



SP/01350 Update: Progress & Next Steps

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Meeting Agenda

- ❑ Introductory Round Robin
- ❑ Presentation by CDPH/IAQ
 - *SP/01350 Background*
 - *Summary of SP/01350 Update Process*
 - *Standard Method (SM) V1.1 vs. SP/01350 (2004)*
 - *Next Steps*
 - Timeline for approval and release of the document
 - Plan for workgroup activities for *SM V2.0*
- ❑ Registration of Concerns about Remaining Gaps and Needs for *SM V2.0*
 - *Brief statement during this meeting.*
 - *Submission of more/supplemental comments to be included in meeting notes.*

History of *Standard Practice 2004*

- Environmental Specifications for Office Furniture Systems (2000)
- Capitol Area East End Complex Section 01350 (Spring, 2001)
- Adoption by CHPS *Best Practices Manual* and in *Reference Specifications for Energy and Resource Efficiency* (Fall, 2001)
- *Standard Practice* (CA/DHS/EHLB/R-174) issued by *DHS* (July, 2004)

STANDARD PRACTICE
FOR THE
TESTING OF VOLATILE ORGANIC EMISSIONS FROM VARIOUS SOURCES
USING SMALL-SCALE ENVIRONMENTAL CHAMBERS
(Supersedes previous versions of small-scale environmental chamber testing portion of California Specification 01350)



PREPARED BY:
Indoor Air Quality Section
Environmental Health Laboratory Branch
Division of Environmental and Occupational Disease Control
California Department of Health Services

ON BEHALF OF:
THE CALIFORNIA SUSTAINABLE BUILDING TASK FORCE

JULY 15, 2004
(INCLUDES ADDENDUM 2004-01)



State of California
ARNOLD SCHWARZENEGGER, Governor
California Health and Human Services Agency
Kimberly Belshé, Secretary
Department of Health Services
Sandra Shewry, Director

Starting point of this update

What is in *SP/01350 (2004)*

Topics	Section No.
Chamber Test Methods	Sections 2, 3, 5 & 6
IAQ Concentration Modeling Methodology; Classroom & Office Scenarios	Section 4
Performance Criteria: Target Chemicals; Maximum Allowable Concentration; Specific Justifications for Formaldehyde & Acetaldehyde	Section 4 Addendum 2004-01
Section 01350/CRI GLP Agreement for Carpet	Section 9

Product Categories Covered in *SP/01350 (2004)*

□ Testing

- *Containerized products (i.e., paints, sealants, adhesives, and other wet products)*
- *Dry products*
 - *resilient flooring, carpet, carpet cushion, acoustical ceiling panel, fiberglass batt insulation and insulation board, wallcoverings, composite wood products, rigid wall panels, etc.*
- *Dry product assemblies*

□ Performance Criteria and Evaluation

- *where classroom or office scenario can reasonably apply*
- *Flooring materials (all types)*
- *Acoustical ceiling panels*
- *Thermal insulation*
- *Wall paint and wallcoverings*
- *Wall base*

How has *SP/01350 (2004)* been used?

