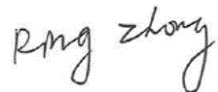


| EXPOSURE ASSESSMENT REPORT  |                                                                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Description</b>  | EufyMake E1                                                                                                                           |
| <b>Customer Information</b> | ANKER INNOVATIONS LIMITED                                                                                                             |
| <b>Released by</b>          | <br>Eric Rosenblum, PhD, DABT<br>Senior Toxicologist |
|                             | <br>Ring Zhong<br>Operations Leader                  |

| Assessment Results <sup>†</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Meets Requirements?                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <p>Estimated room concentrations of measured VOCs and ozone in a representative usage environment do not exceed global occupational exposure limits established by:</p> <ul style="list-style-type: none"> <li>a. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs)</li> <li>b. Occupational Safety and Health Administration (OSHA) Permissible Exposure Levels (PELs)</li> <li>c. European Chemical Agency (ECHA) Derived No Effect Levels (DNELs)</li> </ul> | <ul style="list-style-type: none"> <li>a. Yes</li> <li>b. Yes</li> <li>c. Yes</li> </ul> |
| Predicted inhalation exposure levels of identified carcinogens and reproductive toxins listed under California Proposition 65 do not exceed state published applicable safe harbor levels.                                                                                                                                                                                                                                                                                                                    | Yes                                                                                      |
| Estimated room concentrations of measured VOCs in a representative usage environment do not exceed global exposure limits established for the general population by European Chemical Agency (ECHA) Derived No Effect Levels (DNELs)                                                                                                                                                                                                                                                                          | Yes                                                                                      |

<sup>†</sup>Results are based only on the test and exposure parameters as defined in this report. These results are also based only on inhalation exposure and do not consider other potential routes of exposure, such as dermal and ingestion. In addition only those VOCs, primarily C<sub>6</sub>-C<sub>16</sub> hydrocarbons, that can be measured by the specific analytical methods are reported. Predicted exposure data should be evaluated with expert counsel relative to use and Proposition 65 labeling regulations.

## EXECUTIVE SUMMARY

### INTRODUCTION

UL performed a field emissions investigation of the EufyMake E1. The detailed test methodology is presented in UL Report 1002697523-8404895. The chamber operation, printing, and sampling strategy during the test were designed according to the principles of ISO 28360-1. Air samples were collected in the test environment during printing and analytically measured for Volatile Organic Compounds (VOCs), target list aldehydes and ozone.

The resulting emissions data were used to estimate room air concentrations in a representative indoor environment. Predicted indoor concentrations for given use conditions of the product were screened against key regulatory requirements and the potential to result in adverse health effects. Identified chemicals and their exposure levels from the operating printer were screened against occupational exposure guidelines from US authorities and the European Chemical Agency database, and identified carcinogens and reproductive toxins were further screened against California Proposition 65 safe harbor levels. This assessment is intended to satisfy Section 1.5.13 requirements of the EU Machinery Directive 2006-42.

### EXPOSURE CONCENTRATION CALCULATIONS

Exposure air concentrations were estimated based on the following parameters:

- 34.9 m<sup>3</sup> room size
- 0.45 ACH
- 8 hours printing over a 24-hour work day
- Instantaneous and uniform room air mixing
- 3 year product life

Detailed information is presented in Appendix A. Note: different exposure and use conditions may affect the exposure concentrations.

### RESULTS

All VOCs (including aldehydes) identified as emitting from the printer are listed in Table 1. Emission rates for additional analytes including ozone are listed in Table 2. The printing phase emission rates for each chemical are listed along with a corresponding predicted indoor exposure level.

Exposure levels for individual VOCs and ozone were compared to cognizant third-party exposure limits.

#### Screening for Occupational Exposure Limits

In Tables 4 through 6, the compounds identified in the product emissions were compared to concentration limits for industrial exposure established by US authorities. Predicted indoor concentrations were compared to high quality occupational exposure limits published for carcinogens, non-cancer toxins, and developmental/reproductive toxins. Three sets of values were used: Threshold Limit Values developed by the American Conference of Governmental Industrial Hygienists (ACGIH's TLVs), the Occupational Safety and Health Administration's Permissible Exposure Limits (OSHA's PELs), and the European Chemical Agency (ECHA) repeat dose occupational Derived No Effects Levels (DNELs).

The ACGIH TLV and OSHA PEL values are intended to represent concentrations below which nearly all

workers may be repeatedly exposed on a daily basis without adverse health effects. Although they were generally developed for industrial exposures, comparison of the levels of exposure associated with product emissions allows a general assessment of the risk for overt toxic effects. Exposure levels for workers in a representative usage environment are predicted to be below all occupational exposure values considered.

