From:	Michael Lozeau
To:	PlanningCommission AP; Kelly Cha
Cc:	Hannah Hughes
Subject:	Re: Planning Commission Agenda Item No. 1 - File # 20-0508 - Comments Regarding Proposed Hotel Project at 1296 Lawrence Station Road
Date:	Tuesday, June 16, 2020 3:02:41 PM
Attachments:	2020.06.16 4364 IAQ Letter 2- Hotel at 1296 Lawrence Station Road - Sunnyvale (1).pdf

Dear Planning Commissioners and Ms. Cha,

Attached please find supplemental comments submitted on behalf of Laborers International Union of North America, Local Union 270 regarding the proposed Hotel Project at 1296 Lawrence Station Road (File No. 20-0508) being considered this evening by the Planning Commission. If you could please confirm receipt of these comments would be appreciated. Thank you for considering LIUNA's concerns.

Sincerely,

Michael Lozeau

On Tue, Jun 2, 2020 at 2:37 PM Michael Lozeau <michael@lozeaudrury.com> wrote:

> Dear Planning Commissioners and Ms. Cha,
>
> Attached please find comments submitted on behalf of Laborers International Union of North America, Local Union 270 regarding the proposed Hotel Project at 1296 Lawrence Station Road (File No. 20-0508) being considered this evening by the Planning Commission as Agenda Item No. 1. If you could please confirm receipt of these comments would be appreciated. Thank you for considering LIUNA's concerns.
>
> Sincerely,
>
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Date: June 16, 2020

To: Michael Lozeau
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1939 Harrison Street, Suite 150
Oakland, California 94612

From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: Hotel at 1296 Lawrence Station Road – Sunnyvale, CA (IEE File Reference: P-4364)

Pages: 25

The following are my responses to the June 4, 2020 "Response to Comments on Air Quality Made by Lozeau Drury LLP", prepared by James Reyff from Illingsworth & Rodkin.

I am also including in Appendix A, my June 2, 2020 letter, which contains my comments related to the indoor concentrations of formaldehyde and $PM_{2.5}$ for the Hotel at 1296 Lawrence Station Road – Sunnyvale, CA.

The James Reyff responses are *italicized* and my rebuttal comments follow.

Formaldehyde

The claims provided by the Commenter are speculative since they assume that the hotel project will have the median average of CARB Phase 2 Formaldehyde ATCM materials and have made general assumptions regarding exposure of workers in terms of their exposure level (workplace) and contaminant intake. The median levels are taken from a 2009 study of existing single-family homes. The Commenter is speculating that levels *inside of the hotel that the workers would be exposed would be similar to those of the single-family homes in a study referenced by the Commenter* [Offermann, 2009]. *That study only speculated on the sources of formaldehyde emissions, believing that they are from be (sic) composite wood products. The report notes other sources as "combustion sources (e.g., tobacco smoking, cooking fireplaces, woodstoves), cellulose based products such as acoustic ceiling tiles and paints. Additional sources of formaldehyde include permanent-pressed fabrics and insulation made with urea formaldehyde resins." In addition, the comment describes ventilation systems of older single-family homes and habitable rooms inside of homes rather than the project, which is a modern hotel.*

In my June 2, 2020 letter (Appendix A) I did not state as suggested above "*The claims provided by the Commenter are speculative since they assume that the hotel project <u>will have the median average of CARB Phase 2 Formaldehyde ATCM material</u>*"

Rather, I stated that "Because the hotel will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor formaldehyde concentrations are likely <u>similar</u> to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 22.4 $\mu g/m^3$ (Chan et. al., 2019)". The Chan 2019 study is a follow up study to the Offermann 2009 study, and the homes in the Chan 2019 study were constructed with CARB Phase 2 compliant composite wood products.

The reason that the indoor formaldehyde concentrations in the Hotel are expected to be similar to those in the Chan 2019 residential study is that the Hotel will be constructed with the same CARB Phase 2 certified composite wood products that are used in home construction (e.g., plywood, particle board, and medium density fiberboard which are commonly used for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry etc.). While the indoor formaldehyde concentrations in the Hotel are expected to be <u>similar</u> to those in the Chan 2019 residential study, the actual concentrations will depend on the amount of composite wood products used and the outdoor air ventilation rates. As described in Appendix A of my June 2, 2020 IAQ Letter, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, for offices and hotel rooms constructed with CARB Phase 2 compliant composite wood products and with outdoor air ventilation rates that are the California Mechanical Code required rates for offices and hotel rooms, the CEQA cancer risk of 10 per million for the workers will be exceeded if the following amounts of composite wood products (% of floor area) are used.

