DRAFT ENGINEERING EVALUATION

Plant #23857: Busch Semiconductor Vacuum Group LLC
18430 Sutter Blvd. Morgan Hill, CA, 95037

Application 28580: Spray Booth and Solvent Cleaning

BACKGROUND

Busch Semiconductor Vacuum Group LLC (Busch) has applied for an Authority to Construct (AC) and/or a Permit to Operate (PO) the following equipment:

S-1	**Spray booth for coating pumps, Golden West model and two electric drying/ curing ovens**
S-2	**Facility-wide solvent wipe cleaning operation**

Busch re-manufactures customers' pumps at its facility in Morgan Hill, CA. The pumps received at the facility are disassembled and the parts are cleaned in either of the two heated aqueous parts washers and by wet or dry abrasive blasting. The disassembly table is wipe-cleaned with Simple Green or acetone to remove oil, grease or process fluids from the pump disassembly. Individual parts are inspected and identified for reuse, recycling or disposal in the preparation stage. After the preparation stage, some interior parts are coated with a dry film lubricant in the spray booth and cured in one of the two electric ovens and other parts are moved to presentation stage where they are inspected and organized for reassembly. Wipe-cleaning with acetone occurs prior to coating if the parts contain oil and grease from handling or not removed in previous steps. During the presentation stage, the o-rings, which are pump parts made of synthetic rubber, are wipe cleaned with denatured alcohol to remove oil or grease (acetone cannot be used because the o-rings will swell rendering the pump inoperable). Prior to reassembly, the pumps are re-filled with oil. Post reassembly the pumps are tested to ensure proper operation. Additional wipe-cleaning of o-rings with denatured alcohol and other pump parts with acetone occurs, as necessary, during the re-assembly stage to remove oil and grease from drips from oil filling or from transfer during handling. After initial testing, the exterior of the re-assembled pump is coated with paint in the spray booth. The re-assembled pump is wipe-cleaned with acetone prior to coating to remove any residual oil or grease from handling or not removed in previous steps. The coated pump is air-dried. The pump goes through final testing to ensure proper operation and then is crated and shipped to the customer. The facility uses denatured alcohol to wipe-clean the o-rings and acetone to wipe-clean rest of the parts of the pump at different stages.

Busch has been operating this facility since 2000 without a District permit. The two heated aqueous parts washers are electric and the VOC content of the solvent solutions used in each washer is approximately 0.1% by weight. Therefore, the parts washers are exempt from permitting per Regulation 2-1-118.5.

The dry abrasive blaster has a confined volume of 53 ft^3 and is abated by a particulate filter. Therefore, it is exempt from permitting per Regulation 2-1-118.1. The wet abrasive blaster is exempt from permitting per Regulation 2-1-118.2.

Additionally, Busch operates two unheated solvent cleaners. These solvent cleaners are exempt from permitting per Regulation 2-1-118.6.

Busch uses HVLP spray guns in S-1 to coat pumps. Smaller pump parts are kept on MAXFLO-FB48 portable fume/paint booth, which is located inside S-1, during coating. Busch will store the portable paint booth outside S-1, when not in use. The portable paint booth within S-1 is a "pre-treatment" step; capturing overspray and emissions within filters in the portable unit. Any overspray and emissions not captured by the portable paint booth will be exhausted within S-1 and pass through the filters in S-1 prior to discharge to the atmosphere. Although the portable paint booth is equipped with filters and activated carbon system, the overall efficiency of its abatement system does not meet the efficiency requirements of MACT HHHHHH. Therefore, the portable paint booth will be operated only within the confines of S-1. Permit conditions shall be imposed to ensure that the portable paint booth is not operated outside of S-1.

EMISSIONS SUMMARY

Spraying process at S-1 will generate POC, NPOC, and TAC emissions from organic solvents present in the coatings, additives, and cleaning solutions. POC, NPOC, and TAC emissions were estimated as the product of material usage in gallons, density of the material, and the POC, NPOC, and TAC content in percent by weight in the

material. POC, NPOC, and TAC emissions are based on the assumption that 100% of the POC, NPOC, and TAC contained in the material are emitted. Volatile TAC emissions for the purpose of health risk assessment (HRA) were apportioned between the spray booth and the ovens at a ratio of 70% to 30%.

Spraying process at S-1 will also generate PM10 and PM2.5 emissions from the overspray of solids contained in the coatings and additives. PM10 emissions were estimated as the product of material usage in gallons, density of the material, solids content in percent by weight in the material, transfer efficiency of the application technique and the particulate control efficiency of the spray booth's filter. A default transfer efficiency of 30%[1] as proposed in Permit Handbook Chapter 5.1 and a filter efficiency of 99%[2] as guaranteed by the filter manufacturer was used to estimate PM10 emissions. Controlled PM2.5 emissions were assumed to be equal to controlled PM10 emissions. Particulate or solid TAC emissions were assumed to be all emitted from the spray booth.

Annual and maximum daily emissions of POC, NPOC, PM10 and PM2.5 from coatings are based on the annual and maximum daily material usage for each type of material. Annual and maximum daily material usage originally proposed by the facility and the corresponding estimated emissions were significantly below the fees and any emissions thresholds[3] such as BACT (10 lb/day), offsets (10 tpy), and Regulation 8-4 standard (5 tpy). Therefore, the District is permitting S-1 and S-2 at higher material usage and emission rates than originally proposed by the facility to provide more margin for compliance and room for future growth. Maximum daily usage is based on the higher of busiest business day usage originally proposed by the facility or allowable annual usage divided by number of operating days of the facility per year. The allowable annual material usage has been limited so as to not trigger additional fees and BACT assessment.

