

EVALUATION REPORT
Miasole
Application #17423 - Plant #17993
Santa Clara, CA

DRAFT

I. BACKGROUND

Miasole is a new facility that is requesting permitting for a wipe clean operation and C/Es for other sources at this site. The facility manufactures solar cells by manufacturing a thin film semiconductor CGIS (Copper, Indium Diselenide, Gallium) compound that is applied to the substrate (steel sheet) by using a thin film metallization process where vacuum deposition chambers are utilized.

Emissions from the vacuum deposition chambers are all abated to A-1 scrubber. The facility uses an ozone generator for odor control which is attached to the scrubber A-1. The facility is also requesting a C/E for the Environmental Lab facility which does the following activities: solvent station; failure analysis by using 250 ml beaker to test resin compound, and a test lab using organic and inorganic materials using less than 5 gallons per year total. Previously, the facility did not exceed 20 gallons per year of solvent for the wipe clean operation and they were exempt from permitting per 2-1-118.9. This source is located within 1,000 feet of the outer boundary of a school and as such, this application requires Public Notification via Reg. 2-1-412. A Public Notice has been prepared and sent out to the home address of the students of the school and to each address within a radius of 1,000 feet of the source. This Evaluation Report will be posted on the District Webpage along with the Public Notice. A phone line is set-up at the District to receive public comments.

S-1 Facility Wide Wipe Clean Operation

And the facility is requesting a C/E for the following sources

Bar Coating Printing Press exempt per 2-1-119.2.1
 Ozone Generator model RMU16-DG exempt per 2-1-128.17

Environmental Test Lab – exempt per 2-1-126.2

- QA/QC testing –Solvent Station (beaker)
- Mixing Operations
- Organic and Inorganic compounds using less than 10 gallons

7 Coater operations consisting of vacuum deposition chambers abated to a wet scrubber 500 scfm - exempt per 2-1- 103

II. EMISSION CALCULATIONS

S-1 Wipe Clean
 Operation
 Total Gallons 120
 Operating Time days/yr 364

Compounds	Gallons	lbm/gal	POCs		NPOCs	
			lbm/yr	lbm/day	tons/yr	tons/yr
IPA	99.60	100.00	6.60	660.00	1.81	0.33
Acetone	20.40	21.00	6.60		138.60	0.38

Exempt Sources:**Bar Coating Printing Press** using less than 30 gallons per year or 150 lbm/yr

Ink	Gal/yr	lbm/gal	lbm/yr	tons/yr	Trigger Level lbm/yr
MEK	22	6.65	146.3	0.07	3.90E+04

Ozone Generator – produce less than 1 lbm/day of ozone

Hours per day	24	grams/hr	lbm/hr	lbm/day	Trigger Level lbm/yr
Ozone Generator		18.00	0.04	0.95	7.00E+03

Environmental Test Lab – QA/QC Testing Equipment

██████████ (solvent sink-small beaker)- for failure analysis

Compound	Gal/yr	lbm/gal	POCs lbm/yr
toluene	35	7.2	252
IPA	4	6.6	26.4

Mixing Operations: using 250 ml beaker to mix materials for quality control

Materials Used:	Gal/yr	lbm/gal	lbm/yr
Epoxy Hardner	3.00	8.65	25.95
Mold Release	1.00	6.01	6.01
Epoxy Resin	3.00	9.43	<u>28.29</u>
Total			60.25

Environmental Test Lab using less than 10 gallons of various compounds (inorganic and organic). No toxic trigger level was triggered.

Vacuum Deposition Chambers emissions abated to A-1 Scrubber- from filter analysis performed on one roll coater that consisted of ██████████

██████████ Emissions from all coater operations (7 coaters) on site were estimated from the filter that was collected. Emissions that were captured on the filter were taken prior to being abated.

Liters	624
1 day	8 hrs
day/yr	365
hours/yr	8760

of [REDACTED]/(coaters) [REDACTED] (7)

