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Via Email and Access Sunnyvale

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Re: Comment on the Final Environmental Impact Report for the Proposed 1 AMD Place Redevelopment Project (Sunnyvale Planning Project No. 2016-8035; SCH No. 2017082043)

Dear Mayor Klein, Vice Mayor Melton, Council Members Larsson, Hendricks, Smith, Goldman and Fong, Ms. Simmons, Mr. Caruso, and Ms. Netto:

I am writing on behalf of the Laborers International Union of North America, Local Union 270 and its members living in Santa Clara County and the City of Sunnyvale (collectively "LIUNA") regarding the Environmental Impact Report ("EIR") prepared for the 1 AMD Place Redevelopment Project (Sunnyvale Planning Project No. 2016-8035; SCH No. 2017082043) ("Project"). LIUNA previously submitted comments pointing out the EIR's lack of disclosure and analysis for several important issues, including significant impacts to birds from avian strikes (*see* expert comments of Shawn Smallwood, Ph.D. dated March 19, 2019), errors in the air pollution modeling for the Project (environmental consultant SWAPE comments dated March 23, 2019) and the Project's potential significant health impacts on future residents from

formaldehyde emissions that will be emitted by finishing materials used to construct interiors of the residential units as well as the reasonably foreseeable emissions of formaldehyde from furniture and other materials that will be brought into the residences. (*See* Indoor Environmental Engineering Comment dated March 21, 2019 (“March 21 Offermann Comment”).

LIUNA’s concerns regarding health risks posed by the Project’s formaldehyde emissions are based on the expert analysis and opinions of industrial hygienist and engineer Francis Offermann, PE CIH. Formaldehyde is a potent carcinogen and toxic air contaminant (“TAC”). Mr. Offermann’s comments identified a significant health risk posed by the Project’s emissions of formaldehyde from composite wood products typically used in home and apartment building construction containing formaldehyde-based glues which off-gas formaldehyde over a very long time period. The formaldehyde emissions are from composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims in residential building construction (March 21 Offermann Comments, p. 3.) In addition, because the Project is constructing residential units, other materials and furnishings brought in by future residents that also emit formaldehyde also must be factored into the Project’s cumulative health risks to future residents. In his March 21 comments, Mr. Offermann calculated that future residents of the Project will be exposed to a cancer risk from formaldehyde of approximately 125 cancers per million, assuming all materials used for the Project are compliant with the California Air Resources Board’s formaldehyde airborne toxics control measure. (Offermann Comments, pp. 3-4.) As was noted, this health risk level is more than 12 times the BAAQMD’s CEQA significance thresholds for airborne cancer risk of 10 per million and 100 in a million for cumulative risks. (*Id.*) Adding in the other risks from adjacent TAC sources identified by SWAPE in the vicinity of the Project will only increase the cumulative health risks to be borne by the Project’s future residents. (*Id.*, p. 10; *see* SWAPE Comments, pp. 16-1.)

Despite the City’s duty to investigate issues relating to a project’s potential environmental impacts, City staff, the Planning Commission, and the EIR have, thus far, attempted to deny Mr. Offermann’s expert analysis and refuse to consider with any informed expertise the likely impacts of indoor formaldehyde emissions posed by the Project to future residents. (*See County Sanitation Dist. No. 2 v. County of Kern*, (2005) 127 Cal.App.4th 1544, 1597–98. [“[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts.”].) Rather than objectively study this serious health threat, staff assigned Ascent Environmental, the author of the EIR, to attempt to critique Mr. Offermann’s expert analysis without itself bringing any expertise to bear on the Project’s formaldehyde emissions. (*See* Ascent Memo, pp. 6-7 (April 1, 2019).)

Without any evidence of any expertise regarding indoor air emissions of formaldehyde, Ascent attempts to fault Mr. Offermann’s reliance on a recent study he relies upon for his expert opinion, the 2018 (Chan) study. Mr. Offermann has reviewed Ascent’s comments and prepared a response which is attached as Exhibit A to these comments. As Mr. Offermann notes, Ascent makes at least three fundamental mistakes in their response.