The European Chemical Agency (ECHA) repeat dose occupational Derived No Effects Levels (DNELs) represent chronic exposure thresholds for a particular substance that should not be exceeded in a work environment. The risk of a chemical substance to humans can be considered to be controlled/acceptable if the exposure levels estimated do not exceed the appropriate DNEL. While DNELs are defined as safe exposure levels for threshold effects, such safe levels cannot be defined for non-threshold effects, e.g. effects of genotoxic carcinogens or mutagenic effects. Those compounds identified in product emissions for which a repeat dose occupational DNEL has been published within the ECHA registered substance database are listed in Table 6. For the compounds found in the product emissions which have been evaluated using an ECHA DNEL for occupational exposure, the predicted exposure levels in a representative usage environment are less than the reference value.

### **Screening for California Proposition 65**

Predicted inhalation exposure levels from the product were calculated and compared against the California Proposition 65 criteria for carcinogenic and reproductive toxicity health effects.

***Data results are based only on inhalation exposure and do not consider other potential routes of exposure, such as dermal and ingestion.*** In addition only those VOCs, primarily C<sub>6</sub> - C<sub>16</sub> hydrocarbons, that can be measured by the specific analytical methods are reported. The compounds measured in the printer emissions that are listed by California Proposition 65 are shown in Table 7.

Predicted exposure data, as presented in Table 8A and 8B, indicates that exposure levels in a worst-case usage environment would be below the safe harbor levels that have been developed by California. This data should be evaluated with expert counsel relative to applicability of Proposition 65 labeling regulations.

### **Screening for General Population Exposure Limits**

The ECHA repeat dose general population DNEL represents chronic exposure thresholds for a particular substance that should not be exceeded in the general public. The risk of a chemical substance to humans can be considered to be controlled/acceptable if the exposure levels estimated do not exceed the appropriate DNEL (i.e., exposure estimate/DNEL < 1). While DNELs are defined as safe exposure levels for threshold effects, such safe levels cannot be defined for non-threshold effects, e.g. effects of genotoxic carcinogens or mutagenic effects. Those compounds identified in product emissions for which a repeat dose general population DNEL has been published within the ECHA registered substance database are listed in Table 9. For the compounds found in the product emissions which have been evaluated using an ECHA DNEL for occupational exposure, the predicted exposure levels in a representative usage environment are less than the reference value.

