

# **Appendix A**

**Written Comments Received during 45-day  
comment period**

**Final Statement of Reasons**

**Proposed Amendments to the California Consumer  
Products Regulations**



# Comment Log Display

## Below is the comment you selected to display. Comment 1 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

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Affiliation:

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

The National Aerosol Association (NAA) appreciates the opportunity to comment on the Initial Statement of Reasons (ISOR) for the Consumer Products Regulation released February 2, 2021.

Attachment: [www.arb.ca.gov/lists/com-attach/1-consumerproducts2021-VjhWMVMzAg4AMgM2.docx](http://www.arb.ca.gov/lists/com-attach/1-consumerproducts2021-VjhWMVMzAg4AMgM2.docx)

Original File Name: NAA 45 day comment period 32021.docx

Date and Time Comment Was Submitted: 2021-03-05 08:42:03

If you have any questions or comments please contact [Clerk of the Board](#) at (916) 322-5594.

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March 5, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

The National Aerosol Association (NAA) appreciates the opportunity to comment on the Initial Statement of Reasons (ISOR) for the Consumer Products Regulation released February 2, 2021.

The NAA is an industry group devoted to serving the public's health, safety and hygiene needs through the aerosol product form. The NAA represents marketers, manufacturers, fillers and suppliers to the aerosol market.

These comments from NAA will only be on the Innovative Product Exemption (IPE), further comments will be forth coming.

NAA is highly disappointed that CARB staff did not incorporate language from our December 10, 2020 or our January 19, 2020 comments into the proposed rule on an additional IPE provision. CARB proposed their language on their IPE on November 10, 2020. NAA proposal was exactly 30 days later and was not incorporated into the proposal. We fail to understand why CARB staff did not incorporate our suggestions prior to releasing the draft regulations for the Board's consideration. While we appreciated staff's collaborative approach over the last two years as it relates to the other elements in this rulemaking, we found their engagement on this portion to be the exact opposite. The following comments are on the staff's Compressed Gas IPE and the additional IPE provided by the NAA.

#### **CARB Staff IPE proposal**

Section 94511 Innovative Products is being amended by the staff to add a provision to this section for products utilizing compressed gases. The NAA does not believe this amended provision meets the spirit or the letter of the law under the California Health and Safety Code Section 41712 (b) 2. That states "The regulations are commercially and technologically feasible and necessary."



The NAA believes that this provision is not technologically or commercially feasible for the following reasons:

- 1) Under section 94511(c)(1) there is not a calculation provided to explain how to calculate 50 percent by volume. In section 94511(a) there is a detailed calculation on how to comply. This section does not provide clarity to the user.
- 2) Likewise, 94511(c)(2) does not provide a calculation to determine a lower Global Warming Potential (GWP). Again, clarity for the user is needed.
- 3) No explanation or calculation is provided for 94511(c)(3) to determine the amount of product dispensed. Need clarity.
- 4) Once again, no calculation is provided for 94511(c)(4) to determine the ozone formation of the IPE product compared to the representative HFC-152a product. A calculation is needed to provide clarity.
- 5) Section 94511(c)(1) Table 1, under Dry Shampoo, 55% VOC and 50% VOC, the representative samples are inconsistent with the VOC description of Dry Shampoo's in the ISOR. Figure III-12: Dry Shampoo provides the VOC speciation which is not consistent with the Table 1 representative product sample. There is not nearly this amount of ethanol in the Dry Shampoo as shown in Table 1. None of CARB's survey data has shown this amount of ethanol in a dry shampoo.
- 6) CARB has failed to provide any examples of how this is technologically feasible. During the November 10, 2020, workshop, the example of a product that meets this provision was not even close to be technologically feasible. The example given would have exceeded the can pressure and would not have been feasible. On page I-17 of the ISOR, CARB states that the staff over a 3-year period reviewed over one million products and participated with 1500 product manufacturers but could still not provide one single viable example that meets the provision. Even though on page III-88 of the ISOR staff states manufacturers have expressed an interest in this approach but no examples are available.
- 7) CARB staff states there is a disincentive for compressed gas due to weight. However, there are technical reasons compressed gases have not been used. These technical reasons are the direct drop in pressure that liquefied propellants do not have.
- 8) CARB did not propose this provision until November 10, 2020. Per the ISOR on page ES-3, this rule development started in June of 2018. That means 2 years and 6 months into the rule development CARB staff proposed this provision. Thus, only leaving less than 90 days for Industry to review and comment which Industry did. Stating all the short comings of this provision. However, CARB still proposed this provision.