First, Ascent incorrectly claims that the applicable California Air Resources Board requirements, the “Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products,” 17 Cal.Code Regs. § 93120-93120.12 (hereinafter the Formaldehyde ATCM) did not go into effect until 2014. (*See* Ascent Memo, p. 6.) However, the Phase 2 formaldehyde emission standards applied beginning on January 1, 2011, with one category of products becoming applicable on January 1, 2012 and another less common category of products becoming applicable on July 1, 2012. As of that date, all composite wood products had to comply with the Phase 2 emission standards. Ascent’s failure to acknowledge the clear Phase 2 deadlines created by CARB and mistakenly apply a 2014 applicability date underscores Ascent’s apparent lack of familiarity with the formaldehyde requirements and the health risks posed by this chemical.

Second, Ascent claims that the homes included in that study were all built in 2011. They were not. Mr. Offermann explains, “[t]he homes in the 2018 (Chan) study were built between 2011 and 2015 with a mean of 2014, and were NOT built in 2011 as stated in the Ascent Environmental April 1, 2019 Response.” (Offermann Response, p. 2.) Mr. Offermann reconfirms his prior analysis of the Project’s cancer risks to future residents:

Thus, most of the homes in the 2018 (Chan) study were constructed with CARB Phase 2 compliant materials, and hence my conclusion that the AMD 1 residential project will have similar indoor concentrations of formaldehyde as observed in the 2018 (Chan) study, a median of 25 $\mu\text{g}/\text{m}^3$, with a median lifetime cancer risk 125 per million, which is more than 12 times the CEQA significance threshold for airborne cancer risk of 10 per million, as established by the Bay Area Air Quality Management District (BAAQMD, 2017).

(Offermann Response, p. 2.) In addition, although defying the deadlines of the Formaldehyde ATCM and the construction dates of houses in the Chan study, Mr. Offermann evaluates Ascent’s unreasonable and inaccurate assertions that all of the homes studied by Chan were built in 2011 and the materials in those houses only complied with CARB’s Phase 1 formaldehyde air emission standards. Even applying Ascent’s unreasonable assumptions to the Chan study, Mr. Offermann calculates that the Chan study supports a calculation that current Phase 2 compliant residences would still create a health risk for the most vulnerable residents of the Project of approximately 62.5 cancers per million – more than 6 times the CEQA significance threshold for airborne cancer risk of 10 per million. (*Id.*, p. 3.)

Third, Mr. Offermann provides his expert response to Ascent’s speculation and unsubstantiated opinion that assuming a continuous 24-hour exposure and 100 percent absorption by the respiratory system is unrealistic. (Ascent Memo, pp. 6-7.) Mr. Offermann cites the key study confirming that “many homeowners rarely open their windows or doors for ventilation as a result of their concerns for security/safety, noise, dust, and odor concerns (Price, 2007).” (Offermann Response, p. 4.) Moreover, as Mr. Offermann notes, again assuming Ascent’s incorrect assumption that all homes in the Chan study complied only with the Phase 1 standards, “[e]ven for occupants without continuous 24 hour exposure, say 12 hour exposure per day, the resulting cancer risk will only be reduced by one half to 31 per million, which is more than 3

times the CEQA significance threshold for airborne cancer risk of 10 per million.” (*Id.*, p. 5.) Mr. Offermann also corroborates his reasonable inference that absorption of formaldehyde by people’s respiratory systems is 100 percent. (*Id.*, pp. 4-5.)

Mr. Offermann’s expertise is unassailable given his long-standing involvement in the technical studies underlying the Formaldehyde ATCM, including for example his 2009 California New Homes Study. (*See* March 21 Offermann Comments, attached resume.) Ascent’s cavalier assertion that Mr. Offermann is resorting to speculation is not supported by Mr. Offermann’s expertise, detailed comments and citations to relevant studies. It is Ascent, not Mr. Offermann, that fails to corroborate its speculations with any evidence or relevant expertise. It is the City’s obligation to investigate impacts by requiring the applicant to disclose information regarding the Project necessary to evaluate its impacts. As it stands, the Project is only required to use materials compliant with the Formaldehyde ATCM. Hence, it is more than reasonable to assume that this is what will happen. If the City were to abide by its duty to investigate this potentially significant health issue, Mr. Offermann describes in detail the methodology that the City could use to more precisely estimate the Project’s formaldehyde emissions. (March 21 Offermann Comments, pp. 4-8.) He also identifies the availability of mitigation, including a measure to require that the Project “[u]se only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins (CARB, 2009).” (*Id.*, p. 11.) It is now up to the City to correct its EIR to sufficiently disclose and analyze this impact.