**TABLE 1. PREDICTED VOC EXPOSURE CONCENTRATIONS**

| CAS Number | Compound                                                                  | Emission Rate (mg/hr) | Predicted Exposure Concentration <sup>a</sup> (mg/m <sup>3</sup> ) |
|------------|---------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| 2399-48-6  | Tetrahydrofurfuryl acrylate <sup>†</sup>                                  | 6.580                 | 1.40E-01                                                           |
| 5888-33-5  | 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-      | 1.390                 | 2.95E-02                                                           |
| 2235-00-9  | Vinyl caprolactam <sup>†</sup>                                            | 2.050                 | 4.35E-02                                                           |
| 88-12-0    | 2-Pyrrolidinone,1-ethenyl- (1-Vinyl-2-pyrrolidinone) <sup>†</sup>         | 4.040                 | 8.57E-02                                                           |
| 20324-33-8 | 2-Propanol, 1-[2-(2-methoxy-1-methylethoxy)-1-methylethoxy]- <sup>†</sup> | 1.582                 | 3.36E-02                                                           |
| 25498-49-1 | Tripropylene glycol methyl ether <sup>†</sup>                             | 0.990                 | 2.10E-02                                                           |
| 97-99-4    | 2-Furanmethanol, tetrahydro <sup>†</sup>                                  | 1.979                 | 4.20E-02                                                           |
| 48145-04-6 | b-Phenoxyethyl acrylate <sup>†</sup>                                      | 0.660                 | 1.40E-02                                                           |
| 54344-61-5 | 1-Oxaspiro[4.5]deca-3,6-diene, 2,6,10,10-tetramethyl-                     | 0.098                 | 2.08E-03                                                           |
| 108-88-3   | Toluene (Methylbenzene) <sup>†</sup>                                      | 0.222                 | 4.71E-03                                                           |
| 123-86-4   | Acetate, butyl <sup>†</sup>                                               | 0.766                 | 1.63E-02                                                           |
| 7328-17-8  | 2-(2-Ethoxyethoxy)ethyl acrylate                                          | 0.049                 | 1.04E-03                                                           |
| 13048-33-4 | 1,6-Hexanediol diacrylate                                                 | 0.893                 | 1.90E-02                                                           |
| 556-67-2   | Cyclotetrasiloxane, octamethyl <sup>†</sup>                               | 0.043                 | 9.13E-04                                                           |
| 541-02-6   | Cyclopentasiloxane, decamethyl <sup>†</sup>                               | 0.049                 | 1.04E-03                                                           |
| 17312-80-0 | Undecane, 2,4-dimethyl                                                    | 0.026                 | 5.52E-04                                                           |
| 110-82-7   | Cyclohexane <sup>†</sup>                                                  | 0.035                 | 7.43E-04                                                           |
| 107-50-6   | Cycloheptasiloxane, tetradecamethyl-                                      | 0.015                 | 3.18E-04                                                           |
| 111-76-2   | Ethanol, 2-butoxy <sup>†</sup>                                            | 0.044                 | 9.34E-04                                                           |
| 629-59-4   | Tetradecane <sup>†</sup>                                                  | 0.013                 | 2.76E-04                                                           |
| 96-76-4    | Phenol, 2,4-bis(1,1-dimethylethyl)-                                       | 0.016                 | 3.40E-04                                                           |
| 128-37-0   | 2,6-Di-tert-butyl-4-methylphenol (BHT) <sup>†</sup>                       | 0.024                 | 5.09E-04                                                           |
| 2998-23-4  | 2-Propenoic acid, pentyl ester                                            | 0.028                 | 5.94E-04                                                           |
| 637-64-9   | 2-Furanmethanol, tetrahydro-, acetate                                     | 0.140                 | 2.97E-03                                                           |
| 142-82-5   | Heptane <sup>†</sup>                                                      | 0.007                 | 1.49E-04                                                           |
| 124-19-6   | Nonyl aldehyde (Nonanal) <sup>†</sup>                                     | 0.007                 | 1.49E-04                                                           |
| 122-99-6   | Ethanol, 2-phenoxy <sup>†</sup>                                           | 0.330                 | 7.00E-03                                                           |
| 5779-72-6  | Benzaldehyde, 2,4,5-trimethyl-                                            | 0.312                 | 6.62E-03                                                           |
| 27644-04-8 | 1,5-Heptadien-4-ol, 3,3,6-trimethyl-                                      | 0.239                 | 5.07E-03                                                           |
| 5187-23-5  | 1,3-Dioxane-5-methanol, 5-ethyl-                                          | 0.143                 | 3.04E-03                                                           |
| 108-95-2   | Phenol <sup>†</sup>                                                       | 0.131                 | 2.78E-03                                                           |
| 616-45-5   | 2-Pyrrolidinone <sup>†</sup>                                              | 0.096                 | 2.04E-03                                                           |
| 4265-25-2  | Benzofuran, 2-methyl                                                      | 0.058                 | 1.23E-03                                                           |
| 6192-44-5  | Ethanol, 2-phenoxy-, acetate                                              | 0.058                 | 1.23E-03                                                           |
| 74398-54-2 | 2-Ethylbutyl isobutyrate                                                  | 0.050                 | 1.06E-03                                                           |

| CAS Number | Compound                                             | Emission Rate (mg/hr) | Predicted Exposure Concentration <sup>a</sup> (mg/m <sup>3</sup> ) |
|------------|------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| 78-83-1    | 1-Propanol, 2-methyl (Isobutyl alcohol) <sup>†</sup> | 0.043                 | 9.13E-04                                                           |
| 104-76-7   | 1-Hexanol, 2-ethyl <sup>†</sup>                      | 0.033                 | 7.00E-04                                                           |
| 1330-20-7  | Xylenes (Total) <sup>†</sup>                         | 0.033                 | 7.00E-04                                                           |
| 496-16-2   | Benzofuran, 2,3-dihydro-                             | 0.033                 | 7.00E-04                                                           |
| 112-31-2   | Decanal <sup>†</sup>                                 | 0.030                 | 6.37E-04                                                           |
| 611-14-3   | Benzene, 1-ethyl-2-methyl (2-Ethyltoluene)           | 0.030                 | 6.37E-04                                                           |
| 100-42-5   | Styrene <sup>†</sup>                                 | 0.028                 | 5.94E-04                                                           |
| 110-19-0   | Acetic acid, 2-methylpropyl ester (Isobutyl acetate) | 0.028                 | 5.94E-04                                                           |
| Aldehydes  |                                                      |                       |                                                                    |
| 75-07-0    | Acetaldehyde                                         | 3.094                 | 6.57E-02                                                           |
| 5779-94-2  | Benzaldehyde,2,5-dimethyl                            | 0.038                 | 8.07E-04                                                           |
| 50-00-0    | Formaldehyde                                         | 0.022                 | 4.67E-04                                                           |

<sup>a</sup> See Appendix A, Equation 1 for derivation.  
<sup>†</sup> Indicates calibration to authentic standards. All other compounds calibrated relative to toluene response.