The hourly capacity of the spray guns is 8.4 gallons per hour. The maximum daily usage for each type of coating proposed by the facility is less than hourly capacity of spray gun. Therefore, maximum hourly usage and emissions for the purpose of HRA are based on the assumption that the hourly usage is equal to the daily usage or the daily operating time of the sources is one hour/day. Maximum hourly TAC emissions for the purposes of HRA are also based on the assumption that all types of coatings are used in the same hour. Preliminary HRA based on the hourly usage proposed by the applicant resulted in an acute hazard index (AHI) of 2.0. 90% of the contribution to the total AHI (AHI=1.8) was from the solid film lubricant coating (Kawamura Research Laboratories, Inc., HMB-4A (T)) and its additive (Kawamura Research Laboratories, Inc., ADX-35). The District revised the hourly usage and emission calculations, as explained above, to result in an AHI below 1.0. Therefore, the District shall impose daily usage limits on this coating and additive to ensure S-1 continues to comply with Regulation 2-5-302 standards. The applicant has committed to keep hourly or daily usage records for this coating and additive to demonstrate compliance with the limits.

POC, NPOC, TAC, and solids contents and density of the materials were obtained from the material safety data sheets or email communications with the coating manufacturer.

Table 1 summarizes the VOC and solids content of the coatings proposed to be used at the facility. Table 2 summarizes POC and NPOC emissions, Table 3 summarizes the PM10 and PM2.5 emissions and Table 4 summarizes TAC emissions from coatings used at S-1.

POC, NPOC, and TAC emissions from S-2 were estimated as the product of proposed material usage in gallons, density of the material, and the POC, NPOC, and TAC content in percent by weight in the material. POC, NPOC, and TAC emissions are based on the assumption that 100% of the POC, NPOC, and TAC contained in the material are emitted. For conservative HRA, methanol content in denatured alcohol was assumed to be 100% by weight. Busch provided average hourly material usage for S-2. Maximum hourly emissions for the purpose of HRA are based on daily usage, assuming the entire daily quota of denatured alcohol is used in one hour. Table 5 summarizes POC and NPOC emissions from S-2.

[1] A transfer efficiency of 30% means that 30% of the material sprayed is transferred on to the substrate whereas 70% is overspray.
[2] A filter efficiency of 99% means that 99% of the over-sprayed solids are captured by the filter and 1% are emitted.
[3] Regulation 3, Schedule E charges a flat fee below 1000 gal/year of solvent usage. Original annual usage proposed by the facility was 78 gal/year for S-1 and 71 gal/year for S-2. Annual VOC emissions from S-1 were estimated to be 0.13 tpy. Daily POC and NPOC emissions from S-1 were estimated to be 3.6 lb/day and 7.4 lb/day, respectively. Annual VOC emissions from S-2 were estimated to be 0.23 tpy. Daily POC and NPOC emissions from S-1 were estimated to be 6.6 lb/day and 6.6 lb/day respectively.

Table 1: Proposed Materials to be Used in S-1

Material Type:	Density of Material	% Solids in Material by Wt	% POC in Material by Wt	% NPOC in Material by Wt	POC or VOC Content	VOC or POC content of Coating, As Applied, Excluding Water and Exempt Compounds (lb/gal)	Applicable Reg 8-19 Standard
Description	(lb/gal)	(lb of solids/100 lb Material)	(lb of POC/100 lb Material)	(lb of NPOC/100 lb Material)	(lb of VOC/gal Material)		VOC or POC content of Coating, As Applied, Excluding Water and Exempt Compounds (lb/gal)
Topcoat and primer for exterior of pumps --- Behr Process Corporation, 1753 – Air Dried	10.23	57.50%	1.66%	0.05%	0.17	0.38	2.8
Topcoat and primer for exterior of pumps --- Behr Process Corporation, 3300 – Air Dried	8.85	48.00%	0.09%	0.00%	0.008	0.017	2.8
Topcoat and primer for exterior of pumps --- Behr Process Corporation, 3400 – Air Dried	9.71	48.00%	0.08%	8.12%	0.008	0.025	2.8
Topcoat and primer for exterior of pumps --- Behr Process Corporation, 5050 – Air Dried	10.04	45.00%	1.25%	2.25%	0.125	0.334	2.8
Solid Film Lubricant --- Lubricant for internal components of pumps --- Kawamura Research Laboratories, Inc., HMB-4A (T) – Oven Cured	9.17	15.00%	85.00%	0.00%	7.798	7.798	Exempt per 8-19-123. Regulation 8-4 applies per 8-4-101
Solid Film Lubricant (additive) --- Lubricant for internal components of pumps --- Kawamura Research Laboratories, Inc., ADX-35 – Oven Cured	8.92	35.00%	65.00%	0.00%	5.800	5.800	
Solid Film Lubricant --- Lubricant for internal components of pumps --- DuPont, 850G-204 – Oven Cured	11.63	47.80%	1.38%	53.62%	0.16	0.35	
Solid Film Lubricant --- Lubricant for internal components of pumps --- DuPont, 850G-224 – Oven Cured	11.13	48.00%	8.85%	46.15%	0.985	2.19	
Topcoat for exterior of pumps --- FreiLacke, WL1509L – Air Dried	9.85	44.62%	6.00%	0.00%	0.57	1.44	2.8
Extreme Performance --- Primer for use with FreiLacke WL1509L (as needed) --- Sherwin Williams, E61AL27 – Air Dried	10.61	63.80%	26.40%	9.70%	2.8	3.32	3.5 [Per 8-19-219, coating is extreme performance because pumps are exposed to corrosive chemicals]
Solvent (acetone) --- Solvent (acetone) for cleanup of equipment after use of Primer --- Dykem, 85638	6.60	0.00%	0.00%	100.00%	0	0	Wipe Cleaning under S-1 is solvent cleaning and not surface prep. Subject to 8-16, but exempt from 8-16; therefore, subject to 8-4