	[REDACTED] Emissions Captured on the Filter					Maximum Total Emissions 7 Coaters – [REDACTED]	Trigger Level lbm/yr
	mg/m3	grams/liter	grams/day	grams/yr	lbm/yr	lbm/yr	
Chromium	0.00053	5.3E-10	9.9216E-07	0.000362138	7.98377E-07	3.11367E-05	1.3E-3
Cadmium	0.0004	4E-10	7.488E-07	0.000273312	6.02549E-07	2.34994E-05	0.045
aluminum	0.00071	7.1E-10	1.32912E-06	0.000485129	1.06952E-06	4.17115E-05	
Copper	0.0004	4E-10	7.488E-07	0.000273312	6.02549E-07	2.34994E-05	93
Molybdenum	0.0016	1.6E-09	2.9952E-06	0.001093248	2.4102E-06	9.39976E-05	
Selenium	0.00068	6.8E-10	1.27296E-06	0.00046463	1.02433E-06	3.9949E-05	7.7E+02
Zinc	0.0004	4E-10	7.488E-07	0.000273312	6.02549E-07	2.34994E-05	1.4E+03

III. CUMULATIVE INCREASE

Cumulative Increases for S-1 – new facility

Compound	tons/yr
POCs	0.33
NPOCs	0.07

IV. BACT

The facility is applying BACT to source S-1 even though the facility did not exceed 10 lbm/day. For S-1, the wipe clean operation is not subject to BACT as emissions per day do not exceed 10 lbm/day. Therefore Regulation 2, Rule 2, Section 301 is not applicable. The facility is following good operating practices.

V. OFFSETS

Offsets are not required as all sources do not exceed 10 tons/yr.

VI. TOXIC RISK SCREEN ANALYSIS

No toxic air contaminant is emitted in quantities that would require a risk screen analysis. IPA has a trigger level of 2.7E5 lbm/yr and the facility’s IPA usage is well below this threshold. In addition, for the [REDACTED] coating operation, the facility will not emit compounds that would exceed the trigger level for cadmium. The metals that are applied to the coating line adhere to the metal substrate and any air emissions that occur are abated to a wet scrubber.

VII. STATEMENT OF COMPLIANCE

S-1- Facility Wipe Cleaning Operation-. This facility is keeping usage records and complies with Reg 8, Rule 16, Section 501 Solvent Records. This facility is also in compliance with Reg 8, Rule 1,

Section 321 under the heading of closed containers, where any solvent shall be kept in closed containers and Reg 8, Rule 1, Section 320, where cloths containing organic solvents shall be stored in closed containers. The facility is exempt from using aqueous cleaners (VOC content less than 50 grams/liter) per Reg 8, Rule 4, Section 116 since wipe cleaning is used on electrical components. The Facility complies with Reg 8 Rule 4, 302 (Solvent and Surface Coating Requirements) and Reg 8 Rule 4, Section 312 (Solvent Evaporative Loss Minimization). Facility is exempt from Reg 8, Rule 16 Section 301-304 for wipe cleaning operations per 8.16-111. This facility is not subject to Reg 2, Rule 2, Section 301 and 302 for S-1 as emissions do not exceed 10 lbs/day nor 10 tons/yr.

This application is considered to be ministerial under the District's proposed CEQA guidelines (Regulation 2-1-312) 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 6.3 for wipe cleaning operations. In addition, the facility will comply with Regulation 8 Rule 30, Section 307 (Fab Area Wipe Cleaning). The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 6.3 (Wipe Cleaning Operations).

For the ozone generator, it is exempt from permitting as emissions to the atmosphere are less than 1 lbm/day per 2-1-128.17. The environmental test lab is also exempt per Regulation 2-1-126.2 as emissions from this operation do not trigger a toxic risk screen analysis for compounds used. For the [redacted] coater operation, this source is subject to Regulation 8 Rule 30. However, as the facility uses [redacted] vacuum deposition chambers that are abated to a wet scrubber and these compounds do not exceed toxic trigger level table per 2-5-1, this fab area is also exempt from permitting. The facility will be in compliance with Regulation 8 Rule 30, Section 500 (Monitoring Requirements). The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 7.4 (Semiconductor Manufacturing Operations)

BACT, PSD, NSPS, and NESHAPS are not triggered.

VIII. PERMIT CONDITIONS

Permit Conditions for Facility Wide Wipe Cleaning Operations:

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

IPA	100 Gallons
Acetone	21 Gallons

(Basis: Cumulative Increase)

2. The owner/operator may use an alternate 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-1 do not exceed 660 pounds in any consecutive twelve month period;

- b. Total NPOC emissions from S-1 do not exceed 138 pounds in any consecutive twelve month period; and
 - 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.
(Basis: Cumulative Increase; Toxics)
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 solvent used at this source on a monthly 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.

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; Toxics)

IX. RECOMMENDATION

Waive Authority to Construct and issue a Permit to Operate for the following source:

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March 17, 2009

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Senior Air Quality Engineer