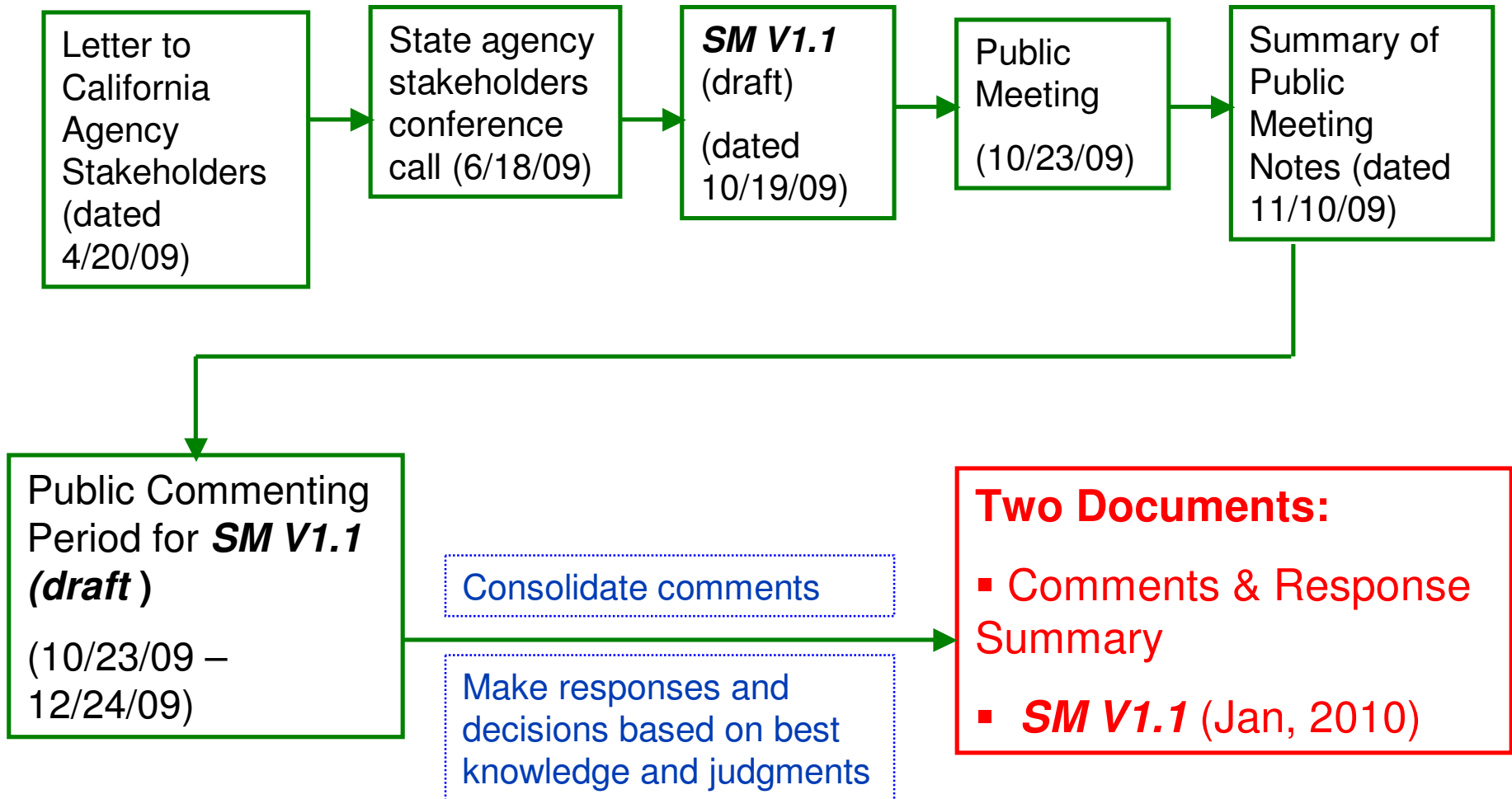
- ❑ Considered as a leading health-based specification
- ❑ Significant number of materials tested to SP
- ❑ Large impact on the market
 - *Certification Programs where SP/01350 is required:*
 - *CHPS*
 - *CRI Green Label Plus*
 - *Resilient Flooring Institute FloorScore*
 - *SCS Indoor Advantage Gold*
 - *GreenGuard Children and Schools*
 - *Test Laboratories most frequently used:*
 - *Berkeley Analytical Associates (BAA)*
 - *Air Quality Sciences (AQS)*
 - *Materials Analytical Services (MAS)*
 - *Eurofins Product Testing*

How has *SP/01350 (2004)* been used? (Cont.)

❑ Other Programs where *SP/01350* is required:

- *BIFMA e3-2008 – Furniture Sustainability Standard*
- *ICC-ES SAVE (Sustainable Attributes Verification and Evaluation)*
- *LEED*
- *Green Guide for Healthcare*
- *ASHRAE Standard 189.1 – Std for the Design of High-Performance Green Bldgs*
- *CA Green Building Code*

