

**DRAFT
ENGINEERING EVALUATION
Keysight Technologies
Application No. 27000
Plant No. 279**

BACKGROUND

Keysight Technologies has applied for an Authority to Construct (A/C) and/or Permit to Operate for the following equipment:

S-113 Above Ground Storage Tank, 2,100 gallon capacity

The equipment will be located at 1400 Fountaingrove Parkway, Santa Rosa, CA 95403.

The new waste solvent storage tank (S-113) along with the existing waste solvent storage tank (S-99) will be plumbed in tandem and will receive the same waste materials from the same site-wide processes. The desire to add a new tank is not driven by any significant increase in waste solvent generated by the facility, but by a need to gain system redundancy and reduce handling, shipping, and tank capacity risks. The site previously had two tanks until early 2015, when storage tank S-39 (which S-113 will be replacing) was taken out of service. The waste materials stored in this tank will be a mixture of solvents, oils, hydraulic fluids, and water associated with the processes from the entire Keysight Technologies facility.

The storage tank is subject to attached condition no. 26096.

EMISSIONS CALCULATIONS

Tank emissions

Precursor organic compound (POC) and non-precursor organic compound (NPOC) emissions from the working and breathing losses of the storage tank were estimated using TANKS 4.09d. Since the exact contents of the storage tank at any given time vary depending on the waste streams from the facility, the facility has agreed to an enforceable permit condition limiting the true vapor pressure of the storage tank contents to 8.2 psia. Emission calculations were done assuming 100% 1-Pentene (true vapor pressure = 8.49 psia), since this compound closely approximates the requested maximum vapor pressure. The emissions, shown in Attachment A, are summarized below.

| | <u>Annual (lb/yr)</u> | <u>Daily (lb/day)</u> | <u>Hourly (lb/hr)</u> |
|--------------------|-----------------------|-----------------------|-----------------------|
| Maximum emissions: | 630.24 | 2.01 | 0.084 |

Since this estimate is very conservative, both with regards to throughput and composition, permit conditions will limit the storage tank to 26,000 gallons per year of waste solvent throughput, or up to 630.24 lb/yr (0.315 ton/yr) of POC and NPOC emissions.

Fugitive emissions

The fugitive emissions from components (such as valves, pumps, compressors, flanges, and miscellaneous components) associated with S-113 are calculated based on emissions calculation methodology and Synthetic Organic Chemical Manufacturing Industry (SOCMI) average emission factors specified on page 4.5-2 of the Emission Inventory Improvement Program (EIIP) document "Volume II: Chapter 4- Preferred and Alternative Methods for Estimating Fugitive Emissions from Equipment Leaks- Final Report." The use of the average emission factor method is appropriate for this specific project because the components associated with S-113 are not subject to any Bay Area Air Quality Management District (BAAQMD) rule, including Regulations 8-18 and 8-22 (Organic Compounds- Valves and Flanges at Chemical Plants). Based on the definition of a chemical plant in Regulation 8-22-207, it appears that a semiconductor facility should be subject to this Regulation 8-22. However, it was determined that Regulation 8-22 is typically not applied to a semiconductor facility, according to staff in the

BAAQMD Compliance and Enforcement Division. This determination may be reconsidered and/or revised at a later date. The calculations are shown below. In the emissions calculations, it is conservatively assumed that 100% of the total organic compounds emitted is POC/NPOC.

| Equipment Type | Component Count | Average SOCM I Emission Factor (lb/hr/source) | POC emissions (lb/hr) | POC emissions (lb/yr) |
|----------------|-----------------|---|-----------------------|-----------------------|
| Valves | 4 | 0.008884629 | 0.03554 | 311.31741 |
| Pump Seals | 0 | 0.04387199 | 0.00000 | 0.00000 |
| Connectors | 0 | 0.004034459 | 0.00000 | 0.00000 |
| Flanges | 15 | 0.004034459 | 0.06052 | 530.12796 |
| Others | 4 | 0.04387199 | 0.17549 | 1,537.27454 |

TOTALS:
0.272 lb/hr
2378.720 lb/yr
6.517 lb/day

| | | | |
|---------------------|-----------------------|-----------------------|-----------------------|
| | <u>Annual (lb/yr)</u> | <u>Daily (lb/day)</u> | <u>Hourly (lb/hr)</u> |
| Combined emissions: | 3008.96 | 8.527 | 0.356 |

TOXIC RISK SCREENING ANALYSIS

The only Hazardous Air Pollutant (HAP) or Toxic Air Contaminant (TAC) expected to be stored in S-113 in a significant quantity is isopropyl alcohol (IPA). As shown in Tables 2 below, and assuming a worst case scenario that all emissions, up to 3008.96 lb/yr, from S-113 are IPA, the TAC does not exceed the District's Risk Screening trigger levels. Therefore, a Health Risk Screening Analysis (HRSA) is not required.

The TAC emissions from two other pending applications are not included below. The project under Application 26961 involves solvent parts washers, and did not trigger an HRSA. The project under Application 23919 involves a change of conditions for an existing semiconductor fabrication area and triggered an HRSA. However, neither of these applications is (1) a reasonably foreseeable consequence of the previous project, nor (2) a critical element or integral part of the previous project. Therefore, per the definition of a project in Regulation 2-1-301, the projects under Applications 23919 and 26961 are considered separate from the project under Application 27000.