Medium Density Fiberboard (MDF) – 3.6 % (offices) and 4.6% (hotel rooms), or
Particle Board – 7.2 % (offices) and 9.4% (hotel rooms), or
Hardwood Plywood – 29 % (offices) and 37% (hotel rooms), or
Thin MDF – 11 % (offices) and 14 % (hotel rooms)

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry, could be used without causing indoor formaldehyde concentrations that result in CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the CEQA cancer risk of 10 per million is met.

If CARB Phase 2 compliant or ULEF composite wood products are utilized in construction, then the resulting indoor formaldehyde concentrations should be determined in the design phase using the specific amounts of each type of composite wood product, the specific formaldehyde emission rates, and the volume and outdoor air ventilation rates of the indoor spaces, and all feasible mitigation measures employed to reduce this impact (e.g. use less formaldehyde containing composite wood products and/or incorporate mechanical systems capable of higher outdoor air ventilation rates). See the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins.

As stated by the City in previous comments, the project is required to comply with the California Green Building Standards Code (CALGreen) Sections 4.504.5 and 5.504.4.5 and composite wood products used in the project must be compliant with the California Air Resource Board (CARB) Airborne Toxic Control Measures Phase II or Toxic Substances Control Act (TSCA) Title VI. These state codes along with Cal/OSHA are the main regulators for indoor formaldehyde levels.

The Cal/OSHA formaldehyde regulations regulate occupational exposures, and do not insure that formaldehyde exposures are below the CEQA cancer risk of 10 per million. The formaldehyde exposure for a worker exposed to the OSHA 8-hour Permissible Exposure Level (PEL) of 0.75 ppm (922.5 µg/m^3) for 45 years (20 years to 60 years), 5 days/week, 50 weeks per year, is a 70 time lifetime average daily exposure of 406 µg/m^3, which exceeds the CEQA average daily exposure of 40 µg/day for a 10 in a million cancer risk by more than a factor of 10. Clearly the Cal/OSHA formaldehyde regulations do not insure a cancer risk below the CEQA cancer risk of 10 per million. The CalGreen, CARB, and TSCA codes cited all require the same emission rates of formaldehyde from composite wood products. As described, above as well as in Appendix A of my June 2, 2020 IAQ Letter, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, "Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry, could be used without causing indoor formaldehyde concentrations that result in

CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy."

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins.

$PM_{2.5}$ Particulate Matter

The commenter further goes on to speculate $PM_{2.5}$ levels at the project without providing any analysis of the sources or the levels within the project building.

As stated in my June 2, 2020 IAQ Letter, "this Project is located in the San Francisco Bay Area Air Basin, which is a State and Federal non-attainment area for $PM_{2.5}$. An air quality analyses should to be conducted to determine the concentrations of $PM_{2.5}$ in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local $PM_{2.5}$ sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the project site. If the outdoor concentrations are determined to exceed the California and National annual average $PM_{2.5}$ exceedance concentration of 12 $\mu g/m^3$, or the National 24-hour average exceedance concentration of 35 $\mu g/m^3$, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient $PM_{2.5}$ removal efficiency, such that the indoor concentrations of outdoor $PM_{2.5}$ particles is less than the California and National $PM_{2.5}$ annual and 24-hour standards. "

The Hotel outdoor air $PM_{2.5}$ concentrations are expected to be significantly impacted by the proximity to the high traffic from CA 237 and Lawrence Expressway. As described above "An air quality analyses should to be conducted to determine the concentrations of $PM_{2.5}$ in the outdoor and indoor air that people inhale each day."

It is my experience that based on the proximity to the high traffic, the annual average concentration of $PM_{2.5}$ will exceed the California and National $PM_{2.5}$ annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. MERV 13 or higher) in all mechanically supplied outdoor air ventilation systems."

Appendix A

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Date: June 2, 2020

To: Michael Lozeau
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1939 Harrison Street, Suite 150
Oakland, California 94612

From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: Hotel at 1296 Lawrence Station Road, Sunnyvale, CA
(IEE File Reference: P-4364)

Pages: 18

Indoor Air Quality Impacts

Indoor air quality (IAQ) directly impacts the comfort and health of building occupants, and the achievement of acceptable IAQ in newly constructed and renovated buildings is a well-recognized design objective. For example, IAQ is addressed by major high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014). Indoor air quality in homes is particularly important because occupants, on average, spend approximately ninety percent of their time indoors with the majority of this time spent at home (EPA, 2011). Some segments of the population that are most susceptible to the effects of poor IAQ, such as the very young and the elderly, occupy their homes almost continuously. Additionally, an increasing number of adults are working from home at least some of the time during the workweek. Indoor air quality also is a serious concern for workers in hotels, offices and other business establishments.