Table 2 – POC and NPOC Emissions from Materials Used in S-1

Material	Material Usage			Density of Material (lb/gal)	POC Content of Material (wt %)	NPOC Content of Material (wt %)	Annual Emissions		Max. Daily Emissions		Max. Hourly Emissions	
	Annual (gal/year)	Daily[1] (gal/day)	Hourly[2] (gal/hr)				POC (lb/yr)	NPOC (lb/yr)	POC (lb/day)	NPOC (lb/day)	POC (lb/hr)	NPOC (lb/hr)
Behr Process Corporation, 1753	35	0.20	0.20	10.23	1.66%	0.05%	5.95	0.18	0.03	0.00	0.03	0.00
Behr Process Corporation, 3300	350	1.35	1.35	8.85	0.09%	0.00%	2.80	0.00	0.01	0.00	0.01	0.00
Behr Process Corporation, 3400	35	0.20	0.20	9.71	0.08%	8.12%	0.280	27.59	0.00	0.16	0.00	0.16
Behr Process Corporation, 5050	35	0.20	0.20	10.04	1.25%	2.25%	4.39	7.91	0.03	0.05	0.03	0.05
Kawamura Research Laboratories, Inc., HMB-4A (T)	10	0.50	0.50	9.17	85.00%	0.00%	77.98	0.00	3.90	0.00	3.90	0.00
Kawamura Research Laboratories, Inc., ADX-35	6	0.25	0.25	8.92	65.00%	0.00%	34.80	0.00	1.45	0.00	1.45	0.00
DuPont, 850G-204	10	0.50	0.50	11.63	1.38%	53.62%	1.60	62.37	0.08	3.12	0.08	3.12
DuPont, 850G-224	6	0.50	0.50	11.13	8.85%	46.15%	5.91	30.82	0.49	2.57	0.49	2.57
FreiLacke, WL1509L	175	0.67	0.67	9.85	6.00%	0.00%	103.43	0.00	0.40	0.00	0.40	0.00
Sherwin Williams, E61AL27	175	0.67	0.67	10.61	26.40%	9.70%	490.18	180.10	1.89	0.69	1.89	0.69
Dykem, 85638	125	0.48	0.48	6.60	0.00%	100.00%	0.00	825.00	0.00	3.17	0.00	3.17
Total	**962**	**5.52**	**5.52**				**727**	**1134**	**8.3**	**9.8**	**8.28**	**9.76**

[1] Maximum daily usage = Max (Busiest business day usage provided by applicant, Annual usage /260 days per year)
[2] Hourly usage for all materials = Daily usage/ 1 hour per day

Sample Calculation for Table 2

Annual POC Emissions from FreiLacke WL 1509L

$$Annual\ POC\ Emissions\ from\ FreiLacke\ WL\ 1509L\ Use = \frac{175\ gal\ Coating}{year} \times \frac{9.85\ lb\ Coating}{gal\ Coating} \times \frac{6\ lb\ POC}{100\ lb\ Coating} = \frac{103.43\ lb\ POC}{year}$$

Table 3 – PM10 and PM2.5 Emissions from Materials Used in S-1

Material	Material Usage			Density of Material (lb/gal)	Solids Content of Material (wt %)	Transfer Efficiency (%)	Filter Efficiency (%)	PM10 and PM2.5 Emissions		
	Annual (gal/year)	Daily[1] (gal/day)	Hourly[2] (gal/hr)					Annual (lb/yr)	Max. Daily (lb/day)	Max. Hourly (lb/hr)
Behr Process Corporation, 1753	35	0.20	0.20	10.23	57.50%	30.00%	99.00%	1.44	0.01	0.01
Behr Process Corporation, 3300	350	1.35	1.35	8.85	48.00%	30.00%	99.00%	10.41	0.04	0.04
Behr Process Corporation, 3400	35	0.20	0.20	9.71	48.00%	30.00%	99.00%	1.14	0.01	0.01
Behr Process Corporation, 5050	35	0.20	0.20	10.04	45.00%	30.00%	99.00%	1.11	0.01	0.01
Kawamura Research Laboratories, Inc., HMB-4A (T)	10	0.50	0.50	9.17	15.00%	30.00%	99.00%	0.10	0.00	0.00
Kawamura Research Laboratories, Inc., ADX-35	6	0.25	0.25	8.92	35.00%	30.00%	99.00%	0.13	0.01	0.01
DuPont, 850G-204	10	0.50	0.50	11.63	47.80%	30.00%	99.00%	0.39	0.02	0.02
DuPont, 850G-224	6	0.50	0.50	11.13	48.00%	30.00%	99.00%	0.22	0.02	0.02
FreiLacke, WL1509L	175	0.67	0.67	9.85	44.62%	30.00%	99.00%	5.38	0.02	0.02
Sherwin Williams, E61AL27	175	0.67	0.67	10.61	63.80%	30.00%	99.00%	8.29	0.03	0.03
Dykem, 85638	125	0.48	0.48	6.60	0.00%	30.00%	99.00%	0.00	0.00	0.00
Total	**962**	**5.52**	**5.52**					**28.61**	**0.2**	**0.16**