Summary of *SP/01350* Update Process



Title & Structure of *Standard Method V1.1*

	<i>SP/01350 (2004)</i>	<i>SM V1.1 (2010)</i>
Title	Standard practice for the testing of volatile organic emissions from various sources using small-scale environmental chambers.	Standard method of the testing and evaluation of volatile organic chemical emissions from indoor sources using environmental chambers
Overall Structure	<p>Section 4 Target chemicals and maximum allowable concentration</p> <p>Section 5 Required elements of the laboratory test report</p> <p>Section 6 Acceptable alternatives to the practice</p> <p>Section 7 Tables</p> <p>Section 8 Useful Information</p> <p>Section 9 Acceptable Emission Testing for Carpet</p> <p>Addendum 2004-01 for Formaldehyde & Acetaldehyde</p>	<p>Section 4 Target chemicals and maximum allowable concentration</p> <p>Section 5 Quality assurance and quality control</p> <p>Section 6 Required elements of the laboratory test report</p> <p>Section 7 Testing of freestanding furniture</p> <p>Section 8 Guidelines for use of standard method as basis for a building product claim</p>

Urgent Needs for *Sections 5, 7 & 8* in *SM V1.1*

- ❑ Address critical elements of the credibility of environmental claims that are the underlying basis for the rating systems
 - *Laboratory quality management systems: ISO/IEC 17025 (Section 5)*
 - *Guidelines for making 1st and 3rd party claims: ISO Guide 65 & ISO 14021 (Section 8)*

- ❑ Provide a way to implement the credit for classroom furniture specified in CHPS 2009 Criteria document (Section 7)

Product Categories Covered in *Standard Method V1.1*

☐ Testing

- *Containerized products (i.e., paints, sealants, adhesives, and other wet products)*
- *Dry products*
 - *resilient flooring, carpet, carpet cushion, acoustical ceiling panel, fiberglass batt insulation and insulation board, wallcoverings, composite wood products, rigid wall panels, etc.*
 - *other insulation products, including blowing wools and loose fill insulation products, and spray foam insulation.*
- *Dry product assemblies*
- *School furniture and open-plan office furniture*

Product Categories Covered in *Standard Method V1.1 (Cont.)*

☐ Performance Criteria and Evaluation

<u>Non-industrial Application</u>	<u>Single-family Residence</u>
Flooring materials (all types)	Flooring materials (all type)
Acoustical ceiling panels	Ceiling materials
Thermal insulation	Thermal insulation
Wall paint and wallcoverings	Wall paint and wallcoverings
Wall base	Optional acoustic insulation
School furniture and open-plan office furniture	Doors and window treatment
Visual air boards in classrooms	
Doors and window treatment	
Adhesives, caulks, sealants and wallboard finishing products	

CHPS Credits

Performance Criteria in *Standard Method V1.1*

☐ Allowable Concentration Limits of CREL VOCs

Compound Name	SP/01350 (2004)	<i>Standard Method V1.1</i>
Formaldehyde	16.5 ug/m ³	9 ug/m ³ (a)
Acetaldehyde	9 ug/m ³	1/2 of CREL (70 ug/m ³)
Others	1/2 of CREL	1/2 of CREL

Note: (1) Effective Jan. 1, 2012. Until that date, 16.5 µg/m³ will continue to be used as the allowable concentration limit.

Key Topics Discussed in *Comments & Response Document*

Topic No.	Topic Description
1	Maximum Allowable Concentration for Formaldehyde and Acetaldehyde
2	Establishment of Residential Scenario(s)
3	Sample Collection, Handling and Shipping
4	Application of BIFMA Test Method for Furniture
5	TVOC Definition and Use of TVOC Limit
6	Document Title and Document Number
7	Quality Assurance and Quality Control
8	Guidelines for Use of Standard Method as Basis for a Building Product Claim

Maximum Allowable Concentration for Formaldehyde and Acetaldehyde

☐ Formaldehyde

- *Formaldehyde is an irritant and is also classified as a known human carcinogen, and exposure to it should be minimized.*
- *The proposed timeline need be realistic, attainable, and keep manufacturers engaged.*
- *Early compliance (before Jan 1, 2012) with the $9 \mu\text{g}/\text{m}^3$ requirement is encouraged and acknowledged.*

☐ Acetaldehyde

- *It is important to develop rational procedures and address other known health concerns.*
- *$70 \mu\text{g m}^{-3}$ ($1/2$ of the revised CREL) is recommended as interim update.*

Single-family Residence Scenario

□ Concentration Modeling

$$C_i = (EF_{Ai} \times A) / Q = EF_{Ai} \times L / N = EF_{Ai} / q_A$$

C_i - estimated building concentration of a target VOC_i, ($\mu\text{g m}^{-3}$),

EF_A - area specific emission factor, ($\mu\text{g m}^{-2} \text{h}^{-1}$)

q_A - area specific flow rate, (m h^{-1}). $q_A = N/L$

N - outdoor air change rate, (h^{-1})

L - loading factor for the installed material, (m^2/m^3). $L = A/V$

A - exposed surface area of the installed material, (m^2)

V - volume of the building, (m^3)

Q - flow rate of outside ventilation air, ($\text{m}^3 \text{h}^{-1}$)

□ Goal: $C < C_{\text{criteria}}$ (i.e., $1/2$ of CREL)

Single-family Residence Scenario (cont.)