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

Indoor Formaldehyde Concentrations Impact. In the California New Home Study (CNHS) of 108 new homes in California (Offermann, 2009), 25 air contaminants were measured, and formaldehyde was identified as the indoor air contaminant with the highest cancer risk as determined by the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), No Significant Risk Levels (NSRL) for carcinogens. The NSRL is the daily intake level calculated to result in one excess case of cancer in an exposed population of 100,000 (i.e., ten in one million cancer risk) and for formaldehyde is 40 µg/day. The NSRL concentration of formaldehyde that represents a daily dose of 40 µg is 2 µg/m^3, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m^3, and 100% absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 µg/m^3. The median indoor formaldehyde concentration was 36 µg/m^3, and ranged from 4.8 to 136 µg/m^3, which corresponds to a median exceedance of the 2 µg/m^3 NSRL concentration of 18 and a range of 2.3 to 68.

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 µg/m^3, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the Bay Air Quality Management District (BAAQMD, 2017).

Besides being a human carcinogen, formaldehyde is also a potent eye and respiratory irritant. In the CNHS, many homes exceeded the non-cancer reference exposure levels (RELs) prescribed by California Office of Environmental Health Hazard Assessment (OEHHA, 2017b). The percentage of homes exceeding the RELs ranged from 98% for the Chronic REL of 9 µg/m^3 to 28% for the Acute REL of 55 µg/m^3.

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

In January 2009, the California Air Resources Board (CARB) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products, including hardwood plywood, particleboard, medium density fiberboard, and also furniture and other finished products made with these wood products (California Air Resources Board 2009). While this formaldehyde ATCM has resulted in reduced emissions from composite wood products sold in California, they do not preclude that homes or other buildings built with composite wood products meeting the CARB ATCM will have indoor formaldehyde concentrations that are below cancer and non-cancer exposure guidelines.

A follow up study to the California New Home Study (CNHS) was conducted in 2016-2018 (Chan et. al., 2019), and found that the median indoor formaldehyde in new homes built after 2009 with CARB Phase 2 Formaldehyde ATCM materials had lower indoor formaldehyde concentrations, with a median indoor concentrations of 22.4 $\mu g/m^3$ (18.2 ppb) as compared to a median of 36 $\mu g/m^3$ found in the 2007 CNHS.

Thus, while new homes built after the 2009 CARB formaldehyde ATCM have a 38% lower median indoor formaldehyde concentration and cancer risk, the median lifetime cancer risk is still 112 per million for homes built with CARB compliant composite wood products, which is more than 11 times the OEHHA 10 in a million cancer risk threshold (OEHHA, 2017a).

With respect to this project, the Hotel at 1296 Lawrence Station Road in Sunnyvale, CA consists of a hotel.

The employees of the hotel are expected to experience significant indoor exposures (e.g., 40 hours per week, 50 weeks per year). These exposures for employees are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in offices, warehouses, residences and hotels.

Because the hotel will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 22.4 µg/m^3 (Chan et. al., 2019)

Assuming that the hotel employees work 8 hours per day and inhale 20 m^3 of air per day, the formaldehyde dose per work-day at the offices is 149 µg/day.

Assuming that these employees work 5 days per week and 50 weeks per year for 45 years (start at age 20 and retire at age 65) the average 70-year lifetime formaldehyde daily dose is 65.8 µg/day.

This is 1.64 times the NSRL (OEHHA, 2017a) of 40 µg/day and represents a cancer risk of 16.4 per million, which exceeds the CEQA cancer risk of 10 per million. This impact should be analyzed in an environmental impact report ("EIR"), and the agency should impose all feasible mitigation measures to reduce this impact. Several feasible mitigation measures are discussed below and these and other measures should be analyzed in an EIR.

While measurements of the indoor concentrations of formaldehyde in residences built with CARB Phase 2 Formaldehyde ATCM materials (Chan et. al., 2018), indicate that indoor formaldehyde concentrations in buildings built with similar materials (e.g. hotels, residences, offices, warehouses, schools) will pose cancer risks in excess of the CEQA cancer risk of 10 per million, a determination of the cancer risk that is specific to this project and the materials used to construct these buildings can and should be conducted prior to completion of the environmental review.

According to the Environmental Checklist for Hotel at 1296 Lawrence Station Road (City of Sunnyvale) this Project will be LEED Gold certified, however the submitted LEED v4

Project Checklist does not include the Low-Emitting Material Credit which would require use of composite wood products that are Ultra Low Emitting Formaldehyde (ULEF) or No Added Formaldehyde (NAF).

Appendix A, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, provides analyses that show utilization of CARB Phase 2 Formaldehyde ATCM materials will not ensure acceptable cancer risks with respect to formaldehyde emissions from composite wood products.