[1] Maximum daily usage = Max (Busiest business day usage provided by applicant, Annual usage /260 days per year)
[2] Hourly usage for all materials = Daily usage/ 1 hour per day

Sample Calculation for Table 3

Maximum daily PM10 Emissions from Solid Film Lubricant Du-Pont 850G-204

$$Daily\ PM10\ from\ Du-Pont\ 850G-204 = \frac{\mathbf{0.5\ gal\ Coating}}{\mathbf{day}} \times \frac{\mathbf{11.63\ lb\ Coating}}{\mathbf{gal\ Coating}} \times \frac{\mathbf{47.8\ lb\ Solids}}{\mathbf{100\ lb\ Coating}} \times (\mathbf{1-30\%\ TE}) \times (\mathbf{1-99\%\ FE}) = \frac{\mathbf{0.02\ lb\ PM10}}{\mathbf{day}}$$

Table 4 – TAC Emissions from Materials Used in S-1

TAC	CAS #	Behr 1753	Behr 3300	Behr 3400	Behr 5050	HMB-4A (T)	ADX-35	DuPont 850G - 204	DuPont 850G - 224	WL1509L	SW E61AL27	Dykem 85638	Emissions	
		Weight % in Coating											lb/hr	lb/yr
Crystalline Silica	14464-46-1	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.2E-04	1.3E-01
Ethylene Glycol	107-21-1	5.0%	5.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0E-01	1.9E+02
Styrene	100-42-5	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.7E-02	1.7E+01
Xylene	1330-20-7	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6E-01	9.2E+00
Ethylbenzene	100-41-4	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	4.7E-01	1.1E+01
1,4-dioxane	123-91-1	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4E+00	7.3E+01
Chromium trioxide	1333-82-0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	8.1E-03	1.6E-01
Phosphoric Acid	7664-38-2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	2.9E-01	5.8E+00
Toluene	108-88-3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	2.8E-01	3.3E+00
2-butoxyethanol	111-76-2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	6.6E-01	1.7E+02
Silica	7631-86-9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	5.0E-04	1.3E-01
Maximum Hourly Usage (gal/hr)		0.20	1.35	0.20	0.20	0.50	0.25	0.50	0.50	0.67	0.67	0.48		
Average Annual Usage (gal/yr)		35	350	35	35	10	6	10	6	175	175	125		
Density (lb/gal)		10.23	8.85	9.71	10.04	9.17	8.92	11.63	11.13	9.85	10.61	6.60		

Equation for Table 4

$$\frac{lb\ TAC_i}{year} = \sum \frac{gal\ of\ Coating_x\ used}{year} \times Density\ of\ Coating_x \times Weight\ \%\ of\ TAC_i\ in\ Coating_x$$

Table 5 – POC and NPOC Emissions from Materials Used in S-2

Material	Annual Usage	Daily Usage	Maximum Hourly Usage	Density	% Weight of Solvent or VOC in Cleaning Solution	Annual Emissions	Daily Emissions	Hourly Emissions
	gal/yr	gal/day	gal/hr	lb/gal	%	lb/yr	lb/day	lb/hr
Denatured Alcohol	350	1.35	1.35	6.57	100%	2300	8.8	8.8
Acetone	350	1.35	1.35	6.59	100%	2306	8.9	8.9
Total POC	350	1.35	1.35			2300	8.8	8.8
Total NPOC	350	1.35	1.35			2306	8.9	8.9

PLANT CUMULATIVE INCREASE

Table 6 summarizes the cumulative increase in criteria pollutant emissions from this application.

Table 6 Cumulative Increase

Pollutant	Permitted Emissions (since April 5, 1991)	Emissions Increase with This Application	Cumulative Emissions Increase
	(TPY)	(TPY)	(TPY)
NOx	0.000	0.000	0.000
POC	0.000	1.513	1.513
CO	0.000	0.000	0.000
PM10	0.000	0.014	0.014
SO2	0.000	0.000	0.000
NPOC	0.000	1.720	1.720

TOXIC HEALTH RISK ASSESSMENT (HRA)

A new source or a modified source of TAC requiring an AC and/or PO is subject to Regulation 2-5. Pursuant to Regulation 2-5, all TAC emissions from new and modified sources are subject to HRA, if the emissions of any individual TAC exceed either the acute or chronic emission thresholds defined in Regulation 2-5, Table 2-5-1.

It can be seen in Table 7 below that an HRA is required because the hourly and annual emissions of 1,4-dioxane and annual emissions of chromium trioxide from S-1 exceed the respective acute and/or chronic trigger levels. Although emissions of TAC from S-2 do not exceed the respective trigger levels, S-2 will be included in the HRA because it is a part of the Project as defined in Reg. 2-5-216.

