipment, including paint lines, with a VOC content in excess of 50 g/l (0.42 lb/gal) unless either,

(i) solvent is pressurized though spray equipment with atomizing air off or dispensed from a small non-atomizing container, and collected and stored in a closed container until recycled or properly disposed of offsite, or

(ii) a spray gun washer subject to and in compliance with the requirements of Regulation 8, Rule 16 is used.

312.3 Shall close containers of solvent or coating when not in use.

The Owner Operator is expected to comply with all the requirements in 8-4-312.

Regulation 8-4-501 (*Recordkeeping Requirements*)

Any person using coatings or solvents subject to this Rule shall:

501.1 Maintain a current list of coatings and solvents in use that provide all of the data necessary to evaluate compliance, such as VOC content and mix ratios of coatings, catalysts and reducers and density and VOC content of solvent.

501.2 Record on an annual basis the quantity of coating applied.

501.3 Record the air pollution abatement equipment key system operating parameters on a daily basis.

501.4 Record, on a monthly basis, coating usage for coatings subject to subsection 8-4-302.3 and solvents used for surface preparation and clean up.

501.5 Records shall be retained and available for inspection by the APCO for the previous 24 - month period.

The Owner Operator is expected to comply with all the requirements in 8-4-501.

Regulation 8-32-301 (*Spray Application Equipment Limitations*)

Any person who utilizes spray application

equipment to apply coatings to wood products shall use one or more of the following application methods:
Airless spray
Air assisted airless spray
High Volume Low Pressure (HVLP) spray
Electrostatic air spray
Detailing or Touch-up Guns
Other coating application methods demonstrated to the APCO to be capable of achieving at least 65 percent transfer efficiency as determined by the test method cited in 8-32-607, and for which written approval by the APCO has been obtained.
The Applicant has indicated that an airless sprayer will be utilized. S-3 is therefore expected to comply with this 8-32-301.

Regulation 8-32-303 (*Wood Furniture, Custom Cabinetry and Custom Architectural Millwork Limits*)

This section establishes VOC content limits for S-3. VOC content is calculated as specified in Regulations 8-32-234 and 8-32-604.
Compliance with VOC content limits is summarized in the table below. S-3 is expected to comply with the limits established in this section.

Table 5
VOC content for S-3

Material	% VOC (w/w) per Reg. 8-32-234	Density (lb/gal)	VOC Content (lb/gal)	VOC Content 8-32 Limit (lb/gal)	Exceeds limit?
Rudd CrystalVar 275 Water-Clear Conversion Varnish	41.0%	8.83	3.6	4.6	No
Rudd MiraVar 275 Opaque Conversion Varnish Satin White	46.0%	9.56	4.4	4.6	No
MiraVar 275 Opaque CV Sanding Sealer White	41.0%	10.07	4.1	4.6	No

Regulation 8-32-320 (*Solvent Evaporative Loss Minimization*)

This section details the solvent evaporative loss minimization standards that are required for S-3.
The Owner Operator is expected to comply with all the requirements in 8-32-320.

Regulation 8-32-320 (*Surface Preparation Standards*)

Effective July 1, 2010, no person shall use a solvent with a VOC content that exceeds 25 g/l (0.21 lbs/gal), as applied, for surface preparation in any operation subject to this Rule unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an overall abatement efficient of at least 85 percent.
The Owner Operator is expected to comply with this requirement.

Regulation 8-32-501 (*Recordkeeping Requirements*)

This section details the recordkeeping requirements that will apply to S-3.
A permit condition will be put in place to require compliance with these recordkeeping requirements.

New Source Performance Standards (NSPS)
NSPS is not triggered.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)
40 CFR Part 63, Subpart JJ identifies the NESHAP for wood furniture manufacturing operations that occur at a major source of hazardous air pollutants (HAPs). Because the facility does not have a potential to emit 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAPs, this NESHAP standard does not apply.

Prevention of Significant Deterioration (PSD)
PSD is not triggered.

PERMIT CONDITIONS

Permit Condition #27922 for S-3

1. The owner/operator shall ensure the following usage limits are not exceeded at S-3 during any consecutive twelve-month period:

Rudd CrystalVar 275 Water-Clear Conversion Varnish Flat	60 Gallons
Rudd CrystalVar 275 Opaque Conversion Varnish Stain White	180 Gallons
MiraVar 275 Opaque CV Sanding Sealer White	180 Gallons
Acetone	180 Gallons

   (Basis: Cumulative Increase, BACT, Regulation 2-5)

2. The owner/operator may use an alternative coating(s) or cleanup solvent(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:
   a. Total POC emissions from S-3 do not exceed 692 pounds in any consecutive twelve-month period;
   b. Total NPOC emissions from S-3 do not exceed 3112 pounds in any consecutive twelve-month period or 11.97 pounds in any day;
   c. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.
   d. The materials do not exceed any limitation identified in Regulation 8-32.

   (Basis: Cumulative Increase, BACT, Regulation 2-5, Regulation 8-32)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

a. Quantities of each type of coating and cleanup solvent used at this source on a monthly basis and on a daily basis.
b. If a material other than those specified in Part 1 is used, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.
d. A current list of coatings in use and the following information:
    i. Manufacturer's recommended ratio of components;
    ii. VOC content of coating as applied after any thinning;
    iii. Solids content of each high solids coating as applied after any thinning;
    iv. Thinner or solvent used for cleaning or surface preparation.
e. Daily records of the following information:
    i. Coating and mix ratio of components in the coating used;
    ii. Quantity of each coating applied;
    iii. Identification of coating category, as listed in Regulation 8-32-303;
    iv. Type and amount of solvent used for cleanup and surface preparation.

All records shall be retained on-site for two years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.
(Basis: Cumulative Increase, BACT, Regulation 2-5, Regulation 8-32)

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 a new source of TAC within 1,000 feet of a K-12 school, which triggers the public notification requirements of Regulation 2-1-412. After the comments are received from the public 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 equipment:

S-3 Paint Spray Operation and Associated Solvent Containment Booth

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