### **Summary**

NAA cannot support this provision because the lack of definition and calculations to accurately be able to develop a product to meet the criteria. Also, with the lack of calculations and detail, how can the Industry be assured that CARB can accurately ensure that VOC emissions are not exceeded. The discrepancy with the Representative Product for Dry Shampoo is disturbing. How was this information developed? The lack of any type of reasonable example is troublesome. If there are manufacturers supporting this provision, why are there no examples? Lastly, CARB staff had stated since May of 2019, that this provision was being considered. However, proposing this provision after 2½ years into a rule development does not appear to be transparent as staff has continuously stated this process is. For all of the above reasons this provision should be modified or removed.

### **Additional Proposal**

During the rulemaking process and 30 days after CARB proposed their IPE provision, NAA proposed this additional IPE provision.

### **Background**

CARB has proposed the use of the Innovative Product Exemption (IPE) for use with Hair Spray, Dry Shampoo or Personal Fragrance Product to utilize Compressed Air, Nitrogen or Carbon Dioxide propellant. CARB has stated the goal of this IPE provision is to provide an alternative way to propel these products to replace the propellant HFC-152 which will lower the Global Warming Potential (GWP) of products.

CARB has provided a chart with Representative HFC-152a formulations for products; these representative products are listed below. NAA used this information even though some sections should be modified.



**Table 94511(d)(1): Representative HFC-152a Product Formulations**

Product Category and Applicable VOC Standard	Weight Percent by Ingredient				
	Ethanol	HFC-152a	Fragrance	Other VOC or LVP-VOC*	Non-Volatiles and Exempt VOCs**
Hair Finishing Spray: 50% VOC	45	45	0.1	3.9	6
Dry Shampoo: 55% VOC	30	29	0.2	30.8	10
Dry Shampoo: 50% VOC	30	33	0.2	26.8	10
Personal Fragrance Product: 70% VOC	40	15	2	30	13
Personal Fragrance Product: 50% VOC	30	30	2	22	16

\* Includes VOCs and LVP-VOCs. Average MIR of 0.9.

\*\* MIR of 0.00.

**IPE GWP Reduction Proposal**

CARB is attempting to provide a pathway for Industry to lower the GWP of the three targeted categories by using an alternate propellant system, which in their proposal is compressed gas. In this proposal CARB has criteria to maintain the MIR value of the product to prevent any increase in Ozone Forming Potential (OFP). This limitation is vital to maintain the VOC emissions proposed by CARB in this rulemaking. The use of Reactivity is a perfect way to ensure that OFP is maintained per product. In addition, there is criteria for not reducing non-propellant mass.

This proposal is very narrow in concept and would be extremely difficult, based on chemistry and physics, to implement. In addition, this proposal may have unintended negative environmental consequences. Aerosol products using compressed gases often are unable to expel all of the actives out of the can which can leave undesired waste in the can and hinder the recycling process. CARB should be commended for not only seeking solutions that are outside the regular command and control, but also maintain OFP and are a potential offset for GWP. Using CARB's goal of reducing GWP in propellants and maintaining OFP this proposal could be broadened to use more tools to reduce GWP while maintaining OFP of a product.



As an alternative, instead of considering only the propellant, it is more appropriate to use the solvent/propellant blend for a product. Especially for aerosols, the Solvent/Propellant blend is critical to the performance of the product. In compressed gas applications the solvent portion is critical to the spray performance. Also, several additional compounds, solvent and propellant, could be utilized to complete the goal of reducing GWP and maintaining OFP of a product.

### **New IPE GWP Reduction Proposal**

Using the solvent/propellant blend for a product is the most critical portion of the Aerosol product.

For this proposal the solvent/propellant blend is the Ethanol/HFC-152a portion of the Representative sample. If we focus on the solvent/propellant blend, then we assume the remaining portion of the product is the active portion. The active portion will likely be maintained with whatever solvent/propellant blend is used. Thus, considering only the solvent/propellant mixture broadens the proposal and offers numerous other possibilities. For example, the Representative Product formulation solvent/propellant for a 50% Hair Finishing Spray per CARB's proposal is the following:

50% Hair Spray

Ethanol            45%

HFC-152a        45%

If one assumes the other 10% of the formula is the active portion, this 10% will remain the same. The above solvent propellant/blend percent is 90%. This is simply the 45% Ethanol plus the 45% HFC-152a. The solvent/propellant blend MIR is the following:

Ethanol            45% x 1.53 MIR Value = 0.70

HFC-152a        45% x 0.02 MIR Value = 0.01

0.71

Thus, the solvent/propellant blend is 90% of the product with an MIR value of 0.71. CARB has stated at least a 50% reduction in HFC-152a is needed to qualify for the IPE.