Table 7 Total TAC Emissions from S-1 and S-2

		S-1 Spray Booth Emissions (P-1)		S-1 Ovens Emissions (P-2)		S-2 Wipe Cleaning		Reg 2-5 Trigger Levels	
		Hourly	Annual	Hourly	Annual	Hourly	Annual	Acute	Chronic
TAC	CAS#	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Ethylene Glycol	107-21-1	5.59E-01	1.33E+02	2.40E-01	5.71E+01	---	---	---	1.50E+04
Styrene	100-42-5	6.80E-02	1.19E+01	2.91E-02	5.10E+00	---	---	4.60E+01	3.50E+04
Xylene	1330-20-7	3.21E-01	6.42E+00	1.38E-01	2.75E+00	---	---	4.90E+01	2.70E+04
Ethylbenzene	100-41-4	3.26E-01	7.72E+00	1.40E-01	3.31E+00	---	---	---	3.30E+01
1,4-dioxane	123-91-1	2.39E+00	5.08E+01	1.02E+00	2.18E+01	---	---	6.60E+00	1.10E+01
Chromium trioxide	1333-82-0	8.14E-03	1.63E-01	0.00E+00	0.00E+00	---	---	---	9.70E-04
Phosphoric Acid	7664-38-2	2.04E-01	4.07E+00	8.72E-02	1.74E+00	---	---	---	2.70E+02
Toluene	108-88-3	1.95E-01	2.34E+00	8.35E-02	1.00E+00	---	---	8.20E+01	1.20E+04
2-butoxyethanol	111-76-2	4.64E-01	1.21E+02	1.99E-01	5.17E+01	---	---	3.10E+01	---
Silica	7631-86-9	1.22E-03	2.55E-01	0.00E+00	0.00E+00	---	---	---	1.20E+02
Methanol	67-56-1	---	---	---	---	8.84	2300	6.20E+01	1.50E+05

The increased cancer risk from the project to the maximally exposed individual resident (MEIR) is 2.2 in a million, to the maximally exposed individual worker (MEIW) is 7.5 in a million and to the student receptor is 2.0 in a million. The chronic hazard index (CHI) at MEIR is 0.003, at MEIW is 0.036, and at student receptor is 0.0037. The acute hazard index (AHI) at point of maximum impact (PMI) was assessed to be 0.35. S-1 virtually contributes to all of the cancer risk, CHI, and AHI. Therefore, per Rule 2-5-301, S-1 is subject to Best Available Control Technology for toxics (TBACT) requirement because the cancer risk is above 1.0 in a million. Per Regulation 2-5-302, the project meets the risk requirements of 10.0 in a million cancer risk and hazard indices of 1.0.

The volatile TAC emitted by S-1 are components of POC and the solid TAC emitted by S-1 are components of PM10. Therefore, abating POC and PM10 emissions would also abate TACs. The BACT guidelines contained in the District's BACT/TBACT Workbook under *Document # 161.5.1 (dated 12/16/03)* for the source category of *Spray Booth – Coating of Miscellaneous Metal Parts and Products* specify the following requirements as BACT (1) for POC:

- Coating with VOC content and transfer efficiency complying with Regulation 8-19, and
- Emissions controlled to overall capture/ destruction efficiency > 90%

No BACT (1) has been determined for PM10 in District BACT guideline *Document # 161.5.1 (dated 12/16/03)*.

Document # 161.5.1 (dated 12/16/03) specifies low VOC coatings complying with Regulation 8-19 as BACT (2) for POC and properly maintained dry filterc or waterwash as BACT (2) for PM10.

In addition to the District's BACT/TBACT guidelines, several other BACT determination databases were searched for similar source, including EPA's RBLC, CARB BACT Clearinghouse, SCAQMD BACT Guidelines for Major and Non-Major Sources, and SJVAPCD's BACT Guidelines, to identify the most current technologically feasible and achieved-in-practice control technologies. SJVAPCD BACT Guidelines # 4.3.1, 4.3.2, and 4.3.5 for metal parts and products coating operations specify achieved in practice BACT for VOC as a VOC content of 2.8 lb/gal (excluding water and exempt compounds) in regular coatings, VOC content of 3.5 lb/gal (excluding water and exempt compounds) in specialty coatings, use of HVLP spray guns, and an enclosed spray gun cleaning system. The achieved in practice BACT for PM10 in SJVAPCD BACT Guidelines # 4.3.1, 4.3.2, and 4.3.5 is enclosed spray booth with dry particulate filters and HVLP spray gun. The technologically feasible BACT in SJVAPCD BACT Guidelines for VOC requires VOC capture and destruction with incineration or carbon adsorption. There is not technologically feasible BACT specified in SJVAPCD BACT Guidelines # 4.3.1, 4.3.2, and 4.3.5 for PM10.

BAAQMD's Regulation 8-19 has the same VOC content limits as those specified in SJVAPCD BACT Guidelines # 4.3.1, 4.3.2, and 4.3.5. As shown in Table 1, all types of coating that are subject to Regulation 8-19 comply with the VOC content limits in that regulation. Those coating that are exempt from Regulation 8-19, but subject to Regulation 8-4, comply with the requirements in Regulation 8-4. Additionally, S-1 will be equipped with HVLP spray guns and dry filters with a manufacturer guaranteed capture efficiency of >99% to abate PM10.

Because the annual emissions from S-1 are so low, a thermal oxidizer or carbon adsorber will not be cost effective.

Based on the above BACT assessment, it can be concluded that S-1 meets TBACT requirement as it complies with BACT (2).

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Per Regulation 2-2-301.1, BACT is triggered for a District BACT pollutant if a new source has a potential to emit (PTE) 10.0 or more pounds per day of that pollutant. BACT is a source and pollutant specific requirement.

As shown in Tables 2 and 3 for S-1 and Table 5 for S-2, the daily PTE of each of the pollutants emitted by these sources is below 10.0 lb/day. Therefore, S-1 and S-2 are not subject to BACT requirements for any of these District BACT pollutants.

OFFSETS

Regulation 2-2-302 requires offsets for NOx and POC emission increases from any new or modified source if the facility-wide PTE of that pollutant is greater than 10 tons/year. Regulation 2-2-303 requires offsets for PM2.5, PM10, and SO2 emission increases from any new or modified source if the facility-wide PTE of that pollutant is greater than 100 tons/year and if the un-offset cumulative increase in emissions of that pollutant at the facility and any related sources since the baseline date exceeds 1 ton per year.