The following describes a method that should be used prior to construction in the environmental review under CEQA, for determining whether the indoor concentrations resulting from the formaldehyde emissions of the specific building materials/furnishings selected for the building exceed cancer and non-cancer guidelines. Such a design analyses can be used to identify those materials/furnishings prior to the completion of the City's CEQA review and project approval, that have formaldehyde emission rates that contribute to indoor concentrations that exceed cancer and non-cancer guidelines, so that alternative lower emitting materials/furnishings may be selected and/or higher minimum outdoor air ventilation rates can be increased to achieve acceptable indoor concentrations and incorporated as mitigation measures for this project.

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment.

This formaldehyde emissions assessment should be used in the environmental review under CEQA to <u>assess</u> the indoor formaldehyde concentrations from the proposed loading of building materials/furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation rates. This assessment allows the applicant (and the City) to determine before the conclusion of the environmental review process and the building materials/furnishings 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/furnishings and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

1.) Define Indoor Air Quality Zones. Divide the building into separate indoor air quality zones, (IAQ Zones). IAQ Zones are defined as areas of well-mixed air. Thus, each ventilation system with recirculating air is considered a single zone, and each room or group of rooms where air is not recirculated (e.g. 100% outdoor air) is considered a separate zone. For IAQ Zones with the same construction material/furnishings and design minimum outdoor air ventilation rates. (e.g. hotel rooms, apartments, condominiums, etc.) the formaldehyde emission rates need only be assessed for a single IAQ Zone of that type.

2.) Calculate Material/Furnishing Loading. For each IAQ Zone, determine the building material and furnishing loadings (e.g., m^2 of material/m^2 floor area, units of furnishings/m^2 floor area) from an inventory of all potential indoor formaldehyde sources, including flooring, ceiling tiles, furnishings, finishes, insulation, sealants, adhesives, and any products constructed with composite wood products containing urea-formaldehyde resins (e.g., plywood, medium density fiberboard, particleboard).

3.) Calculate the Formaldehyde Emission Rate. For each building material, calculate the formaldehyde emission rate (µg/h) from the product of the area-specific formaldehyde emission rate (µg/m^2-h) and the area (m^2) of material in the IAQ Zone, and from each furnishing (e.g. chairs, desks, etc.) from the unit-specific formaldehyde emission rate (µg/unit-h) and the number of units in the IAQ Zone.

NOTE: As a result of the high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014), most manufacturers of building materials furnishings sold in the United States conduct chemical emission rate tests using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), or other equivalent chemical emission rate testing methods. Most manufacturers of building furnishings sold in the United States conduct chemical emission rate tests using ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions (BIFMA, 2018), or other equivalent chemical emission rate testing methods.

CDPH, BIFMA, and other chemical emission rate testing programs, typically certify that a material or furnishing does not create indoor chemical concentrations in excess of the maximum concentrations permitted by their certification. For instance, the CDPH emission rate testing requires that the measured emission rates when input into an office, school, or residential model do not exceed one-half of the OEHHA Chronic Exposure Guidelines (OEHHA, 2017b) for the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017). These certifications themselves do not provide the actual area-specific formaldehyde emission rate (i.e., $\mu g/m^2$-h) of the product, but rather provide data that the formaldehyde emission rates do not exceed the maximum rate allowed for the certification. Thus for example, the data for a certification of a specific type of flooring may be used to calculate that the area-specific emission rate of formaldehyde is less than 31 $\mu g/m^2$-h, but not the actual measured specific emission rate, which may be 3, 18, or 30 $\mu g/m^2$-h. These area-specific emission rates determined from the product certifications of CDPH, BIFA, and other certification programs can be used as an initial estimate of the formaldehyde emission rate.

If the actual area-specific emission rates of a building material or furnishing is needed (i.e. the initial emission rates estimates from the product certifications are higher than desired), then that data can be acquired by requesting from the manufacturer the complete chemical emission rate test report. For instance if the complete CDPH emission test report is requested for a CDHP certified product, that report will provide the actual area-specific emission rates for not only the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017), but also all of the cancer and reproductive/developmental chemicals listed in the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), all of the toxic air contaminants (TACs) in the California Air Resources Board Toxic Air Contamination List (CARB, 2011), and the 10 chemicals with the greatest emission rates.

Alternatively, a sample of the building material or furnishing can be submitted to a chemical emission rate testing laboratory, such as Berkeley Analytical Laboratory (https://berkeleyanalytical.com), to measure the formaldehyde emission rate.

4.) Calculate the Total Formaldehyde Emission Rate. For each IAQ Zone, calculate the total formaldehyde emission rate (i.e. µg/h) from the individual formaldehyde emission rates from each of the building material/furnishings as determined in Step 3.