This proposal represents other unique ways to comply with the IPE using liquefied propellants and other compounds.





### Hairspray Example

Here are other options to maintain the reduced GWP and maintain the OFP of a product.

Example 1	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	40%	0.61	
Isopropanol	0.61 X	5%	0.03	
HFO-1234ze	0.10 X	25%	0.03	50% reduction in GWP Propellant
HFC-152a	0.02 X	20%	0	
		90%	0.68	Below 0.71 MIR of Solvent/Propellant

Note: Solvent/propellant blend maintained

Example 2	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	36%	0.55	
HFO-1233zd	0.04 X	9%	0	
A-46	0.60 X	25%	0.15	50% reduction in GWP Propellant
HFC-152a	0.02 X	20%	0	
		90%	0.70	At 0.71 MIR of Solvent/Propellant

Note: Solvent/propellant blend maintained

Example 3	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	33%	0.50	
HFO-1233zd	0.04 X	15%	0.01	
A-46	0.60 X	30%	0.18	100% reduction in GWP Propellant
HFO-1234ze	0.10 X	15%	0.02	
		90%	0.71	At 0.71 MIR of Solvent/Propellant

Note: Solvent/propellant blend maintained

- All GWP propellant removed



Example 4	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	30%	0.46	
Isopropanol	0.61 X	15%	0.09	
A-46	0.60 X	25%	0.15	50% reduction in GWP Propellant
HFC-152a	0.02 X	20%	0	
		90%	0.70	Below 0.71 MIR of Solvent/Propellant

Note: Solvent/propellant blend maintained

### **Dry Shampoo**

The Solvent/Propellant blend MIR for The Representative Dry Shampoo product is the following:

	MIR Value	%	MIR x %	
Ethanol	1.53 X	30	0.46	
HFC-152a	0.02 X	29	0.01	
		59%	0.47	0.47 MIR is the Solvent/Propellant blend

Note: Solvent/Propellant blend is 59%

### **For 50% Dry Shampoo Representative Product**

	MIR Value	%	MIR x %	
Ethanol	1.53 X	30	0.46	
HFC-152a	0.02 X	33	0.01	
		63%	0.47	0.47 MIR is the Solvent/Propellant blend

Note: Solvent/Propellant blend is 63%

### **Dry Shampoo Examples**



Given that the MIR for the Solvent/Propellant blend is the same these examples work for both 55% and 50% limits

Example 1	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	29%	0.44	
HFO-1233zd	0.04 X	1%	0	
HFO-1234ze	0.10 X	15%	0.02	50% reduction in GWP Propellant
HFC-152a	0.02 X	14%	0	
		59%	0.46	0.46 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 59%

Example 2	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	25%	0.43	
Isopropanol	0.61 X	2%	0.01	
HFO-1234ze	0.10 X	15%	0.02	50% reduction in GWP Propellant
HFC-152a	0.02 X	14%	0	
		59%	0.46	0.46 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 59%

Example 3	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	23%	0.35	
Isopropanol	0.61 X	7%	0.02	
A-46	0.60 X	15%	0.09	50% reduction in GWP Propellant
HFC-152a	0.02 X	14%	0	
		59%	0.46	0.46 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 59%



Example 4	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	9%	0.13	
A-46	0.60 X	50%	0.30	100% reduction in GWP
		59%	0.43	0.43 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 59%

### **Personal Fragrance**

The Solvent/Propellant blend MIR for the Representative Personal Fragrance Product is the following:

#### **For 70% VOC limit**

	MIR Value	%	MIR x %	
Ethanol	1.53 X	40	0.61	
HFC-152a	0.02 X	15	0.00	
		55%	0.61	0.61 MIR is the Solvent/Propellant blend

Note: Solvent/Propellant blend is 55%

#### **For 50% VOC limit**

	MIR Value	%	MIR x %	
Ethanol	1.53 X	30	0.46	
HFC-152a	0.02 X	30	0.01	
		60%	0.47	0.47 MIR is the Solvent/Propellant blend

