

**California Integrated Waste Management Board**  
**Comments on Air Resources Board Report to the California Legislature**  
*Indoor Air Pollution in California*

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## **Executive Summary**

### **I. Introduction**

The last two sentences of this section are directed to the audience reviewing the June 2004 draft report. Consider revising these sentences to the past tense emphasizing that you conducted this type of peer review prior to submitting the report to the Legislature.

### **Indoor Air Pollution Poses Substantial Health Risks**

“Indoor pollution ranked high relative to other environmental problems because there are numerous sources of pollutants indoors, indoor air concentrations of some pollutants often occur at levels that create significant health risks, and people spend most of their time indoors.” Consider replacing the word “and” with the phrase, “due to the fact that,” people spend most of their time indoors. The next sentence seems redundant because it repeats the concept that exposure results in “significant risk.” Consider revising these sentences to compliment one another rather than repeat that same concept.

### **Why Indoor Sources Have Such a Significant Impact**

This first paragraph references Figure ES-1 and claims, “California adults spend an average of 87% of their time indoors.” Figure ES-1 illustrates that California adults spend 6% of their time outdoors. I would recommend including the enclosed transit portion of the figure as part of time spent indoors and change the average time adults spend indoors to 94%. Additionally, the report states, “children under 12 years of age spend about 86% of their time indoors.” Although, at a quick glance of Figure ES-1, it identifies that children spend 10% of their time outdoors. I would recommend that the report state that children spend 90% of their time indoors. An average for both populations could easily be the same 90% time frame.

### **Table ES-1. Sources and Potential Health Effects of Major Indoor Air Pollutants**

Consider listing building materials in general as “Major Indoor Sources,” of Formaldehyde and Other Aldehydes. In addition to the sources already listed, the Building Material Emissions Study (BMES) measured these chemicals in medium density fiberboard, acoustical ceiling tiles, gypsum board, resilient flooring, and thermal insulation. Consider deleting paint from this list of Major Indoor Sources,” as the BMES did not measure any emissions of formaldehyde or aldehydes from these products.

## V. Existing Regulations, Guidelines and Practices

### • Guidelines and Public Education.

- This section states that DHS “played a key role in the development of Section 01350 emissions limits for materials used in state buildings.” This should read state buildings and schools. It goes on to state that the Collaborative for High Performance Schools (CHPS) “developed *Best Practices Manuals*.” Revise this to identify the CHPS document as a “*Best Practices Manual*.” There is only one CHPS manual with multiple volumes.

## IX. Summary

The second paragraph refers to high priority pollutants such as “toxic VOCs.” What are “toxic VOCs”? Are these defined as Toxic Air Contaminants? Please define.

## 1. Introduction and Background

### 1.2 People Spend Most of Their Time Indoors

Please see Executive Summary comments under “Why Indoor Sources Have Such a Significant Impact.”

## 2. Health Impacts, Sources and Concentrations of Indoor Air Pollutants

### Table 2.1. Sources and Potential Health Effects of Major Indoor Air Pollutants

Please see Executive Summary comments under Table ES-1.

#### 2.3.1.2 Sources of Formaldehyde

Please make sure it is clear that the in the nine products whose formaldehyde emissions exceeded the Section 01350 concentration limits did so when modeled for use in a typical state office. Consider revising the text as follows, “When modeling was conducted [on products for use in a state office,] emissions from acoustical ceiling panels, a carpet, medium density fiberboard, gypsum board, resilient flooring (non-rubber based), and thermal insulation, room concentrations were estimated to exceed 16.5 mg/m<sup>3</sup> (13.5ppb).”

The second to the last sentence refers to “items” tested in this study. Please replace the word “items” with “samples.”

The last sentence in the third paragraph states “formaldehyde was detected in additional product categories at lower levels.” Consider including the percent formaldehyde was detected in all building materials tested. Formaldehyde was detected in 34% of the total samples tested.

#### 2.3.2.2 Sources And Emissions of VOCs

Page 56 states “Most recently, emission testing funded by CIWMB indicates that building materials potentially can emit enough VOCs to produce potentially harmful levels.” The word potentially is used twice in this sentence. Consider revising the

sentence to read, “Most recently, a building material emissions testing study funded by CIWMB reported that building materials emit a number of VOCs that were identified as chemicals of concern. Several products exceeded the Section 01350 concentration limits as follows.” However, this statement implies that all carpet, fiberboard, particleboard, and resilient flooring products exceeded Section 01350. Consider including clarification in the introduction sentence that would state, “Several products [in each of the categories identified below] exceeded the Section 01350 concentration limits.” The second bullet includes resilient flooring as a material category with products exceeding the limits for acetaldehyde. Since the third bullet is all about resilient flooring, please delete resilient flooring from the second bullet and add acetaldehyde to the list of chemicals in the third bullet.