Nor do Ascent’s efforts to critique Mr. Offermann’s expert comments stand-in as a sufficient analysis in the EIR of this potentially significant environmental impact of the Project. Mr. Offermann’s expert comments are substantial evidence that, based on the available data, and without the benefit of the City investigating or gathering any information on formaldehyde emissions from the Project, the Project may have significant health risks on future residents from its emissions of formaldehyde. Because this impact was not addressed in the DEIR or FEIR for the Project, the EIR is insufficient and inadequate under CEQA. (*See Sierra Club v. Cty. of Fresno* (2018) 6 Cal.5th 502, 510 (2018).)

LIUNA and its members urge the City to prepare and recirculate a revised EIR addressing the shortcomings identified above and in our previous comments. Thank you for your attention to these comments. Please include this letter and all attachments hereto in the record of proceedings for this project.

Sincerely,



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Date: April 18, 2019

To: Michael R. Lozeau
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From: Francis J. Offermann PE CIH

Subject: Offermann Response to Ascent Environmental April 1, 2019 Response to the Laborers International Union of North America's Public Comment Regarding the 1 AMD Redevelopment Project (P-4231)

Pages: 18

The Ascent Environmental April 1, 2019 Response states that the 2009 (Offermann) and 2018 (Chan) studies “do not provide evidence that the project, which will be built in phases out to 2020, will have significant impacts from formaldehyde emissions.”

This conclusion is based upon the following inaccurate assumptions regarding the materials used to build the homes in the 2018 (Chan) study and when the CARB Phase 2 standards were put in place.

The Ascent Environmental April 1, 2019 Response states “While the second study cited by Mr. Offermann was published in 2018, it assessed homes built in 2011 before the newest CARB formaldehyde standards (Phase 2 standards) were put into place (2014).”

This statement is not true with respect to:

- when the CARB Phase 2 standards were implemented in California and
- when the homes in the 2018 (Chan) study were completed.

The CARB Phase 2 standards were implemented in California beginning on January 1, 2011 and, for one category of composite materials, completed on July 1, 2012 and NOT in 2014 as stated by Ascent Environmental (see Table 1 below from the CARB Formaldehyde ATCM)

Table 1 Phase 1 and Phase 2 Formaldehyde Emission Standards for Hardwood Plywood (HWPW), Particleboard (PB), and Medium Density Fiberboard (MDF) ¹					
Effective Date	---- Phase 1 (P1) and Phase 2 (P2) Emission Standards (ppm) ----				
	HWPW-VC	HWPW-CC	PB	MDF	Thin MDF
1-1-2009	P1: 0.08	-----	P1: 0.18	P1: 0.21	P1: 0.21
7-1-2009	-----	P1: 0.08	-----	-----	
1-1-2011	P2: 0.05	-----	P2: 0.09	P2: 0.11	-----
1-1-2012	-----	-----	-----	-----	P2: 0.13
7-1-2012	-----	P2: 0.05	-----	-----	

⁽¹⁾ Based on the large chamber test method (ASTM E1333-96) in parts per million (ppm). HWPW-VC = veneer core; HWPW-CC = composite core.

The formaldehyde ATCM states that “no person shall sell, supply, offer for sale, or manufacture for sale in California any composite wood product which, at the time of sale or manufacture, does not comply with the emission standards in Table 1 on or after the effective dates specified in Table 1.” Thus, after July 1, 2012 only Phase 2 composite wood products are permitted for sale, not the later January 2014 date stated in the Ascent Environmental April 1, 2019 Response.

The homes in the 2018 (Chan) study were built between 2011 and 2015 with a mean of 2014, and were NOT built in 2011 as stated in the Ascent Environmental April 1, 2019 Response.

Thus, most of the homes in the 2018 (Chan) study were constructed with CARB Phase 2 compliant materials, and hence my conclusion that the AMD 1 residential project will have similar indoor concentrations of formaldehyde as observed in the 2018 (Chan) study, a

median of 25 $\mu\text{g}/\text{m}^3$, with a median lifetime cancer risk 125 per million, which is more than 12 times the CEQA significance threshold for airborne cancer risk of 10 per million, as established by the Bay Area Air Quality Management District (BAAQMD, 2017).