Note: Solvent/Propellant blend is 60%

### **Personal Fragrance Examples**



For 70% VOC limit MIR content 0.61 Solvent/Propellant blend 55%

Example 1	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	38%	0.58	
HFO-1233zd	0.04 X	1%	0	
HFO-1234ze	0.10 X	8%	0.01	50% reduction in GWP Propellant
HFC-152a	0.02 X	7%	0	
		55%	0.61	0.61 MIR is at Solvent/Propellant blend

Note: Solvent/Propellant blend is 55%

Example 2	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	37%	0.57	
Isopropanol	0.61 X	3%	0.02	
HFO-1234ze	0.10 X	8%	0.01	50% reduction in GWP Propellant
HFC-152a	0.02 X	7%	0	
		55%	0.60	0.60 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 55%

Example 3	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	36%	0.55	
HFO-1233zd	0.04 X	4%	0.00	
A-46	0.60 X	8%	0.05	50% reduction in GWP Propellant
HFC-152a	0.02 X	7%	0	
		55%	0.60	0.60 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 55%



Example 4	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	34%	0.55	
Isopropanol	0.61 X	6%	0.01	
A-46	0.60 X	8%	0.05	50% reduction in GWP Propellant
HFC-152a	0.02 X	7%	0	
		55%	0.61	0.61 at MIR Solvent/Propellant blend

Note: Solvent/Propellant blend is 55%

**For 50% VOC Limit MIR content 0.47 Solvent/Propellant 60%**

Example 1	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	29%	0.44	
HFO-1233zd	0.04 X	1%	0.00	
HFO-1234ze	0.10 X	15%	0.02	50% reduction in GWP Propellant
HFC-152a	0.02 X	15%	0	
		60%	0.46	0.46 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 60%

Example 2	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	28%	0.43	
Isopropanol	0.61 X	2%	0.01	
HFO-1234ze	0.10 X	15%	0.02	50% reduction in GWP Propellant
HFC-152a	0.02 X	15%	0	
		55%	0.46	0.46 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 55%



Example 3	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	23%	0.35	
HFO-1233zd	0.04 X	7%	0.00	
A-46	0.60 X	15%	0.10	50% reduction in GWP Propellant
HFC-152a	0.02 X	15%	0	
		60%	0.45	0.45 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 60%

Example 4	MIR Value	%	MIR x %	Note
Ethanol	1.53 X	20%	0.31	
Isopropanol	0.61 X	10%	0.06	
A-46	0.60 X	15%	0.09	50% reduction in GWP Propellant
HFC-152a	0.02 X	15%	0	
		60%	0.46	0.46 MIR is below Solvent/Propellant blend

Note: Solvent/Propellant blend is 60%

### Summary

Using the Solvent/Propellant blend MIR for the new GWP Reduction IPE affords the product manufacturers a larger variation of options to reformulate their products to these stringent limits. Adding in the Reactivity concept allows for the use of certain compounds that have lower Reactive values than currently utilized compounds. These examples are only a paper formulations and not necessarily desirable formulas for products. There may be certain characteristics of the compounds described above that will limit the individual use of these compounds. Characteristics such as odor, cost, compatibility and flammability may restrict some use of these compounds. In addition, there are likely other compounds that could be used that have not been considered here.

However, these examples are an attempt to show the kind of flexibility and potential for manufacturers to innovate their product lines. This provision will allow a format for product manufacturers to explore expanded options to provide more efficient and effective products while achieving compliance to help CARB reach and maintain Air Quality goals.



Once approved, the IPE product would have its own unique VOC limit which CARB enforcement and laboratory could check for compliance, the same as any other product.

Below is the Regulatory Language.

**Innovative Products.**

- (a) The Executive Officer shall exempt a consumer product from the VOC limits specified in Section 94509(a) if a manufacturer demonstrates by clear and convincing evidence that, due to some characteristic of the product formulation, design, delivery systems or other factors, the use of the product will result in less VOC emissions as compared to:
  - (1) the VOC emissions from a representative consumer product which complies with the VOC limits specified in Section 94509(a), or
  - (2) the calculated VOC emissions from a noncomplying representative product, if the product had been reformulated to comply with the VOC limits specified in section 94509(a). VOC emissions shall be calculated using the following equation:

$$E_R = E_{NC} \times VOC_{STD} \div VOC_{NC}$$

where:

$E_R$  = The VOC emissions from the noncomplying representative product, had it been reformulated.

$E_{NC}$  = The VOC emissions from the noncomplying representative product in its current formulation.

$VOC_{STD}$  = the VOC limit specified in 94509(a).

$VOC_{NC}$  = the VOC content of the noncomplying product in its current formulation.