Outdoor Air Change Rate

Whole Building Ventilation Requirements (cont) Table 4.1a (cfm)

Number of Bedrooms	0-1	2-3	4-5	6-7	>7
<1500 ft ²	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500 ft ²	105	120	135	150	165

- ASHRAE 62.2-2007
- CARB Study on New California Homes
(Offermann's report for CARB, 2009)

Equivalent to 0.23 h⁻¹

PFT Measurement of Outdoor Air Exchange Rates

	N	Mean	Standard Deviation	Geometric Mean	Geometric Std. Dev.	Min	10%	25%	50%	75%	90%	Max	CBC Code ^a Requirement
24-Hour Measurement (ach)	107 ^b	0.48	0.78	0.31	2.24	0.09	0.13	0.18	0.26	0.45	0.85	5.3	0.35
2-Week Measurement (ach)	21 ^b	0.45	0.54	0.31	2.23	0.11	0.14	0.19	0.24	0.42	0.83	2.3	0.35

Single-family Residence Scenario (cont.)

□ Material and Product Quantities

Materials Used in the Construction of a 2,272 Square-Foot Single-Family Home, 2000

13,837 board-feet of lumber	<u>12 interior doors</u>
13,118 square feet of sheathing	<u>6 closet doors</u>
19 tons of concrete	2 garage doors
3,206 square feet of exterior siding material	1 fireplace
3,103 square feet of roofing material	3 toilets, 2 bathtubs, 1 shower stall
3,061 square feet of insulation	3 bathroom sinks
<u>6,050 square feet of interior wall material</u>	<u>15 kitchen cabinets, 5 other cabinets</u>
<u>2,335 square feet of interior ceiling material</u>	1 kitchen sink
226 linear feet of ducting	1 range, 1 refrigerator, 1 dishwasher, 1 garbage disposal,
<u>19 windows</u>	1 washer, 1 dryer
<u>4 exterior doors (3 hinged, 1 sliding)</u>	1 heating and cooling system
<u>2,269 square feet of flooring material</u>	

Data taken from DOE Buildings Energy Data Book:

<http://buildingsdatabook.eren.doe.gov/ChapterView.aspx?chap=2#2>

Single-family Residence Scenario (cont.)

□ Area Specific Flow Rate

Product Type	Area or Quantity ¹		Area Specific Air Flow Rate	
Flooring (all types)	m ²	211	m/h	0.602
Ceiling	m ²	217	m/h	0.585
Walls & wallcoverings	m ²	562	m/h	0.226
Interior wallboard paint ²	m ²	779	m/h	0.163
Thermal insulation	m ²	284	m/h	0.447
Acoustic insulation (comprehensive acoustic upgrade) ³	m ²	343	m/h	0.370
Windows ⁴	unit/m ²	19/38.0	m/h	3.34
Exterior doors ⁵	unit/m ²	4/7.56	m/h	16.8
Interior doors ⁶	unit/m ²	12/37.2	m/h	3.41
Closet doors ⁷	unit/m ²	6/44.6	m/h	2.85

Single-family Residence Scenario (cont.)

□ Area Specific Flow Rate

Product Type	Area or Quantity ¹		Area Specific Air Flow Rate	
	Unit	Value	Unit	Value
Flooring (all types)	m ²	211	m/h	0.602
Ceiling	m ²	217	m/h	0.585
Walls & wallcoverings	m ²	562	m/h	0.226
Interior wallboard paint ²	m ²	779	m/h	0.163
Thermal insulation	m ²	284	m/h	0.447
Acoustic insulation (comprehensive acoustic upgrade) ³	m ²	343	m/h	0.370
Windows ⁴				
Exterior doors ⁵				
Interior doors ⁶				
Closet doors ⁷				

Section 8.4.2 Certification/verification organizations may adjust the material areas or quantities of a product in concentration modeling to account for partial coverage or unique conditions provided that the adjustment is consistent with the product usage commonly employed in building design and construction practices. Such deviations shall be stated in reports and public claims of compliance, e.g., on certificates of compliance.