Table 8: Cumulative Emissions and Offset Requirement

Pollutant	Actual Facility Emissions per Most Recent District Inventory (TPY)	Total Permitted Emissions (Pre- + Post – 4/5/1991) (TPY)	Emissions with This Application (TPY)	Adjusted Total Facility PTE (TPY)	Regulation 2-2-302 and 2-2-303 Offset Triggers (TPY)
NOx	0.000	0.000	0.000	0.000	Facility PTE > 10 TPY
POC	0.000	0.000	1.513	1.513	Facility PTE > 10 TPY
CO	0.000	0.000	0.000	0.000	NA
PM10	0.000	0.000	0.014	0.014	Facility PTE > 100 TPY and Cum. Inc. > 1
SO2	0.000	0.000	0.000	0.000	Facility PTE > 100 TPY and Cum. Inc. > 1
NPOC	0.000	0.000	1.720	1.720	NA
PM2.5	0.000	0.000	0.014	0.014	Facility PTE > 100 TPY and Cum. Inc. > 1

As shown in Table 8, Facility-wide, post-project PTE will not exceed 10 tpy for NOx and POC; therefore, offsets are not required for NOx and POC emission increases. The facility-wide, post-project PTE will not exceed 100 tpy for PM2.5, PM10, and SO2 and the un-offset cumulative increase in emissions (shown in Table 6) of these pollutants does not exceeds 1 ton per year; therefore, offsets are not required for PM2.5, PM10, and SO2 emission increases.

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

There are no NSPS rules that apply to S-1 or S-2.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

S-1 is subject to NESHAP Subpart HHHHHH "National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources" because the facility is an area source of HAP and S-1 will be used to apply coatings containing compounds of chromium to parts or products made of metal. At this time, BAAQMD is not the delegated authority for the requirements of compliance with the Federal NESHAP Subpart HHHHHH. However, per interpretation of the California Health and Safety Code, Chapter 3.5, section 39658, b1, BAAQMD will verify that the source is in compliance with the NESHAP Subpart HHHHHH standards and will forward any materials related to the NESHAP Subpart HHHHHH requirements to the EPA Region 9 office as they arrive at BAAQMD. BAAQMD has notified the affected plant of the NESHAP Subpart HHHHHH requirements as part of their operating conditions.

Per Initial Notification and Notification of Compliance sent to the EPA Region 9 office, the facility certifies that it is in compliances with the following NESHAPs Subpart HHHHHH standards:

A: Train/certify all painters on spray gun equipment selection, spray techniques, maintenance and environmental compliance;

B: Install filters on booth that achieve at least 98% capture efficiency;

C: Spray booths/stations used to coat miscellaneous parts or products or vehicle subassemblies must have a full roof, and at least three complete walls or side curtains, and be ventilated so that air is drawn into the booth,

D: Spray-applied coatings must be applied with a HVLP spray gun or other spray equipment with equivalent technology/transfer efficiencies,

E: Spray gun cleaning must be done so that atomized mist or spray of the cleaning solvent is not created outside a container that collects the spent solvent,

F: Train/certify all personnel who spray apply coatings no later than 180 days after hiring or by July 7, 2008 (new sources) or by January 10, 2011 (existing sources).

STATEMENT OF COMPLIANCE

S-1 is subject to the requirements of Regulation 8, Rule 19, "Surface Preparation and Coating of Miscellaneous Metal Parts and Products". Busch will use a variety of coatings in S-1. Regular, air-dried coatings are subject to the VOC content standard in Regulation 8-19-302.2 of 2.8 lb of VOC/ gallon of coating applied, excluding water and exempt compounds. Per Regulation 8-19-312.12 extreme performance coatings are subject to a VOC content standard of 3.5 lb of VOC/ gallon of coating applied, excluding water and exempt compounds. As summarized in

Table 1 and per the manufacturer's MSDS and technical data sheets, the regular, air-dried coatings and the extreme performance coatings will comply with the respective VOC content standards. Busch will also use solid film lubricant coatings and additives in S-1. Per Regulation 8-19-123, solid film lubricant coatings are exempt from provisions of Regulation 8-19. Therefore, per Regulation 8-4-101, the solid film coatings and S-1 are subject to Regulation 8-4. As currently defined for section 302 of Regulation 8-4, VOC emissions include both POC and NPOC emissions[1]. As shown in Table 2, combined POC and NPOC emissions from S-1 are ≤ 5 TPY (0.93 TPY). As such, S-1 is in compliance with Regulation 8-4-302.1 and it is, therefore, not required to meet the emission standards in Regulation 8-4-302.2 and 8-4-302.3.

Coatings will be applied with an HVLP guns within the confines of S-1. This method of spray application complies with the equipment limitations in Regulation 8-19-313. S-1 is also subject to the prohibition in Regulation 8-19-307. Compliance with these sections shall be established via proposed permit condition and verified through inspection. S-1 is subject to the solvent evaporative loss minimization requirements in Regulation 8-19-320. Busch will use acetone to clean the spray equipment in S-1 and therefore, will comply with VOC content standard in Regulation 8-19-320.2. Compliance with Regulation 8-19-320 requirements will be verified through inspection. S-1 is not subject to the surface preparation standards in Regulation 8-19-321, because cleaning of spray equipment does not constitute surface preparation. S-1 is subject to the recordkeeping requirements of Regulation 8-19-501. Recordkeeping requirements are incorporated into the proposed permit conditions.