Even if we assume that the homes in the 2018 (Chan) study were constructed entirely of CARB Phase 1 compliant materials, the resulting indoor formaldehyde concentrations in residences built with all CARB Phase 2 compliant materials, such as the residences at 1 AMD, will not be reduced by more than a factor of two (i.e. the Phase 2 emission rates are approximately on half of the Phase 1 emission rates). Thus, even applying the above worst case assumptions, the future residences at 1 AMD will have indoor formaldehyde concentrations approximately one half of the 2018 (Chan) study, or 12.5 $\mu\text{g}/\text{m}^3$, which translates to 62.5 per million for 24/7 continuous exposures, which is more than 6 times the CEQA significance threshold for airborne cancer risk of 10 per million.

To more accurately understand the indoor formaldehyde concentrations and associated cancer risks at the proposed 1 AMD residences, a formaldehyde emissions assessment should be used in the environmental review under CEQA to assess the indoor formaldehyde concentrations from the proposed loading of building materials as well as anticipated furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation rates. This assessment (see attached March 29, 2019 Offermann Indoor Air Quality comment letter) allows the applicant (and the City) to determine before the conclusion of the environmental review process and the building materials are specified, purchased, and installed, if the total chemical emissions will exceed cancer and non-cancer guidelines, and if so, allow for changes in the selection of specific material and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

Further in the Ascent Environmental April 1, 2019 Response, they state “In addition, the 2018 study cited by Mr. Offermann, required participants to keep their windows closed for the duration of the study and rely on mechanical ventilation. In reality, residents would open their windows for hours at a time during spring, summer, and

fall. This ventilation would greatly reduce formaldehyde concentrations in indoor air and thus the studies do not accurately capture real-world scenarios.”

In “reality” most residential occupants rarely open their windows. In my 1 AMD IAQ letter on page 9, I state that many homeowners rarely open their windows or doors for ventilation as a result of their concerns for security/safety, noise, dust, and odor concerns (Price, 2007). In the CNHS field study, 32% of the homes did not use their windows during the 24-hour Test Day, and 15% of the homes did not use their windows during the entire preceding week”. Thus, the Ascent Environmental April 1, 2019 Response statement that residents would open their windows for hours at a time during spring, summer, and fall is incorrect.

Further in the Ascent Environmental April 1, 2019 Response, they state “In addition, the studies assume a continuous 24-hour exposure and 100 percent absorption by the respiratory system, further unrealistic assumption unsupported by substantial evidence.”

Yes, I did assume continuous 24 hour exposure, which for some occupants (elderly, infants, invalids etc.) is a fair assumption, and the assumption of 100% absorption of formaldehyde, a highly water soluble gas, is a good assumption (see below, Franks. 2005).

A mathematical model for the absorption and metabolism of formaldehyde vapour by humans.

Franks SJ¹.

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Abstract

Epidemiological studies of occupational exposure to formaldehyde gas (HCHO) have suggested possible links between concentration and duration of exposure, and elevated risks of leukaemia and other cancers at sites distant from the site of contact. Formaldehyde is a highly water soluble gas which, when inhaled, reacts rapidly at the site of contact and is quickly metabolised by enzymes in the respiratory tissue. Inhaled formaldehyde is almost entirely absorbed in the respiratory tract and, for formaldehyde induced toxicity to occur at distant sites, HCHO must enter the blood and be transported to systemic tissues via the circulatory system. A mathematical model describing the absorption and removal of inhaled formaldehyde in the nasal tissue is therefore formulated to predict the proportion of formaldehyde entering into the blood. Accounting for the spatial distribution of the formaldehyde concentration and the metabolic activity within the mucosa, the concentration of formaldehyde in the mucus, the epithelium and the blood has been determined and was found to attain a steady-state profile within a few seconds of exposure. The increase of the formaldehyde concentration in the blood was predicted to be insignificant compared with the existing pre-exposure levels in the body, indicating that formaldehyde is rapidly removed in the nasal tissue. The results of the model thus suggest that it is highly unlikely that following inhalation by the nose, formaldehyde itself will cause toxicity at sites other than the initial site of contact in the respiratory tract.

Even for occupants without continuous 24 hour exposure, say 12 hour exposure per day, the resulting cancer risk will only be reduced by one half to 31 per million, which is more than 3 times the CEQA significance threshold for airborne cancer risk of 10 per million.

In conclusion, this development should use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins (CARB, 2009). Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment, to determine that the combination of formaldehyde emissions from building materials and furnishings do not create indoor formaldehyde concentrations that exceed the CEQA cancer and non-cancer health risks.