**TABLE 2. EMISSION FACTORS AND PREDICTED CONCENTRATIONS OF OZONE**

| Compound | Emission Rate (mg/h) | Predicted Exposure Concentration (mg/m <sup>3</sup> ) |
|----------|----------------------|-------------------------------------------------------|
| Ozone    | 0.96                 | 2.04E-02                                              |

**TABLE 3. COMPARISON OF PRODUCT EMISSIONS TO BREATHING AIR GUIDELINES BASED ON EXISTING STANDARDS**

| Compound                | Predicted Concentration (mg/m <sup>3</sup> ) | Standard (mg/m <sup>3</sup> ) | Source           |
|-------------------------|----------------------------------------------|-------------------------------|------------------|
| Ozone (O <sub>3</sub> ) | 0.0204                                       | 0.098                         | FDA <sup>1</sup> |

<sup>1</sup>FDA: U.S. Food and Drug Administration (21 CFR 801.415), 2024

**TABLE 4. ACGIH THRESHOLD LIMIT VALUES (TLVs) FOR OCCUPATIONAL EXPOSURES**

| CAS Number | Compound                                             | Predicted Concentration (mg/m <sup>3</sup> ) | ACGIH TLV (mg/m <sup>3</sup> ) |       | TLV Index <sup>†</sup> |
|------------|------------------------------------------------------|----------------------------------------------|--------------------------------|-------|------------------------|
|            |                                                      |                                              | TWA                            | STEL  |                        |
| 88-12-0    | 2-Pyrrolidinone,1-ethenyl- (1-Vinyl-2-pyrrolidinone) | 8.57E-02                                     |                                | 0.227 | 3.78E-01               |
| 108-88-3   | Toluene (Methylbenzene)                              | 4.71E-03                                     | 75                             |       | 6.28E-05               |
| 123-86-4   | Acetate, butyl                                       | 1.63E-02                                     | 236.7                          | 710   | 6.87E-05               |
| 110-82-7   | Cyclohexane                                          | 7.43E-04                                     | 350                            |       | 2.12E-06               |
| 111-76-2   | Ethanol, 2-butoxy                                    | 9.34E-04                                     | 97                             |       | 9.63E-06               |
| 128-37-0   | 2,6-Di-tert-butyl-4-methylphenol (BHT)               | 5.09E-04                                     | 2.00                           |       | 0.000255               |
| 142-82-5   | Heptane                                              | 1.49E-04                                     | 1,600                          | 2,000 | 9.29E-08               |
| 108-95-2   | Phenol                                               | 2.78E-03                                     | 19                             |       | 0.000146               |
| 78-83-1    | 1-Propanol, 2-methyl (Isobutyl alcohol)              | 9.13E-04                                     | 150                            |       | 6.08E-06               |
| 1330-20-7  | Xylenes (Total)                                      | 7.00E-04                                     | 87                             |       | 8.05E-06               |
| 100-42-5   | Styrene                                              | 5.94E-04                                     | 43                             | 85    | 1.4E-05                |
| 110-19-0   | Acetic acid, 2-methylpropyl ester (Isobutyl acetate) | 5.94E-04                                     | 233                            | 700   | 2.55E-06               |
| 75-07-0    | Acetaldehyde                                         | 6.57E-02                                     |                                | 45c   | 1.46E-03               |
| 50-00-0    | Formaldehyde                                         | 4.67E-04                                     |                                | 0.37  | 1.26E-03               |

See Appendix A, Section 2.1 for derivation.

Key:  
ACGIH = American Conference of Governmental Industrial Hygienists  
TLV = Threshold Limit Value  
TWA = Time Weighted Average  
STEL = Short-term Exposure Limit  
C = Ceiling; the concentration that shall not be exceeded during any part of the working exposure