If a manufacturer demonstrates that this equation yields inaccurate results due to some characteristic of the product formulation or other factors, an alternative method which accurately calculates emissions may be used upon approval of the Executive Officer.

- (b) For the purposes of subsections (a) and (f), “representative consumer product” means a consumer product which meets all of the following criteria:
  - (1) the representative product shall be subject to the same VOC limit in Section 94509(a) as the innovative product.





- (2) the representative product shall be of the same product form as the innovative product, unless the innovative product uses a new form which does not exist in the product category at the time the application is made.
  - (3) the representative product shall have at least similar efficacy as other consumer products in the same product category based on tests generally accepted for that product category by the consumer products industry.
- (c) The Executive Officer shall exempt an aerosol “Hair Finishing Spray,” “Dry Shampoo,” or “Personal Fragrance Product” product from the VOC limits specified in Section 94509(a) if the product manufacturer demonstrates by clear and convincing evidence that the proposed innovative product meets all four of the following criteria:
- (1) At least 50 percent by volume of propellant ingredients are compressed gas, nitrogen, or carbon dioxide;
  - (2) the replacement of HFC-152a propellant with compressed air, nitrogen, or carbon dioxide propellant will result in the proposed innovative product having a lower global warming potential (GWP) compared to a representative HFC-152a product.
    - (A) The global warming potential of the proposed innovative product shall be determined by using the 100-Year GWP values from the Intergovernmental Panel on Climate Change’s (IPCC) Fourth Assessment Report IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland, 104 pp.);
    - (B) For a substance for which no GWP value exists in the IPCC’s Fourth Assessment Report, but for which a GWP value does exist in IPCC’s Fifth Assessment Report (IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp), the GWP of the substance shall be determined by using the 100-Year Global Warming Potential values from the IPCC Fifth Assessment Report.
    - (C) For a substance for which no GWP value exists in IPCC’s Fourth Assessment Report or the IPCC Fifth Assessment Report, the GWP value of the substance shall be zero.



(3) the non-propellant mass of the proposed innovative product does not exceed the non-propellant mass of the representative HFC-152a product; and

(4) the ozone forming potential of the proposed innovative product does not exceed that of the representative HFC-152a product.

(A) Assignment of a substance's Maximum Incremental Reactivity (MIR) values for the purposes of determining a product's ozone forming potential shall be conducted pursuant to subsections 94509(r)(5)(A)-(D) and (F)-(I)

(B) For fragrance, the MIR value for terpinolene in section 94700 must be used to calculate the product ozone forming potential.

(d) For the purposes of subsections (c) and (f) of this section, "representative HFC-152a product" means a consumer product that meets either of the following criteria:

(1) has the product formulation identified in Table 94511(d)(1) for the applicable product category; or

(2) whose propellant mass is at least 50 percent HFC-152a; whose fragrance content does not exceed that of the proposed innovative product; and which meets the criteria identified in subsection 94511(b)(1) through (3).

(3) where the percent of HFC-152a is reduced by 50% from the representative product.



**Table 94511(d)(1): Representative HFC-152a Product Formulations**

Product Category and Applicable VOC Standard	Weight Percent by Ingredient				
	Ethanol	HFC-152a	Fragrance	Other VOC or LVP-VOC*	Non-Volatiles and Exempt VOCs**
Hair Finishing Spray: 50% VOC	45	45	0.1	3.9	6
Dry Shampoo: 55% VOC	30	29	0.2	30.8	10
Dry Shampoo: 50% VOC	30	33	0.2	26.8	10
Personal Fragrance Product: 70% VOC	40	15	2	30	13
Personal Fragrance Product: 50% VOC	30	30	2	22	16

\* Includes VOCs and LVP-VOCs. Average MIR of 0.9.

\*\* MIR of 0.00.

(e) The Executive Officer shall exempt an aerosol product that is a Hair Spray, Dry Shampoo or Personal Fragrance from the VOC limit specified in section 94509(a) if the product manufacturers demonstrate by clear and convincing evidence that the proposed innovative product meets all four of the following criteria:

(1) The propellant/solvent blend total percentage is the same as the Representative Sample in Table 94511 (c)1 or of a Representative product as described in Table 94511 (e) 1.



Propellant + Solvent Blend = Propellant/Solvent Blend

(2) the replacement of HFC-152a propellant will result in the proposed innovative product having at least a 50% reduction in weight of global warming potential (GWP) compounds compared to a representative HFC-152a product as described in Table 92511 (e) 1.

