



April 16, 2018

Monet Vela  
Office of Environmental Health Hazard Assessment  
P. O. Box 4010, MS 23 11F  
Sacramento, California 95812-4010  
Submitted electronically via <https://oehha.ca.gov/comments>

**Re: Initial Statement of Reasons for Proposed Amendments to Article 6 Clear and Reasonable Warnings Residential Rental Property Exposure Warnings New Sections 25607.34 and 25607.35**

Dear Ms. Vela:

On February 23, 2018, the Office of Environmental Health Hazard Assessment (OEHHA) announced proposed amendments to Article 6 of Title 27 of the California Code of Regulations, which included tailored safe harbor exposure warnings for exposures to listed chemicals that can occur at residential rental properties. OEHHA's announcement included an Initial Statement of Reasons which provided several examples of warning content. As explained below, the American Chemistry Council's (ACC) Formaldehyde Panel has concerns regarding the examples presented and requests that OEHHA remove the following example:

“▲WARNING: Building materials containing urea-formaldehyde resins, such as insulation, pressed wood materials, finishes, or adhesives, on this property can expose you to formaldehyde, which is known to the State of California to cause cancer. Talk to your landlord or the building manager about how and when you could be exposed to this chemical in your building. For additional information go to [www.P65Warnings.ca.gov/apartments](http://www.P65Warnings.ca.gov/apartments).”

This warning example does not take into consideration the stringent formaldehyde emissions standards in place in California. It also does not reflect the current state of the formaldehyde science regarding human health cancer risk, will be misleading to consumers and is disparaging to the formaldehyde industry. While building materials (e.g., insulation, pressed wood materials, finishes, or adhesives) can be a source of exposure to formaldehyde, human exposures are low and at levels unlikely to result in increased cancer risk. Peer reviewed literature over the past several decades has illustrated a safe threshold for human exposure, most recently in a 2017 publication by Sheehan et al.,<sup>1</sup> which evaluated potential formaldehyde exposure and human health cancer risk. This study measured formaldehyde concentrations in approximately 18,000 residences and found that formaldehyde emissions posed virtually no cancer risk. The study also noted that the improved

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<sup>1</sup> Sheehan, P., Singhal, A., Bogen, K.T., MacIntosh, D., Kalmes, R.M., McCarthy, J. 2017. Potential Exposure and Cancer Risk from Formaldehyde Emissions from Installed Chinese Manufactured Laminate Flooring. Risk Analysis. Nov 15. Available at <https://www.ncbi.nlm.nih.gov/pubmed/29139137>.



scientific understanding of formaldehyde provided assurance that low concentrations of formaldehyde attributable to laminate flooring posed no increased cancer risk. In addition to this recent study, a full review of the available peer reviewed scientific literature reveals that most epidemiology studies regarding formaldehyde exposure and cancers demonstrate no increased risk from formaldehyde exposure.<sup>2, 3,4, 5, 6, 7,8,9</sup>

In addition to the low human health cancer risk from current exposures, there are also standards in place to ensure low formaldehyde emissions from building materials:

- Since 2009, emissions standards have been in effect in California under the California Air Resources Board's (CARB) Air Toxics Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products (ATCM). The CARB ATCM has provided clear product testing and certification standards for formaldehyde emissions from composite wood products. The CARB ATCM and industry's stewardship efforts have resulted in the development of resin technologies, including ultra-low emitting formaldehyde resins that are capable of reducing potential emissions to remarkably low levels – some emissions are at or very near the level of wood itself.
- In 2010, the World Health Organization (WHO) established indoor air quality guidelines for short- and long-term formaldehyde exposures of 100 ug/m<sup>3</sup> (0.08 ppm).<sup>10</sup> The WHO evaluated potential non-cancer and cancer effects and established air quality guidelines that would be unlikely to lead to increased adverse effects. The WHO's guideline was re-evaluated in 2016 to consider new toxicology studies and published updates to key cancer

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<sup>2</sup> Marsh, G., Morfeld, P., Zimmerman, S., Liu, Y., and Balmert, L. 2016. An updated re-analysis of the mortality risk from nasopharyngeal cancer in the National Cancer Institute formaldehyde worker cohort study. *Journal of Occupational Medicine and Toxicology*, 11: 8. Available at [www.ncbi.nlm.nih.gov/pmc/articles/PMC4774098/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4774098/).

<sup>3</sup> Marsh, G.M. and Youk, A.O. 2005. Reevaluation of mortality risks from nasopharyngeal cancer in the formaldehyde cohort study of the National Cancer Institute. *Regulatory Toxicology and Pharmacology*, 42(3): 275-283.

<sup>4</sup> Mundt, K.A., Gallagher, A.E., Dell, L.D., Natelson, E.A., Boffetta, P., and Gentry, P.R. 2017. Does occupational exposure to formaldehyde cause hematotoxicity and leukemia-specific chromosome changes in cultured myeloid progenitor cells? *Critical Reviews in Toxicology*, 47(7): 592-602. Available at [www.tandfonline.com/doi/full/10.1080/10408444.2017.1301878](http://www.tandfonline.com/doi/full/10.1080/10408444.2017.1301878).