<sup>†</sup>Determined using TWA when available and STEL or Ceiling when not

**TABLE 5. OSHA PERMISSIBLE EXPOSURE LIMITS (PELS)**

| CAS Number | Compound                                             | Predicted Concentration (mg/m <sup>3</sup> ) | OSHA PEL (mg/m <sup>3</sup> ) |           | PEL Index <sup>†</sup> |
|------------|------------------------------------------------------|----------------------------------------------|-------------------------------|-----------|------------------------|
|            |                                                      |                                              | TWA                           | STEL      |                        |
| 108-88-3   | Toluene (Methylbenzene)                              | 4.71E-03                                     | 750                           | 1,125     | 6.28E-06               |
| 123-86-4   | Acetate, butyl                                       | 1.63E-02                                     | 710                           |           | 2.29E-05               |
| 110-82-7   | Cyclohexane                                          | 7.43E-04                                     | 1,050                         |           | 7.07E-07               |
| 111-76-2   | Ethanol, 2-butoxy                                    | 9.34E-04                                     | 240                           |           | 3.89E-06               |
| 142-82-5   | Heptane                                              | 1.49E-04                                     | 2,000                         |           | 7.43E-08               |
| 108-95-2   | Phenol                                               | 2.78E-03                                     | 19                            |           | 1.46E-04               |
| 78-83-1    | 1-Propanol, 2-methyl isobutyl alcohol)               | 9.13E-04                                     | 300                           |           | 3.04E-06               |
| 1330-20-7  | Xylenes (Total)                                      | 7.00E-04                                     | 435                           |           | 1.61E-06               |
| 100-42-5   | Styrene                                              | 5.94E-04                                     | 425                           |           | 1.40E-06               |
| 110-19-0   | Acetic acid, 2-methylpropyl ester (Isobutyl acetate) | 5.94E-04                                     | 700                           |           | 8.49E-07               |
| 75-07-0    | Acetaldehyde                                         | 6.57E-02                                     | 360                           |           | 1.82E-04               |
| 50-00-0    | Formaldehyde                                         | 4.67E-04                                     | 0.92                          | 2.45 STEL | 5.08E-04               |

See Appendix A, Section 2.1 for derivation.

<sup>†</sup> Determined using TWA.

Key:  
OSHA = Occupational Safety & Health Administration  
PEL = Permissible Exposure Limits  
TWA = Time Weighted Average  
STEL = Short Term Emission Limit  
C = Ceiling Limit

**TABLE 6. ECHA DERIVED NO EFFECTS LEVELS (DNELs) OCCUPATIONAL EXPOSURE LEVELS**

| CAS Number | Compound                                                             | Predicted Exposure Concentration (mg/m³) | Occupational Repeat Dose DNEL (mg/m³) | DNEL Index |
|------------|----------------------------------------------------------------------|------------------------------------------|---------------------------------------|------------|
| 2399-48-6  | Tetrahydrofurfuryl acrylate                                          | 1.40E-01                                 | 1.73                                  | 8.07E-02   |
| 5888-33-5  | 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- | 2.95E-02                                 | 4.90                                  | 6.02E-03   |
| 2235-00-9  | Vinyl caprolactam                                                    | 4.35E-02                                 | 4.90                                  | 8.88E-03   |
| 88-12-0    | 2-Pyrrolidinone,1-ethenyl- (1-Vinyl-2-pyrrolidinone)                 | 8.57E-02                                 | 0.10                                  | 8.57E-01   |
| 25498-49-1 | Tripropylene glycol methyl ether                                     | 2.10E-02                                 | 187.0                                 | 1.12E-04   |
| 97-99-4    | 2-Furanmethanol, tetrahydro                                          | 4.20E-02                                 | 1.40                                  | 3.00E-02   |
| 48145-04-6 | b-Phenoxyethyl acrylate                                              | 1.40E-02                                 | 12.0                                  | 1.17E-03   |
| 108-88-3   | Toluene (Methylbenzene)                                              | 4.71E-03                                 | 192.0                                 | 2.45E-05   |
| 123-86-4   | Acetate, butyl                                                       | 1.63E-02                                 | 300.0                                 | 5.42E-05   |
| 7328-17-8  | 2-(2-Ethoxyethoxy)ethyl acrylate                                     | 1.04E-03                                 | 2.60                                  | 4.00E-04   |
| 13048-33-4 | 1,6-Hexanediol diacrylate                                            | 1.90E-02                                 | 24.50                                 | 7.74E-04   |
| 556-67-2   | Cyclotetrasiloxane, octamethyl                                       | 9.13E-04                                 | 73.0                                  | 1.25E-05   |
| 541-02-6   | Cyclopentasiloxane, decamethyl                                       | 1.04E-03                                 | 97.30                                 | 1.07E-05   |
| 110-82-7   | Cyclohexane                                                          | 7.43E-04                                 | 700.0                                 | 1.06E-06   |
| 111-76-2   | Ethanol, 2-butoxy                                                    | 9.34E-04                                 | 98.0                                  | 9.53E-06   |
| 96-76-4    | Phenol, 2,4-bis(1,1-dimethylethyl)-                                  | 3.40E-04                                 | 44.10                                 | 7.70E-06   |
| 128-37-0   | 2,6-Di-tert-butyl-4-methylphenol (BHT)                               | 5.09E-04                                 | 3.50                                  | 1.46E-04   |
| 142-82-5   | Heptane                                                              | 1.49E-04                                 | 2,085.0                               | 7.13E-08   |
| 124-19-6   | Nonyl aldehyde (Nonanal)                                             | 1.49E-04                                 | 24.90                                 | 5.97E-06   |
| 122-99-6   | Ethanol, 2-phenoxy                                                   | 7.00E-03                                 | 5.70                                  | 1.23E-03   |
| 5187-23-5  | 1,3-Dioxane-5-methanol, 5-ethyl-                                     | 3.04E-03                                 | 26.40                                 | 1.15E-04   |
| 108-95-2   | Phenol                                                               | 2.78E-03                                 | 8.0                                   | 3.48E-04   |
| 616-45-5   | 2-Pyrrolidinone                                                      | 2.04E-03                                 | 29.62                                 | 6.88E-05   |
| 104-76-7   | 1-Hexanol, 2-ethyl                                                   | 7.00E-04                                 | 12.80                                 | 5.47E-05   |
| 1330-20-7  | Xylenes (Total)                                                      | 7.00E-04                                 | 221.0                                 | 3.17E-06   |
| 112-31-2   | Decanal                                                              | 6.37E-04                                 | 24.90                                 | 2.56E-05   |
| 100-42-5   | Styrene                                                              | 5.94E-04                                 | 85.0                                  | 6.99E-06   |
| 110-19-0   | Acetic acid, 2-methylpropyl ester (Isobutyl acetate)                 | 5.94E-04                                 | 300.0                                 | 1.98E-06   |
| 50-00-0    | Formaldehyde                                                         | 4.67E-04                                 | 9.0                                   | 5.19E-05   |