Based on the process description, the District has determined that the wipe-cleaning process under S-2 to remove oil and grease off the o-rings with denatured alcohol constitutes solvent cleaning operation and the wipe cleaning process under S-2 with acetone just prior to coating in S-1 constitutes surface preparation. Therefore, wipe cleaning with acetone in S-2 is subject to the surface preparation standard in Regulation 8-19-321 and will comply with this standard because the VOC content of acetone is zero.

Wipe cleaning with denatured alcohol under S-2, which is determined to be solvent cleaning operation, is exempt from all requirements in Regulation 8, Rule 16: *Organic Compounds: Solvent Cleaning Operations* per Regulation 8-16-111*: Exemption, Wipe Cleaning*, except for the recordkeeping requirements in Regulation 8-16-501.3. S-2 will comply with the recordkeeping provisions in Section 8-16-501.3, which have been incorporated in the permit conditions. Because wipe cleaning with denatured alcohol under S-2 is exempt from Regulation 8-16, it is subject to Regulation 8-4, per Regulation 8-16-101. S-2 is subject to Regulation 8-4-302. As shown in Table 5, combined POC and NPOC emissions from S-2 are ≤ 5 TPY (2.3 TPY). As such, S-2 is in compliance with Regulation 8-4-302.1 and it is, therefore, not required to meet the emission standards in Regulation 8-4-302.2 and 8-4-302.3.

S-2 is also subject to the evaporative loss minimization requirements, including storage and disposal requirements of Regulation 8-4-312. The owner/operator will comply with Regulation 8-4-312 by using closed containers to store or dispose solvent-impregnated materials such as cloth or paper and closing the containers of solvent when not in use. Regulation 8-4-312.2 does not apply to S-2, because S-2 will not be used for cleanup of spray equipment, including paint lines. S-2 is also subject to and will comply with the recordkeeping requirements in Regulation 8-4-501. Compliance with these rules shall be determined by District's Compliance and Enforcement staff during facility inspection.

This application is considered to be ministerial under the District's 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 5.1 and Chapter 6.3 and therefore, is not discretionary as defined by CEQA.

S-1 is located less than 1,000 feet from the nearest K-12 school and is therefore, subject to the public notification requirements of Regulation 2-1-412. A public notice will be prepared and sent to all addresses within 1,000 feet of S-1 and parents or guardians of students of the following school(s):

Voices Morgan Hill
610 Jarvis Drive,
Morgan Hill, CA 95037

The project will not trigger a PSD review because the facility is not a major facility per Regulation 2-2-304.

[1] Same definition as for VOC in Regulation 1-233 and Regulation 1-236.

Major facility review per Regulation 2-6 is also not triggered because this facility is not a major facility, not a phase II acid rain facility, not a subject solid waste incinerator, and not a designated facility.

PERMIT CONDITIONS

CONDITION # 26713----------

Plant 23587; Applies to

S-1, Spray Booth with HVLP Spray Guns and Two Electric Ovens

S-2, Facility-wide Wipe Cleaning and Surface Preparation

1. The owner/operator of S-1 shall not exceed the following usage limits during any consecutive, rolling twelve-month period at S-1:

Behr Process Corporation, Topcoat and Primer, 1753	- 35 gallons
Behr Process Corporation, Topcoat and Primer, 3300	- 350 gallons
Behr Process Corporation, Topcoat and Primer, 3400	- 35 gallons
Behr Process Corporation, Topcoat and Primer, 5050	- 35 gallons
Kawamura Research Laboratories, Solid Film Lubricant, HMB-4A(T)	- 10 gallons
Kawamura Research Laboratories, Solid Film Lubricant Additive, ADX-35	- 6 gallons
DuPont, Solid Film Lubricant, 850G-204	- 10 gallons
DuPont, Solid Film Lubricant, 850G-224	- 6 gallons
FreiLacke, Topcoat, WL1509L	- 175 gallons
Sherwin Williams, Extreme Performance Primer	- 175 gallons
100% Acetone	- 125 gallons

(Basis: Cumulative Increase)

2. The owner/operator of S-1 shall not exceed the following usage limits during any one day:

Kawamura Research Laboratories, Solid Film Lubricant, HMB-4A(T)	- 64 fl. ounce
Kawamura Research Laboratories, Solid Film Lubricant Additive, ADX-35	- 32 fl. ounce

(Basis: Regulation 2-5-302)

3. The owner/operator shall not exceed the following usage limits during any consecutive, rolling twelve-month period at S-2:

100% Denatured Alcohol	- 350 gallons
100% Acetone	- 350 gallons

(Basis: Cumulative Increase)

4. The owner/operator may use alternate coating(s) or cleanup solvent(s) other than the materials specified in Parts 1 and 3 of this Permit Condition, and/or quantities in excess of those specified in Parts 1 and 3 of this Permit Condition, provided that the owner/operator can demonstrate that all of the following requirements are satisfied:
    a. Total POC emissions from S-1 do not exceed 727 pounds in any consecutive, rolling, 12-month period.
    b. Total NPOC emissions from S-1 do not exceed 1134 pounds in any consecutive, rolling 12-month period.
    c. Total POC emissions from S-2 do not exceed 2300 pounds in any consecutive 12-month period.
    d. Total NPOC emissions from S-2 do not exceed 2300 pounds in any consecutive 12-month period.
    e. The use of these materials does not release toxic emissions above any acute or chronic risk screening trigger level of Table 2-5-1 in Regulation 2-5.

