

**COMMENTS ON CARB'S
"PROPOSED AIRBORNE TOXIC CONTROL MEASURE TO REDUCE
FORMALDEHYDE EMISSIONS FROM COMPOSITE WOOD PRODUCTS"**

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The following comments are not intended to be comprehensive in nature. Rather, these comments are those considered to have the greatest impact on the use of this document as a scientific basis for CARB's impending decision on the proposed ATCM standards for formaldehyde from composite wood products.

1. The introductory statement to Section VII states "This chapter presents an overview of the health risk assessment process..." Chapter VII falls grossly short in presenting a *transparent, clear, consistent and reasonable*² overview of CARB's risk assessment. For example, it lacks a standard uncertainty analysis as part of the risk characterization (Step 4) component. Also, it completely excludes any discussion of the current scientific discussion/debate on the cancer slope factor (CSF), which has more influence on estimated cancer risks in humans than any other single factor. In my opinion, it fails all four quality criteria, is biased, and will mislead risk management decision makers.
2. The introductory statement also states that "As HCHO has been identified as a toxic air contaminant (CARB, 1992), there is no threshold exposure level below which adverse health effects are not anticipated." This statement is blatantly wrong, has no scientific basis, and has no basis in either USEPA or Cal/EPA's designation of formaldehyde as a likely human carcinogen.
3. Whereas Section 2 of Chapter VII presents a relatively comprehensive, 21-page summary of the toxicology and human epidemiology literature on formaldehyde, no attempt is made to relate the information directly to the proposed ATCM standard.
4. Also, Section 2 of Chapter VII makes no mention of the metabolism of formaldehyde in biological systems including humans. It is a well-known fact that virtually all cells in the body possess aldehyde dehydrogenase enzymes that detoxify formaldehyde at air concentrations less than about 2 ppm. For the CARB report to ignore this fact shows blatant bias and misuse of science (i.e., including the science that supports the proposed ATCM standard and excluding the science that doesn't support the proposed standard).
5. Chapter VII (Section 2) presents no discussion of OEHHA's CSF or Unit Risk Factor (URF), even though this factor affects the risk assessment results as much or more than any other single factor in the assessment. The fact that the CSF is not listed among the seven "factors that affect the outcome of a health risk assessment"

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² According to USEPA's "Risk Characterization Handbook" (USEPA, 2000), transparency, clarity, consistency and reasonableness are the four quality criteria that all risk assessments should strive to meet.

(Section C, Chapter VII) shows bias, misleads CARB's risk managers, and is yet another failure of the report to meet the four risk assessment quality standards.

6. Chapter VII makes no mention of key reports in the published scientific literature that have challenged the underlying assumptions and scientific bases of OEHHA's CSF; notably Connolly et al. (2004)³. The scientific controversy associated with the CSF and URF factor for formaldehyde is well known. The complete silence of CARB's report on this important scientific controversy shows bias, misleads CARB's risk managers, and is yet another failure of the report to meet the four risk assessment quality standards.
7. Whereas the proposed ATCM standard may reduce exposure of Californians to formaldehyde to some unknown degree, there is no scientific basis for concluding that a reduction in the incidence of cancer in California will result. The primary reasons are: 1) formaldehyde is completely detoxified at low levels of exposure; levels currently associated with emissions from composite wood products, and 2) there is no scientific evidence of human carcinogenesis at the already low air concentrations of formaldehyde that are typically emitted from composite wood products manufactured in California.

³ Connolly, R.B et al., 2004. *Human Respiratory Tract Cancer Risks of Inhaled Formaldehyde: Dose-Response Predictions Derived From Biologically-Motivated Computational Modeling of a Combined Rodent and Human Dataset*. *Toxicological Sciences*, 82:279-296.