5.) Calculate the Indoor Formaldehyde Concentration. For each IAQ Zone, calculate the indoor formaldehyde concentration (µg/m^3) from Equation 1 by dividing the total formaldehyde emission rates (i.e. µg/h) as determined in Step 4, by the design minimum outdoor air ventilation rate (m^3/h) for the IAQ Zone.

$$C_{in} = \frac{E_{total}}{Q_{oa}} \quad \text{(Equation 1)}$$

where:

C_{in} = indoor formaldehyde concentration (µg/m^3)

E_{total} = total formaldehyde emission rate (µg/h) into the IAQ Zone.

Q_{oa} = design minimum outdoor air ventilation rate to the IAQ Zone (m^3/h)

The above Equation 1 is based upon mass balance theory, and is referenced in Section 3.10.2 “Calculation of Estimated Building Concentrations” of the California Department of Health “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers”, (CDPH, 2017).

6.) Calculate the Indoor Exposure Cancer and Non-Cancer Health Risks. For each IAQ Zone, calculate the cancer and non-cancer health risks from the indoor formaldehyde concentrations determined in Step 5 and as described in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2015).

7.) Mitigate Indoor Formaldehyde Exposures of exceeding the CEQA Cancer and/or Non-Cancer Health Risks. In each IAQ Zone, provide mitigation for any formaldehyde exposure risk as determined in Step 6, that exceeds the CEQA cancer risk of 10 per million or the CEQA non-cancer Hazard Quotient of 1.0.

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the health risks of the chemical exposures below the CEQA cancer and non-cancer health risks.

Source mitigation for formaldehyde may include:

1.) reducing the amount materials and/or furnishings that emit formaldehyde
2.) substituting a different material with a lower area-specific emission rate of formaldehyde

Ventilation mitigation for formaldehyde emitted from building materials and/or furnishings may include:

1.) increasing the design minimum outdoor air ventilation rate to the IAQ Zone.

NOTE: Mitigating the formaldehyde emissions through use of less material/furnishings, or use of lower emitting materials/furnishings, is the preferred mitigation option, as mitigation with increased outdoor air ventilation increases initial and operating costs associated with the heating/cooling systems.

Further, we are not asking the builder to "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), and use the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

<u>Outdoor Air Ventilation Impact</u>. Another important finding of the CNHS, was that the outdoor air ventilation rates in the homes were very low. Outdoor air ventilation is a very important factor influencing the indoor concentrations of air contaminants, as it is the primary removal mechanism of all indoor air generated air contaminants. Lower outdoor air exchange rates cause indoor generated air contaminants to accumulate to higher indoor air concentrations. 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. Most of the homes with no window usage were homes in the winter field session. Thus, a substantial percentage of homeowners never open their windows, especially in the winter season. The median 24-hour measurement was 0.26 ach, with a range of 0.09 ach to 5.3 ach. A total of 67% of the homes had outdoor air exchange rates below the minimum California Building Code (2001) requirement of 0.35 ach. Thus, the relatively tight envelope construction, combined with the fact that many people never open their windows for ventilation, results in homes with low outdoor air exchange rates and higher indoor air contaminant concentrations.

The Hotel at 1296 Lawrence Station Road, Sunnyvale, CA is close to roads with moderate to high traffic (e.g. CA-237, Lawrence Expressway, Mountainview-Alviso Road, Anvilwood Road, Lawrence Station Road, etc.) as well as in the flight path of air traffic at San Jose International Airport. As a result of the outdoor vehicle traffic noise, the Project site is likely to be a sound impacted site.

As a result of the high outdoor noise levels, the current project will require the need for mechanical supply of outdoor air ventilation air to allow for a habitable interior environment with closed windows and doors. Such a ventilation system would allow windows and doors to be kept closed at the occupant's discretion to control exterior noise within building interiors.

$PM_{2.5}$ Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of $PM_{2.5}$. According to the Environmental Checklist for Hotel at 1296 Lawrence Station Road (City of Sunnyvale) this Project is located in the San Francisco Bay Area Air Basin, which is a State and Federal non-attainment area for $PM_{2.5}$.

An air quality analyses should to be conducted to determine the concentrations of $PM_{2.5}$ in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local $PM_{2.5}$ sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the project site. If the outdoor concentrations are determined to exceed the California and National annual average $PM_{2.5}$ exceedence concentration of 12 µg/m^3, or the National 24-hour average exceedence concentration of 35 µg/m^3, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient $PM_{2.5}$ removal efficiency, such that the indoor concentrations of outdoor $PM_{2.5}$ particles is less than the California and National $PM_{2.5}$ annual and 24-hour standards.

