

Notice of Change

Date of Notice: 05/18/2010

Change Number: 4364.72

Comment Period Ending Date: 06/17/2010

Comments may be submitted electronically during the comment period to programupdates@greenguard.org. The comment period begins on the date of notice and ends at 12:00 midnight EST on the comment period ending date listed above. *Please be sure to reference the change number listed above in your correspondence. Correspondence without the change number will be disregarded.*

Description of Proposed Change: GEI desires to continually improve the accuracy of its test methods including the analysis of individual VOCs. Based on a review of primary chemicals emitting from office furniture as well as those chemicals which fall on key criteria target lists as required by GEI and CA 01350, GEI has added guidance on specific chemical calibration requirements. These target lists are based upon reviewing emissions data for 373 different office furniture products including workstations, case goods and seating. Measured emissions data obtained over a three year period (2007-2010) were reviewed for the presence of chemicals of concern including those required by the GREENGUARD programs and those in the California Specification 01350 emissions testing protocol (v1.1). These included any VOCs found on the following lists and are considered chemicals of concern:

- CA/EPA OEHHA Chronic Reference Exposure Levels (CRELs);
- CA/EPA carcinogens and reproductive toxins (Proposition 65); and
- CA/EPA Toxic Air Contaminants (TACs) as required by the CA 1350 specification; and
- ACGIH Threshold Limit Values (TLVs) as required by the GEI.

Additional chemicals were reviewed for their presence including the top ten most frequently emitting VOCs and odorants. The following lists of VOCs provide guidance in expectation of specific VOC presence for analysis and calibrations purposes.

Table A lists those VOCs that have been measured and found to be the top 10 of highest frequency among all products; observed CRELs; and those Proposition 65, TAC, TLV and odorant chemicals that have been observed in greater than 10% of all measured products. Table B lists those VOCs that are CRELs but have not been found in measurable levels; those Proposition 65, TAC, TLV and odorant chemicals that are present in less than 10% of all measured products; and other non listed VOCs that have been observed with a frequency between 15 and 20 percent.

Table A should be considered a primary list for authentic calibration and Table B includes those VOCs that have a lower likelihood of presence in the emissions. However, any VOCs of concern present in the emissions, as found in the CA 1350 specification (v1.1), should be calibrated with authentic standards.

TABLE A

VOCs FROM OFFICE FURNITURE INCLUDING ALL MEASURED CRELs; THE TOP TEN HIGHEST EMITTING VOCs; AND ODORANTS, CARCINOGENS (AS LISTED IN CA PROPOSITION 65), TOXIC VOCs (AS LISTED BY CA AIR TOXICS) AND ACGIH TLVs IF MEASURED IN GREATER THAN 10% OF ALL PRODUCTS

Chemicals	CAS#	CREL	CA Prop 65	CA Toxics	ACGIH TLV	Odorants	Top 10 [†]
Ethylbenzene	100-41-4	X	X	X	X		
Styrene	100-42-5	X		X	X		
Acetic acid, 2-ethylhexyl ester	103-09-3					X	
1-Hexanol, 2-ethyl	104-76-7					X	35.4
ε-Caprolactam (2H-Azepin-2-one, hexahydro)	105-60-2			X	X		
p-Xylene	106-42-3	X					
Benzene, 1,4-dichloro	106-46-7		X	X	X		
Ethylene Glycol	107-21-1	X		X	X		
1-Methoxy-2-propanol	107-98-2	X			X		
Vinyl Acetate	108-05-4	X		X	X		
m-Xylene	108-38-8	X					
Toluene (Methylbenzene)	108-88-3	X	X	X	X		
Benzene, chloro	108-90-7	X		X	X		
Cyclohexanone	108-94-1				X	X	
Phenol	108-95-2	X		X	X	X	
2-Heptanone	110-43-0				X	X	
n-Hexane	110-54-3	X		X	X		
2-Ethoxyethanol	110-80-5	X	X	X	X		
Ethanol, 2-ethoxy-, acetate (2-Ethoxyethyl acetate)	111-15-9	X	X	X	X		
Ethanol, 2-butoxy	111-76-2			X	X		39.9
Undecane	1120-21-4					X	29.8
Decanal	112-31-2					X	
Ethanol, 2-(2-butoxyethoxy)	112-34-5					X	
Dodecane	112-40-3					X	37.5
2-Pentanone, 4-hydroxy-4-methyl-	123-42-2				X	X	
Acetate, butyl	123-86-4				X	X	28.7
1,4-Dioxane	123-91-1	X	X	X	X		
Nonyl aldehyde (Nonanal)	124-19-6					X	
Tetrachloroethylene	127-18-4	X	X	X	X		