Table 2. Toxic Air Contaminant (TAC) emissions and trigger levels

| HAP | Annual Emissions (lb/yr) | Regulation 2-5 Chronic Trigger Levels (lb/yr) | Chronic Triggered? | Hourly Emissions (lb/hr) | Regulation 2-5 Acute Trigger Levels (lb/hr) | Acute Triggered? |
|-----|--------------------------|---|--------------------|--------------------------|---|------------------|
| IPA | 3008.96 | 2.70E+05 | no | 0.356 | 7.10E+00 | no |

PLANT CUMULATIVE INCREASE AND OFFSETS

The following table summarizes the total Potential to Emit (PTE) for this facility. The current PTE includes the PTE for several grandfathered sources (as calculated in Application 20966, and accounting for several grandfathered sources that have been shut down).

| Facility PTE for POC | |
|--|---------------------|
| | Emissions (tons/yr) |
| Current Potential to Emit (pre- and post- 4/5/91 emissions combined) | 4.559 |
| New Increase with Application 27000 | 0.554 |
| New Increase with Application 26961 | 3.613 |
| Total Facility PTE | 8.726 |

BAAQMD Regulation 2-2-302 was amended on December 21, 2004, so that facilities with a potential to emit of 35 tons or more of POC or NOx (nitrogen oxides) could not use offsets from the Small Facilities Bank. Facilities with a potential to emit between 10 and 35 tons/yr of POC or NOx can use offsets from the Small Facilities Bank. Therefore, offsets are not required for POC because the PTE of POC for this facility is below 10 tons/yr.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

In accordance with Regulation 2, Rule 2, Section 301, Best Available Control Technology (BACT) is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO (carbon monoxide), SO₂ (sulfur dioxide) or PM₁₀ (particulate matter less than 10 microns in diameter). Based on the emission calculations above, POC and NPOC emissions (at 8.527 lb/day each) are below 10 lb/day, and the owner/operator is not subject to BACT.

STATEMENT OF COMPLIANCE

The owner/operator of S-113 shall comply with Regulation 8-5 (*Storage of Organic Liquids*). S-113 is required to be equipped with a submerged fill pipe or a pressure vacuum valve, as required by Regulation 8-5-301 for storing organic liquids with vapor pressures that range between 1.5 and 11 psia.

The fugitive components associated with S-113 are not subject to any BAAQMD rule, including Regulations 8-18 and 8-22 (Organic Compounds- Valves and Flanges at Chemical Plants). Based on the definition of a chemical plant in Regulation 8-22-207, it appears that a semiconductor facility should be subject to this Regulation 8-22. However, it was determined that Regulation 8-22 is typically not applied to a semiconductor facility, according to staff in the BAAQMD Compliance and Enforcement Division. This determination may be reconsidered and/or revised at a later date.

This application is considered to be ministerial under the District's California Environmental Quality Act (CEQA) 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 and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 4.0)

Because this equipment will be located within 1,000 ft of Hidden Valley Satellite School, the project is subject to the public notification requirements of Regulation 2-1-412 due to the increase in emissions from the project. A public notice will be sent to all parents of students of the above-mentioned school and all residents within 1,000 feet of the facility. There will be a 30-day public comment period.

Prevention of Significant Deterioration (PSD) does not apply.

PERMIT CONDITIONS

Condition No. 26096 -----

Keysight Technologies
S-113 Above Ground Storage Tank, 2,100 gallon capacity
Application 27000

Conditions for S-113

1. The owner/operator of S-113 shall not exceed the following throughput and/or vapor pressure limits during any consecutive twelve-month period:
26,000 gallons of waste solvent (true vapor pressure not to exceed not to exceed 8.2 psia)
(Basis: Cumulative Increase)
2. The owner/operator of S-113 may store alternate liquid(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-113 do not exceed 630 pounds in any consecutive twelve month period;
 - b. Total NPOC emissions from S-113 do not exceed 630 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. The owner/operator of S-113 shall retain the MSDS and/or specification sheets for all materials to be stored in S-113. The owner/operator of S-113 shall also include the maximum true vapor pressure for all constituents identified on the MSDS. For the purpose of complying with Part 1, each constituent shall not exceed the maximum vapor pressure limit in Part 1. (Basis: Cumulative Increase)
4. The owner/operator of S-113 shall collect and retain a representative sample of the contents of the storage tank using a district approved method each time the tank is emptied or during every calendar quarter, whichever is more frequent. Samples shall be retained for at least 12 months, or until requested by District staff, whichever occurs first. Samples shall be stored in a sample refrigerator (or by another District approved method) in order to preserve the composition of each sample. The stored sample shall be analyzed for vapor pressure upon request by District staff in order to determine compliance with Part 1. (Basis: Cumulative Increase)
5. To determine compliance with the above parts, the owner/operator of S-113 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 liquid stored at S-113 on a monthly basis.
 - b. If a material other than those specified in Part 1 is stored, 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 throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.
 - d. Each vapor pressure analysis result for the day of operation the analysis result is taken to demonstrate compliance with Parts 1 and 4.
 - e. MSDS and maximum true vapor pressure of the materials stored at S-113 to demonstrate compliance with Parts 1 and 3.

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)

Conditions for Fugitive Components Associated with S-113

6. The owner/operator of S-113 shall not exceed the following fugitive component counts associated with S-113:

4 valves

15 flanges

4 miscellaneous components (2 vents and 2 sensors)

(Basis: Cumulative Increase)

End of Conditions

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 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 an Authority to Construct for the following equipment:

S-113 Above Ground Storage Tank, 2,100 gallon capacity

By: _____

Jimmy Cheng
Air Quality Engineer

Date: _____