## **4. Existing Regulations, Guidelines, and Practices**

### **4.1.4 Reference Exposure Levels for Air Toxics**

The last sentence in the last paragraph of this section states “Section 01350 requirements...are discussed further below.” Since the next section is on Tobacco Control, this statement appears out of place. Please include specific section of the report those requirements are discussed in further detail.

### **4.3.3.2 Government Guidelines for Building Materials**

#### Sustainable Buildings and Section 01350

“Components of sustainable buildings include materials for interior surfaces and furnishings that are protective of indoor air quality and health, cost-effective, durable, recyclable, and include some recycled content.” Please replace the term “include some,” with “contain recycled content,” to end this sentence.

In addition to the reference to AB 498, Chan, 2002, include the actual law where this legislation was codified. My understanding is that it has become Public Contract Code Section 12400-12404.

Every other section of this report references the California Integrated Waste Management Board as CIWMB. Please change the reference in this section from “IWMB” to “CIWMB.”

The third sentence in the second paragraph states, “A test protocol was developed for laboratory testing of building materials by manufacturers.” This statement implies that the manufacturers developed the test protocol. Actually, manufacturers can have their products tested at independent labs using the test protocol developed for use at the Capitol Area East End Complex.

#### Collaborative for High Performance Schools

Please replace the word “scoring,” with the term “rating system,” when referencing the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) Rating System.

The first sentence in the second paragraph references the “CHPS certification criteria.” Volume III of the CHPS Best Practices Manual is named the CHPS Criteria. Please replace “certification criteria,” with “Criteria.”

#### **4.3.3.3 Professional and Industry Guidelines and Practices for Building Materials**

The last paragraph references the Carpet and Rug Institute (CRI) Green Label Program. Based on the chemicals emitted from carpet products in the BMES, the report concluded that the Carpet and Rug Institute (CRI) Green Label program be re-evaluated. CRI proactively took this challenge and worked with DHS, CIWMB and CHPS to develop the CRI Green Label Plus. Since, CRI now has a Green Label Plus program that DHS has recognized as equivalent to Section 01350, consider revising this paragraph to include the current criteria. Details of this program are included in the second attachment to this email message. Here is a link to the CRI Press Release. [http://www.carpet-rug.com/News/040614\\_GLP.cfm](http://www.carpet-rug.com/News/040614_GLP.cfm)

#### **4.4.3.2 Guidelines for School Buildings**

“Design guidelines for environmentally sustainable, healthy schools in California schools....” Consider deleting the second use of the word schools in this sentence. I recommend that you clarify these are Board Members when stating, “CHPS members include state agencies....”

LAUSD and San Francisco USD are listed and the report claims, “a few other schools districts have already adopted the CHPS criteria.” Please identify the fact that a total of 10 school districts have actually adopted the CHPS Criteria. Also, Criteria should be capitalized in this section because that is the name of Volume III.

The second paragraph states “CHPS plans to update its Best Practices Manual in 2004.” CHPS actually plans to update the Manual in 2005. The Operations and Maintenance volume will be released in Fall 2004.

## **6. Prioritization of Sources and Pollutants Based on Exposure and Adverse Impacts**

The last sentence in the second paragraph states, “Low-emitting carpets, non-formaldehyde furniture, and non-toxic cleaning products are currently available, and would grow in market share.” I would recommend that you replace the word “would,” with “continue to.”

- **Building materials and furnishings**

Explain that mitigation is occurring most commonly in the manufacturing stage.

“In cabinets or furniture, all surfaces of these products can be coated or laminated to substantially reduce formaldehyde emissions.” I would caution against this statement. According to the BMES, “when two of the four edges of the [plastic laminate and fiberboard assembly] were not laminated formaldehyde was not detected. However, when the assembly was fully laminated, detectable amounts of formaldehyde were measured.”

A reference was made to Section 01350 emission requirements for formaldehyde and other TACs. Please consider using a different term than TACs. While TACs must be identified and are considered additional chemicals of concern, Section 01350 emission requirements are based on the Chronic Reference Exposure Levels (CRELs) published by OEHHA. Please replace TACs with CRELs or use the term “chemicals of concern” rather than TACs.

Please make sure the Capital Area East End Complex (CAEEC) is correctly identified and not identified as the “Capitol East End Project.” CAEEC is consistent with the rest of the report.

CHPS recently released a list of products that meet Section 01350 concentration limits for use in schools. Please consider mentioning this list of low-emitting materials. More information can be found at the following website.  
[http://www.chps.net/manual/lem\\_overvw.htm](http://www.chps.net/manual/lem_overvw.htm)

## **7. Options to Mitigate Indoor Air Pollution**

### **7.1 General Mitigation Options**

The third element suggests that manufacturers be required to test emissions of building materials. Emissions testing should be conducted at independent labs and not by manufacturers at their own labs. Please clarify.

The fourth element suggests that children’s health in schools be a top priority. There is a reference to a “section below.” Consider including a reference to the CHPS list of low-emitting materials that meet Section 01350.