It is my experience that based on the projected high traffic noise levels, the annual average concentration of $PM_{2.5}$ will exceed the California and National $PM_{2.5}$ annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. MERV 13 or higher) in all mechanically supplied outdoor air ventilation systems.

Indoor Air Quality Impact Mitigation Measures

The following are recommended mitigation measures to minimize the impacts upon indoor quality:

- indoor formaldehyde concentrations
- outdoor air ventilation
- $PM_{2.5}$ outdoor air concentrations

Indoor Formaldehyde Concentrations Mitigation. 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). Other projects such as the AC by Marriott Hotel – West San Jose Project (Asset Gas SC Inc.) and 2525 North Main Street, Santa Ana (AC 2525 Main LLC, 2019) have entered into settlement agreements stipulating the use of composite wood materials only containing NAF or ULEF resins.

Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Chemical 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.

It is important to note that we are not asking that the builder to “speculate” on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers”, (CDPH, 2017), and use the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Mitigation. Provide each habitable room with a continuous mechanical supply of outdoor air that meets or exceeds the California 2016 Building Energy Efficiency Standards (California Energy Commission, 2015) requirements of the greater of 15 cfm/occupant or 0.15 cfm/ft^2 of floor area. Following installation of the system conduct testing and balancing to insure that required amount of outdoor air is entering each habitable room and provide a written report documenting the outdoor airflow rates. Do not use exhaust only mechanical outdoor air systems, use only balanced outdoor air supply and exhaust systems or outdoor air supply only systems. Provide a manual for the occupants or maintenance personnel, that describes the purpose of the mechanical outdoor air system and the operation and maintenance requirements of the system.

$PM_{2.5}$ Outdoor Air Concentration Mitigation. Install air filtration with sufficient $PM_{2.5}$ removal efficiency (e.g. MERV 13 or higher) to filter the outdoor air entering the mechanical outdoor air supply systems, such that the indoor concentrations of outdoor $PM_{2.5}$ particles are less than the California and National $PM_{2.5}$ annual and 24-hour standards. Install the air filters in the system such that they are accessible for replacement by the occupants or maintenance personnel. Include in the mechanical outdoor air ventilation system manual instructions on how to replace the air filters and the estimated frequency of replacement.

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APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS
AND THE
CARB FORMALDEHYDE ATCM

With respect to formaldehyde emissions from composite wood products, the CARB ATCM regulations of formaldehyde emissions from composite wood products, do not assure healthful indoor air quality. The following is the stated purpose of the CARB ATCM regulation - *The purpose of this airborne toxic control measure is to "reduce formaldehyde emissions from composite wood products, and finished goods that contain composite wood products, that are sold, offered for sale, supplied, used, or manufactured for sale in California".* In other words, the CARB ATCM regulations do not "assure healthful indoor air quality", but rather "reduce formaldehyde emissions from composite wood products".

Just how much protection do the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products ? Definitely some, but certainly the regulations do not "*assure healthful indoor air quality"* when CARB Phase 2 products are utilized. As shown in the Chan 2019 study of new California homes, the median indoor formaldehyde concentration was of 22.4 $\mu g/m^3$ (18.2 ppb), which corresponds to a cancer risk of 112 per million for occupants with continuous exposure, which is more than 11 times the Bay Area Air Quality Management District CEQA cancer risk of 10 per million.

Another way of looking at how much protection the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products is to calculate the maximum number of square feet of composite wood product that can be in a residence without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy.

For this calculation I utilized the floor area (2,272 ft^2), the ceiling height (8.5 ft), and the number of bedrooms (4) as defined in Appendix B (New Single-Family Residence Scenario) of the Standard Method for the Testing and Evaluation of Volatile Organic Chemical

Emissions for Indoor Sources Using Environmental Chambers, Version 1.1, 2017, California Department of Public Health, Richmond, CA. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

For the outdoor air ventilation rate I used the 2019 Title 24 code required mechanical ventilation rate (ASHRAE 62.2) of 106 cfm (180 m^3/h) calculated for this model residence. For the composite wood formaldehyde emission rates I used the CARB ATCM Phase 2 rates.

The calculated maximum number of square feet of composite wood product that can be in a residence, without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 15 ft^2 (0.7% of the floor area), or
Particle Board – 30 ft^2 (1.3% of the floor area), or
Hardwood Plywood – 119 ft^2 (5.3% of the floor area), or
Thin MDF – 46 ft^2 (2.0 % of the floor area).