DNEL Reported for systemic effects when available.

See Appendix A, Section 1.0 for derivation

**TABLE 7. CALIFORNIA PROPOSITION 65 REVIEW OF VOC EMISSIONS**

| CAS Number | Compound                | ✓() = Found In Listing (Class) |
|------------|-------------------------|--------------------------------|
|            |                         | Cal Prop. 65                   |
| 108-88-3   | Toluene (Methylbenzene) | ✓(2)                           |
| 100-42-5   | Styrene                 | ✓(1)                           |
| 75-07-0    | Acetaldehyde            | ✓(1)                           |
| 50-00-0    | Formaldehyde            | ✓(1)                           |

CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals  
1 = known to cause cancer  
2 = known to cause reproductive toxicity

**TABLE 8A. CARCINOGENIC RISK ESTIMATES BASED ON CALIFORNIA PROPOSITION 65 EXPOSURE LEVELS**

| CAS Number | Compound     | Lifetime Average Daily Dose (µg/day) | Proposition 65 Exposure Level (µg/day) |
|------------|--------------|--------------------------------------|----------------------------------------|
| 100-42-5   | Styrene      | 0.2                                  | 27                                     |
| 75-07-0    | Acetaldehyde | 19.3                                 | 90 (inhalation)                        |
| 50-00-0    | Formaldehyde | 0.1                                  | 40                                     |

See Appendix A, Section 2.1 for derivation.

Based on a 70 year lifetime, 3 years of workplace exposure (as requested by ANKER), 250 work days/year, 10 m<sup>3</sup> inhaled breathing volume/day at the average daily concentration determined per work day.

**TABLE 8B. REPRODUCTIVE TOXICITY RISK ESTIMATES BASED ON CALIFORNIA PROPOSITION 65 EXPOSURE LEVELS**

| CAS Number | Compound                | Maximum Daily Dose (µg/day) | Proposition 65 Exposure Level (µg/day) |
|------------|-------------------------|-----------------------------|----------------------------------------|
| 108-88-3   | Toluene (Methylbenzene) | 47.1                        | 13,000                                 |

See Appendix A, Section 2.3 for derivation.

Based on a workplace exposure 10 m<sup>3</sup> inhaled breathing volume/day, at the maximum daily concentration determined per work day.