<sup>5</sup> Checkoway, H., Dell, L.D., Boffetta, P., Gallagher, A.E., Crawford, L., Lees, P.S., and Mundt, K.A. 2015. Formaldehyde exposure and mortality risks from acute myeloid leukemia and other lymphohematopoietic malignancies in the US National Cancer Institute cohort study of workers in formaldehyde industries. *Journal of Occupational and Environmental Medicine*, 57(7): 785-794. Available at [www.ncbi.nlm.nih.gov/pmc/articles/PMC4479664/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4479664/).

<sup>6</sup> Coggon, D., Ntani, G., Harris, E. C., and Palmer, K. T. 2014. Upper airway cancer, myeloid leukemia, and other cancers in a cohort of British chemical workers exposed to formaldehyde. *American Journal of Epidemiology*, 179(11), 1301-1311. Available at [www.ncbi.nlm.nih.gov/pmc/articles/PMC4189094/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4189094/).

<sup>7</sup> Talibov, M., Lehtinen-Jacks, S., Martinsen, JI., Kjørheim, K., Lynge, E., Sparén, P., Tryggvadottir, L., Weiderpass, E., Kauppinen, T., Kyrrönen, P., and Pukkala, E. 2014. Occupational exposure to solvents and acute myeloid leukemia: a population-based, case-control study in four Nordic countries. *Scandinavian Journal of Work, Environment & Health*, 40(5): 511-517. Available at [www.sjweh.fi/show\\_abstract.php?abstract\\_id=3436&fullText=1](http://www.sjweh.fi/show_abstract.php?abstract_id=3436&fullText=1).

<sup>8</sup> Meyers, A.R., Pinkerton, L.E., and Hein, M.J. 2013. Cohort mortality study of garment industry workers exposed to formaldehyde: Update and internal comparisons. *American Journal of Industrial Medicine*, 56(9): 1027-1039. Available at <https://www.ncbi.nlm.nih.gov/pubmed/23788124>.

<sup>9</sup> Saberi Hosnijeh, F., Christopher, Y., Peeters, P., Romieu, I., Xun, W., Riboli, E., Raaschou-Nielsen, O., Tjønneland, A., Becker, N., Nieters, A., Trichopoulou, A., Bamia, C., Orfanos, P., Oddone, E., Luján-Barroso, L., Dorronsoro, M., Navarro, C., Barricarte, A., Molina-Montes, E., Wareham, N., Vineis, P., and Vermeulen, R. 2013. Occupation and risk of lymphoid and myeloid leukaemia in the European Prospective Investigation into Cancer and Nutrition (EPIC). *Occupational & Environmental Medicine*, 70(7): 464-470. Available at <https://www.ncbi.nlm.nih.gov/pubmed/23576671>.

<sup>10</sup> World Health Organization (WHO). 2010 Formaldehyde. In: *Selected pollutants. WHO Guidelines for Indoor Air Quality*. WHO, Regional Office for Europe, Copenhagen, Denmark, pp. 103-156. Available at [http://www.euro.who.int/\\_data/assets/pdf\\_file/0009/128169/e94535.pdf](http://www.euro.who.int/_data/assets/pdf_file/0009/128169/e94535.pdf).



epidemiology studies<sup>11</sup> and found that the guideline value was still scientifically valid and health protective.

- In 2016, the U.S. Environmental Protection Agency (EPA) issued a final rule to implement the Formaldehyde Standards for Composite Wood Products Act with emission levels equivalent to the CARB ATCM.

Members of the ACC Formaldehyde Panel include formaldehyde-based resin producers that, over the course of the past several decades, have developed resin technologies, including ultra-low emitting formaldehyde resins that encompass advanced urea formaldehyde chemistry which meet both CARB ATCM and the equivalent emission limits established by EPA. OEHHA's example warning for formaldehyde goes well-beyond informing Californians about potential exposures and instead incorrectly suggests that current formaldehyde exposure levels could increase risk. This suggestion is not supported by the available toxicological, epidemiological or exposure data. It also does not reflect the demonstrated industry stewardship in meeting established emissions limits and seems instead designed to disadvantage the use of formaldehyde.

Given the above information and limited likelihood for increased human health cancer risk from current formaldehyde exposures in building materials, we request that OEHHA remove the formaldehyde example from the Initial Statement of Reasons. Feel free to contact me by email ([Kimberly.White@americanchemistry.com](mailto:Kimberly.White@americanchemistry.com)) or phone (202-249-6707) or with any questions related to this letter.

Sincerely,

Kimberly Wise White, PhD.  
American Chemistry Council (ACC)  
Senior Director, Chemical Products and Technology Division  
On Behalf of the ACC Formaldehyde Panel

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<sup>11</sup> Nielsen, G.D., Larsen, S.T. and P. Wolkoff. (2016) Re-evaluation of the WHO (2010) formaldehyde indoor air quality guideline for cancer risk assessment. Arch. Toxicol. Available at <https://www.ncbi.nlm.nih.gov/pubmed/27209488>.