Chemicals	CAS#	CREL	CA Prop 65	CA Toxics	ACGIH TLV	Odorants	Top 10 [†]
Pinene, β (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)	127-91-3				X	X	
2,6-Di-tert-butyl-4-methylphenol (BHT)	128-37-0				X		
Xylenes (m-, o- and/or p-)	1330-20-7	X		X	X		
Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)	138-86-3					X	33.0
Hexanoic acid	142-62-1					X	
Hexanoic acid, 2-ethyl	149-57-5		X		X		
2-Octenal, (E)	2548-87-0					X	
Trimethylbenzene (All Isomers)	25551-13-7				X		
Tetramethylbutanedinitrile	3333-52-6				X		
Dipropylene glycol monomethyl ether	34590-94-8				X		
Longifolene	475-20-7						26.5
4-Phenylcyclohexene	4994-16-5					X	
Formaldehyde	50-00-0	X			X		
Cyclopentasiloxane, decamethyl	541-02-6						32.2
Tridecane	629-50-5					X	
Isopropanol	67-63-0	X		X	X		
N,N-Dimethyl Formamide	68-12-2	X		X	X		
1-Butanol (N-Butyl alcohol)	71-36-3			X	X		27.6
1-Pentanol (N-Pentyl alcohol)	71-41-0					X	
Benzene	71-43-2	X	X	X	X		
Acetaldehyde	75-07-0	X			X		
1-Propanol, 2-methyl (Isobutyl alcohol)	78-83-1				X	X	
2-Butanone (Methyl ethyl ketone, MEK)	78-93-3			X	X	X	
Trichloroethylene	79-01-6	X	X	X	X		
Pinene, α (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	80-56-8				X		44.8
1-Methyl-2-Pyrrolidinone	872-50-4	X	X				
Naphthalene	91-20-3	X	X	X	X		
Benzothiazole	95-16-9					X	
o-Xylene	95-47-6	X					
Propane, 1,2,3-trichloro	96-18-4		X		X		

Chemicals	CAS#	CREL	CA Prop 65	CA Toxics	ACGIH TLV	Odorants	Top 10[†]
Benzene, 1-methyl-4-(1-methylethyl) (p-Cymene; 4-Isopropyltoluene)	99-87-6					X	

[†]Percentage of all products found to emit this VOC.

TABLE B

VOCs FROM OFFICE FURNITURE INCLUDING CRELs (NOT MEASURED); ODORANTS, CARCINOGENS (AS LISTED IN CA PROPOSITION 65), TOXIC VOCs (AS LISTED BY CA AIR TOXICS), AND ACGIH TLVs IF MEASURED BUT IN LESS THAN 10% OF ALL PRODUCTS

Chemicals	CAS#	CREL	CA Prop 65	CA Toxics	ACGIH TLV	Odorants	Primary [†]
Cyclohexene, 4-vinyl (4-Ethenylcyclohexene)	100-40-3		X		X		
2-Propenoic acid, 2-ethylhexyl ester (Octyl acrylate)	103-11-7					X	
Phenol, 4-methyl	106-44-5			X	X	X	
Oxirane, ethyl	106-88-7			X			
Propane, 1-bromo-	106-94-5		X		X		
Ethane, 1,2-dichloro	107-06-2		X	X	X		
Hexasiloxane, tetradecamethyl	107-52-8						> 15%
2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)	108-10-1			X	X	X	
Phenol, 3-methyl	108-39-4			X	X	X	
1-Methoxy-2-propyl acetate	108-65-6						> 15%
2-Methoxyethanol	109-86-4	X					
Acetic acid, 2-methylpropyl ester (Isobutyl acetate)	110-19-0				X	X	
Ethylene monomethyl acetate	110-49-6	X					
Cyclohexane	110-82-7			X	X		
Ethane, 1,1'-oxybis[2-chloro- (s-Dichloroethyl ether)	111-44-4		X	X	X		
Heptanal (Heptaldehyde)	111-71-7					X	
Nonane	111-84-2				X	X	
1-Dodecanol	112-53-8					X	