**TABLE 9. ECHA DERIVED NO EFFECTS LEVELS (DNELS) GENERAL POPULATION EXPOSURE LEVELS**

| CAS Number | Compound                                                             | Predicted Exposure Concentration (mg/m³) | General Population Repeat Dose DNEL (mg/m³) | DNEL Index |
|------------|----------------------------------------------------------------------|------------------------------------------|---------------------------------------------|------------|
| 2399-48-6  | Tetrahydrofurfuryl acrylate                                          | 1.40E-01                                 | 0.30                                        | 4.66E-01   |
| 5888-33-5  | 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- | 2.95E-02                                 | 1.45                                        | 2.03E-02   |
| 2235-00-9  | Vinyl caprolactam                                                    | 4.35E-02                                 | 1.04                                        | 4.18E-02   |
| 25498-49-1 | Tripropylene glycol methyl ether                                     | 2.10E-02                                 | 19.0                                        | 1.11E-03   |
| 97-99-4    | 2-Furanmethanol, tetrahydro†                                         | 4.20E-02                                 | 0.25                                        | 1.68E-01   |
| 108-88-3   | Toluene (Methylbenzene)                                              | 4.71E-03                                 | 56.50                                       | 8.34E-05   |
| 123-86-4   | Acetate, butyl                                                       | 1.63E-02                                 | 35.70                                       | 4.55E-04   |
| 13048-33-4 | 1,6-Hexanediol diacrylate                                            | 1.90E-02                                 | 7.20                                        | 2.63E-03   |
| 556-67-2   | Cyclotetrasiloxane, octamethyl                                       | 9.13E-04                                 | 13.0                                        | 7.02E-05   |
| 541-02-6   | Cyclopentasiloxane, decamethyl                                       | 1.04E-03                                 | 17.30                                       | 6.01E-05   |
| 110-82-7   | Cyclohexane                                                          | 7.43E-04                                 | 206.0                                       | 3.61E-06   |
| 111-76-2   | Ethanol, 2-butoxy                                                    | 9.34E-04                                 | 59.0                                        | 1.58E-05   |
| 96-76-4    | Phenol, 2,4-bis(1,1-dimethylethyl)-                                  | 3.40E-04                                 | 13.0                                        | 2.61E-05   |
| 128-37-0   | 2,6-Di-tert-butyl-4-methylphenol (BHT)                               | 5.09E-04                                 | 0.44                                        | 1.17E-03   |
| 142-82-5   | Heptane                                                              | 1.49E-04                                 | 447.0                                       | 3.32E-07   |
| 124-19-6   | Nonyl aldehyde (Nonanal)                                             | 1.49E-04                                 | 6.10                                        | 2.44E-05   |
| 122-99-6   | Ethanol, 2-phenoxy                                                   | 7.00E-03                                 | 2.41                                        | 2.91E-03   |
| 5187-23-5  | 1,3-Dioxane-5-methanol, 5-ethyl-                                     | 3.04E-03                                 | 6.50                                        | 4.67E-04   |
| 108-95-2   | Phenol                                                               | 2.78E-03                                 | 0.45                                        | 6.15E-03   |
| 616-45-5   | 2-Pyrrolidinone                                                      | 2.04E-03                                 | 1.99                                        | 1.03E-03   |
| 104-76-7   | 1-Hexanol, 2-ethyl                                                   | 7.00E-04                                 | 2.30                                        | 3.05E-04   |
| 1330-20-7  | Xylenes (Total)                                                      | 7.00E-04                                 | 65.30                                       | 1.07E-05   |
| 112-31-2   | Decanal                                                              | 6.37E-04                                 | 6.13                                        | 1.04E-04   |
| 100-42-5   | Styrene                                                              | 5.94E-04                                 | 10.20                                       | 5.83E-05   |
| 110-19-0   | Acetic acid, 2-methylpropyl ester (Isobutyl acetate)                 | 5.94E-04                                 | 35.70                                       | 1.66E-05   |
| 50-00-0    | Formaldehyde                                                         | 4.67E-04                                 | 3.20                                        | 1.46E-04   |

See Appendix A, Section 1.0 for derivation

## APPENDIX A • METHODOLOGIES

### 1.0 Determination of Predicted Concentrations

Emission rate data for individual compounds identified during chamber testing may be combined with expected use conditions to determine a predicted exposure concentration. The assumption is made that the space within which the printer is operating is well-mixed, and that the average concentration is spread over the entire work day.