CalGreen Residential Measures (draft, 1/27/10)

□ Mandatory

- **4.504.3 Carpet systems.** *All carpet installed in the building interior shall meet the testing and product requirements of one of the following:*
 1. *Carpet and Rug Institute's Green Label Plus Program*
 2. *California Department of Public Health Standard Practice for the testing of VOCs (Specification 01350)*
 3. *NSF/ANSI 140 at the Gold level*
 4. *Scientific Certifications Systems Indoor Advantage™ Gold*
- **4.504.4 Resilient flooring systems.** *Where resilient flooring is installed, at least 50% of floor area receiving resilient flooring shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or certified under the Resilient Floor Covering Institute (RCFI) FloorScore program.*

CalGreen Residential Measures (draft, 1/27/10)

□ Mandatory

- **4.504.3 Carpet systems.** *All carpet installed in the building interior shall meet the testing and product requirements of one of the following:*

1. *Carpet and Rug Institute's Green Label Plus Program*
2. *California Department of Public Health Standard Practice for the testing of VOCs (Specification 01350)*
3. *NSF/ANSI 140 at the Gold level*
4. *Scientific Certifications Systems Indoor Advantage™ Gold*

- **4.504.4 Resilient flooring systems.** *Where resilient flooring is installed, at least 50% of floor area receiving resilient flooring shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low*

emitting ➤ *The impact of this interim update on residential construction is a function of the certification organizations and end-users.*

Coverage ➤ *Certification/verification organizations are allowed adjust the material areas or quantities of a product in concentration modeling during this interim update as long as it is transparent and clearly documented.*

CalGreen Residential Measures (draft, 1/27/10) (cont.)

Voluntary

- **A4.504.3 Thermal insulation.** *Thermal insulation installed in the building shall meet the following requirements:*

Tier 1. Install thermal insulation in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List.

Tier 2. Install insulation which contains No-Added Formaldehyde (NAF) and is in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List.

- *Thermal insulation belongs to voluntary measures.*
- *CalGreen references CHPS list. CHPS certifies products using school classroom model. No significant changes have been made for classroom model. Therefore, products compliance with CHPS requirements will not be affected by this interim SM V1.1.*

Next Steps

- ❑ Release *Standard Method V1.1* as Interim Update
- ❑ Target for Release of *Standard Method V2.0* – Jan. 2011
 - *Register concerns about remaining gaps and needs for SM V2.0*
 - *Kick off stakeholder meeting on planning workgroup activities for SM V2.0*
 - *.....*

Standard Method V2.0: Needs

- ❑ Residential scenarios:
 - *Single-family residence model refinement*
 - *Development of other scenarios (multi-family home, manufactured home, etc.)*
- ❑ Other chemicals of concern
- ❑ Private office scenario
 - *Inclusion of private office furniture*
- ❑ *TVOC definition and whether/how to use TVOC Limit*
- ❑ *Cabinetry testing and concentration modeling*
- ❑ *Further harmonization with other standards*
- ❑ *Others based on further comments on Standard Method V1.1*

Standard Method V2.0: Proposed Approach

□ Role/responsibility of CDPH/IAQ program

- *Call for volunteer work groups*
- *Facilitate work groups as needed*
- *Assure the process is transparent and open to all stakeholders*
- *Organize public meeting to report outputs from each work group*
- *Issue Standard Method V2.0*

□ Role/responsibility of volunteer work groups

- *Propose suggested changes*
- *Demonstrate group consensus on suggested changes*
- *Demonstrate scientific integrity of suggested changes*

Meeting Agenda

- ❑ Introductory Round Robin
- ❑ Presentation by CDPH/IAQ

Thank you for your attention!

- ❑ Registration of Concerns about Remaining Gaps and Needs for *SM V2.0*
 - *Brief statement during this meeting*
 - *Overall observation*
 - *Areas of concern and specific requests*
 - *Major areas of interest if participating work group for SM V2.0*
 - *Follow-up submission of more/supplemental comments to be included in meeting notes*