For offices and hotels the calculated maximum amount of composite wood product (% of floor area) that can be used without exceeding the CEQA cancer risk of 10 per million for occupants, assuming 8 hours/day occupancy, and the California Mechanical Code minimum outdoor air ventilation rates are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 3.6 % (offices) and 4.6% (hotel rooms), or
Particle Board – 7.2 % (offices) and 9.4% (hotel rooms), or
Hardwood Plywood – 29 % (offices) and 37% (hotel rooms), or
Thin MDF – 11 % (offices) and 14 % (hotel rooms)

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry, could be used without causing indoor formaldehyde concentrations that result in CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

If CARB Phase 2 compliant composite wood products are utilized in construction, then the resulting indoor formaldehyde concentrations should be determined in the design phase using the specific amounts of each type of composite wood product, the specific formaldehyde emission rates, and the volume and outdoor air ventilation rates of the indoor spaces, and all feasible mitigation measures employed to reduce this impact (e.g. use less formaldehyde containing composite wood products and/or incorporate mechanical systems capable of higher outdoor air ventilation rates). See the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (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. These products are now readily available and many other projects such as the AC by Marriott Hotel – West San Jose Project and 2525 North Main Street, Santa Ana have entered into settlement agreements stipulating the use of composite wood materials only containing NAF or ULEF resins.

From:	Michael Lozeau
To:	PlanningCommission AP; Kelly Cha
Cc:	Hannah Hughes
Subject:	Re: Planning Commission Agenda Item No. 1 - File # 20-0508 - Comments Regarding Proposed Hotel Project at 1296 Lawrence Station Road
Date:	Tuesday, June 16, 2020 4:46:30 PM
Attachments:	2020.06.16 Smallwood comments 2 1296 Lawrence Station Rd 061620.pdf

Dear Planning Commission and Ms. Cha,

Attached please find supplemental comments prepared by Dr. Shawn Smallwood and submitted on behalf of Laborers International Union of North America, Local Union 270 regarding the proposed Hotel Project at 1296 Lawrence Station Road (File No. 20-0508). Although I was unable to submit this additional comment by 3 pm today, please include this comment in the record of proceedings pursuant to Pub. Res. Code sec. 21177(a).

Thank you again for your consideration of these comments,

Michael Lozeau
Lozeau Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612
(510) 836-4200
(510) 836-4205 (fax)
michael@lozeaudrury.com

On Tue, Jun 16, 2020 at 3:02 PM Michael Lozeau <michael@lozeaudrury.com> wrote:

> Dear Planning Commissioners and Ms. Cha,
>
> Attached please find supplemental comments submitted on behalf of Laborers International Union of North America, Local Union 270 regarding the proposed Hotel Project at 1296 Lawrence Station Road (File No. 20-0508) being considered this evening by the Planning Commission. If you could please confirm receipt of these comments would be appreciated. Thank you for considering LIUNA's concerns.
>
> Sincerely,
>
> Michael Lozeau
>
> On Tue, Jun 2, 2020 at 2:37 PM Michael Lozeau <michael@lozeaudrury.com> wrote:
>
>> Dear Planning Commissioners and Ms. Cha,
>>
>> Attached please find comments submitted on behalf of Laborers International Union of North America, Local Union 270 regarding the proposed Hotel Project at 1296 Lawrence Station Road (File No. 20-0508) being considered this evening by the Planning Commission as Agenda Item No. 1. If you could please confirm receipt of these comments would be appreciated. Thank you for considering LIUNA's concerns.

Sincerely,

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Shawn Smallwood, PhD
3108 Finch Street
Davis, CA 95616

16 June 2020

Michael Lozeau
Lozeau Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612

RE: 1296 Lawrence Station Road

Dear Mr. Lozeau,

I write to reply to responses to my 2nd June 2020 comments on a proposed 6-story hotel project on 1.1 acres at 1296 Lawrence Station Road. My qualifications for preparing expert comments were summarized in my original letter.

Letter from David Burkett, AIA

It is important to note that Mr. Burkett did not challenge my estimate of the extent of glass on the façades of the Hotel, nor of its use of glass-walled railings and cornering of extensive glass façades. I estimated the hotel's façades would present 802 m^2 of glass to flying birds. To this estimate the empirical evidence from various settings across North American predict 62 bird deaths per year (95% CI: 32-88) at the building, with a 50-year cumulative toll in the thousands.

Most of Mr. Burkett's letter response summarizes appealing attributes of the building's design from a human's perspective. But however attractive and efficient the building might be from a human perspective, the point of my comments is that some of these attractive features are killing birds at alarmingly high rates. Also, a building can still provide attractive features while also implementing steps to minimize bird collisions with windows.