Concentrations of the different compounds emitted by the printer were calculated for a use scenario in which the printer is used for the maximum expected print time during an 8 hour workday to be conservative. The predicted exposure concentration is calculated for each compound using the following equation:

$$C = [E \times (T_{\text{printing}} / T_{\text{total}})] / (N \times V) \quad (1)$$

where:

- C = the predicted daily concentration ( $\mu\text{g}/\text{m}^3$ ) of a given compound in the workspace;
- E = the emission rate ( $\mu\text{g}/\text{hr}$ ), of the compound of interest;
- $T_{\text{printing}}$  = print time in hours (hr)
- $T_{\text{total}}$  = total work day (hrs)
- N = the air exchange rate ( $\text{hr}^{-1}$ ) in the workspace;
- V = the volume ( $\text{m}^3$ ) of the workspace.

*Predicted exposure concentrations are provided in Table 1 and 2.*

### 2.0 Estimation of Risk Levels

#### 2.1 Occupational exposure limits

Occupational exposure limits, such as TLVs, PELs, and DNELs, are used in the current analysis as indicators of potential adverse health effects or overt toxicity upon exposure to the compounds of interest. The predicted exposure concentrations C (determined in Equation 1) are compared directly with the reference value to assess the likelihood of overt toxicity due to exposure to the individual compounds in the emissions of the printer. Also, the ratio of C and the minimum reference value may be calculated to determine an index or quotient. These may be added for the mixture of compounds to get an index of the likelihood of the mixture to cause overt toxic effects. If the index is above 1, there is a possibility of adverse health effects resulting directly from the exposure. Again, these ratios do not represent the absolute probability of toxicity from the exposure.

*Results for the occupational exposure limits assessment are provided in Tables 4, 5, and 6 for ACGIH TLVs, OSHA PELs, and ECHA DNELs respectively.*

#### 2.2 Carcinogenesis

Predicted exposure levels for comparison with Proposition 65 levels are determined using the average predicted room concentrations from Equation 1 and an average daily lifetime exposure concentration experienced by an individual to the product emissions. The average daily lifetime exposure concentration is determined by assuming that an individual is exposed to the predicted average concentration of each compound for each of 250 workdays each year over a 3 years period of workplace exposure ( $10 \text{ m}^3$  of workplace air inhaled per day) (22 California Code of Regulations 12721).

The average daily lifetime exposure concentration is determined from Equation 2:

$$C_{LT} = (C \times f_{EXP} \times d_{EXP})/t_{LT} \quad (2)$$

where:

- $C_{LT}$  = the average daily lifetime exposure concentration ( $\mu\text{g}/\text{m}^3$ );
- $C$  = the predicted daily concentration ( $\mu\text{g}/\text{m}^3$ ) of a given compound in the workspace, determined in Equation 1;
- $f_{EXP}$  = the exposure frequency per year (250 days/year);
- $d_{EXP}$  = the cumulative lifetime exposure duration (assumed to be 3 years); and,
- $t_{LT}$  = the exposure averaging time, taken to be 365 days per year over a 70 year lifetime for carcinogenic effects.

Equation 3 is then used to determine the carcinogen exposure levels for comparison with Proposition 65 safe harbor levels:

$$EL = C_{LT} \times V_D \quad (3)$$

where:

- $EL$  = exposure level ( $\mu\text{g}/\text{day}$ ); and,
- $C_{LT}$  = the average daily lifetime exposure concentration ( $\mu\text{g}/\text{m}^3$ ), determined in Equation 2; and,
- $V_D$  = the volume of air ( $\text{m}^3/\text{day}$ ) taken in by the exposed individual, assumed to be  $10 \text{ m}^3/\text{day}$  workplace air inhaled per day (22 California Code of Regulations 12721).

*Results for the Proposition 65 carcinogenicity assessment using these calculations are provided in Table 8A.*

### 2.3 Reproductive toxicity

Exposure assessments for reproductive endpoints are done in a similar way to other non-carcinogenic endpoints; however, it is assumed that a single exposure may result in developmental toxicity, if it occurs at the wrong time. Therefore, the exposure is not averaged over a time period, and comparison to the California Proposition 65 requirements is made directly from the average exposure level calculated from Equation 1.

Equation 3 is then used to determine the reproductive toxicant exposure levels for comparison with Proposition 65 safe harbor levels:

$$EL = C \times V_D \quad (3)$$

where:

- $EL$  = exposure level ( $\mu\text{g}/\text{day}$ ); and,
- $C$  = the daily exposure concentration ( $\mu\text{g}/\text{m}^3$ ), determined in Equation 1 and,
- $V_D$  = the volume of air ( $\text{m}^3/\text{day}$ ) taken in by the exposed individual, assumed to be  $10 \text{ m}^3/\text{day}$  workplace air inhaled per day (22 California Code of Regulations 12721).

*Results for the Proposition 65 reproductive toxicity assessment using these calculations are provided in Table 8B.*