Chemicals	CAS#	CREL	CA Prop 65	CA Toxics	ACGIH TLV	Odorants	Primary [†]
Benzene, 1,2,4-trichloro-	120-82-1			X	X		
Triethylamine (N,N-Diethylethanamine)	121-44-8			X	X		
Octanal	124-13-0					X	
1,3-Butadiene, 2-chloro	126-99-8		X	X	X		
2-Propanol, 1-(2-methoxypropoxy)-	13429-07-7						> 15%
Estragole (4-Allylanisole)	140-67-0		X				
Butyl acrylate (2-Propenoic Acid, butyl ester)	141-32-2			X	X		
Acetate, ethyl	141-78-6				X	X	
Heptane	142-82-5				X	X	
Phosphoric acid, trimethyl ester	512-56-1		X				
Benzene, 1,2,3,5-tetramethyl	527-53-7					X	
Pentane, 2,2,4-trimethyl (Isooctane)	540-84-1			X	X		
2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]	55956-25-7						> 15%
1,2-Propanediol (Propylene glycol)	57-55-6						> 15%
Toluene Diisocyanate	584-84-9			X	X		
2-Hexanone	591-78-6		X		X		
D-Limonene	5989-27-5					X	
Aniline	62-53-3		X	X	X		
Tetradecane	629-59-4						> 15%
Pentadecane	629-62-9						> 15%
Ethane, hexachloro	67-72-1		X	X	X		
1,1,1-Trichloroethane	71-55-6	X					
Methylene Chloride	75-09-2	X					
Carbon Disulfide	75-15-0	X					
Propane, 2-bromo-	75-26-3		X				
2,2,4-Trimethyl-1,3-pentenediol monoisobutyrate	77-68-9						> 15%

Chemicals	CAS#	CREL	CA Prop 65	CA Toxics	ACGIH TLV	Odorants	Primary [†]
2-Cyclohexen-1-one, 3,5,5-trimethyl-	78-59-1			X	X		
Propane, 1,2-dichloro	78-87-5		X	X	X		
2-Butanol (s-Butyl alcohol)	78-92-2			X	X		
Propanoic acid	79-09-4				X	X	
2-Propenoic acid	79-10-7			X	X		
Propane, 2-nitro	79-46-9		X	X	X		
Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)	80-62-6			X	X		
o-Hydroxybiphenyl ([1,1-Biphenyl]-2-ol)	90-43-7		X	X			
Benzene, 1,2-dimethoxy-4-(2-propenyl)	93-15-2		X				
Benzenamine, 2-methyl	95-53-4		X	X	X		
Benzene, 1,2,4,5-tetramethyl	95-93-2					X	
2-Propanol, 1,3-dichloro-	96-23-1						> 15%
Furfural (2-Furaldehyde)	98-01-1				X	X	
Benzene, 1-methylethyl (Cumene)	98-82-8			X	X		
Acetophenone (Ethanone, 1-phenyl)	98-86-2			X	X	X	

[†] Primary includes VOCs beyond Top 10 than are observed in > 15% of all products.

Response: Chloroform (CAS # 67-66-3) and Epichlorohydrin (CAS # 106-89-8) will be added to B making it consistent with CDPH/EHLB/Standard Method V1.1 “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers Version 1.1” dated February 2010. Table A is considered a primary list for authentic calibration and Table B includes those VOCs that have a lower likelihood of presence in the emissions. However, any VOCs of concern measured from the emissions of a product, as found in the CA 1350 specification (v1.1), shall be calibrated with authentic standards.

Effective Date: 8/2/2010.