    (Basis: Cumulative Increase, Regulation 2-5)

5. The owner/operator may use MAXFLO-FB48 or any other portable fume/paint booth only within the confines of S-1. When MAXFLO-FB48 or any other portable fume/paint booth is not in use, the owner/operator may store it outside of S-1. The owner/operator shall develop and implement standard operating and recordkeeping procedures to ensure that MAXFLO-FB48 or any other portable fume/paint booth is not used outside of S-1.
(Basis: Cumulative Increase, Regulation 2-5, and 40 CFR Part 63, Subpart HHHHHH)

6. To determine compliance with the above parts, the owner/operator shall maintain the following records:
    a. A current list of materials in use which provides all of the data necessary to evaluate compliance, including the following information:
        i. Type of coatings, additives, catalysts, and reducers/ thinners/ solvents used at S-1;
        ii. Types of solvents used for solvent cleaning at S-1;
        iii. Type of solvents used for solvent cleaning and surface preparation at S-2;
        iv. MSDS and manufacturer's recommended mixing ratio of all components in coatings;
        v. VOC content of each coating as applied after catalyzing, thinning or mixing with additives;
        vi. VOC content of surface preparation and cleanup solvents, as applied at S-1 and S-2.
    b. Record the following on a weekly basis unless otherwise specified below:
        i. Types of coatings used and mixing ratio of components (e.g., coating : catalyst : reducer) in the coatings, as applied, at S-1;
        ii. Quantity of each type of coating applied at S-1,
        iii. Quantity of catalysts, additives, and reducers/ thinners used at S-1;
        iv. Quantity of solid lubricant coatings and additives applied at S-1 on a daily basis;
        v. Identification of specialty coating category;
        vi. Types and quantity of solvents used for cleanup at S-1;
        vii. Types and quantity of solvents used for cleaning and surface preparation at S-2;
        viii. Oven temperature; and
        ix. If a material other than those specified in Parts 1 and 3 of this Permit Condition is used, the owner/operator of S-1 and S-2 shall record the consumption rate and the POC, NPOC, and toxic component contents of each material used and calculate and record the emissions of POC, NPOC, and toxic air contaminant on a pounds/ hour basis.

Weekly and daily usage and/or hourly POC, NPOC, and toxic air contaminant emissions shall be totaled on a monthly basis and monthly usage and/or POC, NPOC, and toxic air contaminant emissions shall be totaled for each consecutive, rolling twelve-month period to demonstrate compliance with Parts 1, 3, and 4. 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, Regulations 2-5, 8-4, 8-16, and 8-19)

End of Conditions

CONDITION # 24064----------

Plant 23587; Applies to

S-1, Spray Booth with HVLP Spray Guns

National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements (40 CFR Part 63), subpart HHHHHH, for the controlling of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd) ('target Hazardous Air Pollutants') from Paint Stripping and Miscellaneous Surface Coating Operations (including motor vehicle/mobile equipment/miscellaneous surface coating operations):

1. The owner/operator shall perform an Initial Notification upon startup to the delegated authority: Director, Air and Toxics Division, EPA, Region IX, 75 Hawthorne St, San Francisco, CA 94105.

2. The owner/operator shall certify that the owner/operator is in compliance with the following provisions of the applicable NESHAP:
   a. Train/certify all painters on spray gun equipment selection, spray techniques, maintenance, and environmental compliance (40 CFR Part 63, section 63.11173(f)(2)(i)-(iv)).
   b. Install/operate filter technology on all spray booths/stations/enclosures to achieve at least 98% capture efficiency.
   c. Spray booths/stations used to refinish complete motor vehicles or mobile equipment must be fully enclosed and ventilated at negative pressure or up to 0.05 inches water gauge positive pressure for booths that have seals on all doors and other openings and an automatic pressure balancing system.
   d. Spray booths/stations used to coat miscellaneous parts or products or vehicle subassemblies must have a full roof, at least three complete walls or side curtains, and is ventilated so that air is drawn into the booth.
   e. Spray-applied coatings must be applied with a high volume, low-pressure (HVLP) spray gun, electrostatic application, airless or air-assisted airless spray gun, or an equivalent technology.
   f. Paint spray gun cleaning must be done so that an atomized mist or spray of the cleaning solvent is not created outside a container that collects used gun cleaning solvent.
   g. Train and certify all personnel who spray apply surface coatings no later than 180 days after hiring.

3. To demonstrate compliance with Parts 1, 2, and 3, the owner/operator shall maintain the following records for five years from the date of creation and have the records readily available to the District upon request.
   a. Copies of Notifications submitted to EPA.
   b. Painter training certifications.
   c. Spray booth filter efficiency documentation.
   d. Spray gun transfer efficiency.
   e. Target HAP content information such as MSDS.
   f. Annual usage of MeCl for paint stripping, and written MeCl minimization plan if annual usage > 1 ton per year.
   g. Deviation and corrective action documentation.

4. The owner/operator may petition the Administrator for an exemption from Parts 1, 2, and 3, if it can demonstrate to the satisfaction of the Administrator that the

coatings that contain compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd) are not applied. The owner/operator shall have the Administrator's approval of the exemption readily available to the District for as long as the exemption is applicable.

Basis: 40 CFR Part 63, subpart HHHHHH

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 a Permit to Operate for the equipment listed below. However, the proposed sources will be located within 1,000 feet of at least one school, which triggers the public notification requirements of 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 a Permit to Operate for the following source:

S-1 Spray booth for coating pumps, Golden West model and two electric drying/ curing ovens

S-2 Facility-wide solvent wipe cleaning operation

_____
Snigdha Mehta
Air Quality Engineer
Engineering Division