Mr. Burkett says that he and others worked with City staff to implement designs consistent with the City's Bird Safe Building Design guidelines. I do not question whether he did; I only comment on what I see in the design attributes of the building. Mr. Burkett offers as an example the understanding that hotel windows experience a high rate of closed curtains. However, whether curtains would be closed at this hotel is speculative and out of the control of the architect or the City. It also begs the question of why build such extensive windows if they are to be closed by curtains? But even if curtains are often closed on many windows, reflectivity of some glass can be increased with closed curtains. For example, notice in Photo 1 the enhanced reflectance of clear glass windows when backed by the ceilings of the walkways. An argument that closed curtains would minimize collisions might be true for some windows, but it is only speculative and not true for all windows. A more certain approach than hoping for curtains to be closed would be to use less glass or fritted glass. Another sure way to minimize bird collisions would be to eliminate glass-walled rails, which would not be graced by closed curtains.

Photo 1. *A closer view of the walkway façade where 254 bird fatalities per year were estimated, and which was shown at larger scale in Figure 1 of my original comment letter. Notice that reflections of other buildings are visible on the glass where the glass is backgrounded by ceilings. Also note that the shadows cast by the vertical beam and window frames deceptively appear like passageways. Even the shadows on the walls adjacent to windows add to the confusion of whether and where the façade might be passable. None of it was passable.*

As another example, Mr. Burkett points out the windows would be recessed 3 inches from walls to enhance shadow and depth. But this is not a good example. Increased shadow and depth can contribute to the "black hole" effect (see Factor 4 under the heading, 'Bird-Window Collision Factors' in my original comment letter). The black hole or passage effect is the deceptive appearance of a cavity or darkened ledge that certain species of bird typically approach with speed when seeking roosting sites.

Referring to the building's recessing of windows, Mr. Burkett says "*This is not a design likely to confuse the average bird*." But how would Mr. Burkett know this? Certainly, the average bird has been confused by many design features that architects and City staff either gave no thought regarding bird-window collisions or inaccurately predicted would pose no collision risk. That they have been confused many times is abundantly evidenced by the fatality rates measured at many buildings. For example, that walkway that I showed in Fig. 1 of my original comment letter includes windows that are recessed from vertical beams, but nevertheless kills an estimated 254 birds per year. I show it again here, but with a closer view of the effects of recessing of windows relative to the vertical beam (Photo 1).

Mr. Burkett next implies that wall materials and the window pattern were primarily oriented laterally, but it is unclear to me whether these design features were implemented to minimize bird collisions. Nor is it clear to me how these design features would minimize bird collisions. Such an orientation is not mentioned in Sunnyvale's Bird Safe Building Design guidelines, nor in any other guidelines of which I am familiar. None of the other design elements later mentioned in Mr. Burkett's letter have anything to do with Sunnyvale's Bird Safe Building Design guidelines.

Attachment 12: Biological Resources

An argument is presented that my comments of 2nd June 2020 offered no new information. In support of this argument, it is pointed out that WRA (environmental consultants) visited the project site once, only detected one special-status species of wildlife – oak titmouse. It is also pointed out that WRA performed the standard data base search to identify 64 special-status species of wildlife that potentially occur at one time or another at the project site. However, these supporting points have little bearing on the type of impact my comment letter addressed.

The only type of survey performed by WRA was a reconnaissance-level walk-around survey. Whereas this type of survey can be useful for detecting common species and for crudely assessing habitat, it is not designed for detecting special-status species. Detection survey guidelines have been developed for most special-status species of wildlife, and it is this type of survey one would use for detecting special-status species. Nor is a reconnaissance survey suitable for assessing bird-window collision risk. The appropriate survey for assessing bird-window collision risk would be behavior surveys, in which biologists trained in behavioral ecology visually scan for flying birds and record their flight paths, heights above ground, and flight behaviors. Such surveys should be performed both during day and night, because many birds fly at night during migration. For night surveys, behavioral ecologists use thermal imaging cameras.

According to the response, "*The site is not an active habitat for any known biological resource…*" But this conclusion cannot be true it if is also true that oak titmouse was detected at the site. If trees are present, or if nesting substrate is present on the building, or if the lawn or landscaping provides forage, then the site is actively used as habitat. But again, whether the site is actively used as habitat does not go entirely to my comments, which are about birds flying through the area and potentially crashing into glass windows.

The response notes the adjacency of the freeway, implying that freeways serve as barriers to flying birds. They do not. In my comments I pointed out that a large expanse of open space is located just across the freeway, which to a bird is right next door. A bird flying 30 MPH can cross the freeway in 6 seconds. A bird chased by a peregrine falcon will cross the freeway in 3.6 seconds. Based on my experience, I have no doubt that birds routinely cross that freeway between the open space to the north and the trees at the existing building. Additionally, the project site is adjacent to woodland and grassland within the open spaces of the freeway's onramps and offramps.

The mitigation measures listed in the response, including preconstruction nest surveys, have no bearing on the type of impact my comments raised.

Thank you for your attention,

Shawn Smallwood

Shawn Smallwood, Ph.D.