A – B = C

A – HFC-152a content in original formula

B – HFC-152a content in proposed IPE formula

C – HFC-152a content is less than 50% of original formula.

- (A) The global warming potential of the proposed innovative product shall be determined by using the 100-Year GWP values from the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland, 104 pp.);
- (B) For a substance for which no GWP value exists in the IPCC's Fourth Assessment Report, but for which a GWP value does exist in IPCC's Fifth Assessment Report (IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp), the GWP of the substance shall be determined by using the 100-Year Global Warming Potential values from the IPCC Fifth Assessment Report.
- (C) For a substance for which no GWP value exists in IPCC's Fourth Assessment Report or the IPCC Fifth Assessment Report, the GWP value of the substance shall be zero.

(3) The propellant/solvent blend percentage cannot exceed the MIR Value of the representative product as described in Table 94511 (e) 1.

A – B = C

A – MIR Value of Representative sample

B – MIR Value of Proposed IPE formula

C- Cannot be a value that is negative



A) Assignment of a substance’s Maximum Incremental Reactivity (MIR) values for the purposes of determining a product’s ozone forming potential shall be conducted pursuant to subsections 94509(r)(5)(A)-(D) and (F)-(I)

(B) For fragrance, the MIR value for terpinolene in section 94700 must be used to calculate the product ozone forming potential.

(4) The Executive Officer will designate a new VOC limit for the Innovative Product. This new VOC limit is enforceable by CARB.

**Table 94511(e)(1): Representative HFC-152a Product Formulations**

Product Category and Applicable VOC Standard	Weight Percent by Ingredient				
	Solvent/Propellant Blend		Fragrance	Other VOC or LVP-VOC*	Non-Volatiles and Exempt VOCs**
	Ethanol	HFC-152a			
Hair Finishing Spray: 50% VOC	45	45	0.1	3.9	6
Dry Shampoo: 55% VOC	30	29	0.2	30.8	10
Dry Shampoo: 50% VOC	30	33	0.2	26.8	10
Personal Fragrance Product: 70% VOC	40	15	2	30	13



~~(e)~~ A manufacturer shall apply in writing to the Executive Officer for any exemption claimed under this subsection (a). ~~The application shall include the supporting documentation that demonstrates the reduction of emissions from the innovative product, including the actual physical test methods used to generate the data and, if necessary, the consumer testing undertaken to document product usage. In addition, the applicant must provide any information necessary to enable the Executive Officer to establish enforceable conditions for granting the exemption including the VOC content for the innovative product and test methods for determining the VOC content.~~ All information submitted by a manufacturer pursuant to this section shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Sections 91000-91022.

(1) For products that meet the criteria identified in subsections 94511(a) and (b), the application shall include the supporting documentation that demonstrates the reduction of emissions from the innovative product, including the actual physical test methods used to generate the data and, if necessary, the consumer testing undertaken to document product usage. In addition, the applicant must provide any information necessary to enable the Executive Officer to establish enforceable conditions for granting the exemption including the VOC content for the innovative product and test methods for determining the VOC content.

(2) For products that meet the criteria identified in subsections 94511(c) and (d), the application shall include the supporting documentation that demonstrates the criteria identified in subsections (c)(1) through (4) are met, including the name, mass, weight percent, density, reactivity, and GWP for all ingredients present in an amount greater than or equal to 0.1 percent by weight of the product formulation, and all supporting calculations or analytical measurements. In addition, the applicant must provide any information necessary to enable the Executive Officer to establish enforceable conditions for granting the exemption, including the VOC content and ozone forming potential of the innovative product.

(g) A consumer product which reduces VOC emissions relative to the representative consumer product due to VOC combustion (including, but not limited to, catalytic combustion) shall be ineligible for any exemption provided in this section.

(h) Within 30 days of receipt of the exemption application the Executive Officer shall determine whether an application is complete as provided in section 60030(a), Title 17, California Code of Regulations.



- (j) Within 90 days after an application has been deemed complete, the Executive Officer shall determine whether, under what conditions, and to what extent, an exemption from the requirements of Section 94509(a) will be permitted. The applicant and the Executive Officer may mutually agree to a longer time period for reaching a decision, and additional supporting documentation may be submitted by the applicant before a decision has been reached. The Executive Officer shall notify the applicant of the decision in writing and specify such terms and conditions that are necessary to ensure that emissions from the product will meet the emissions reductions specified in subsection (a), and that such emissions reductions can be enforced.
- (i) In granting an exemption for a product the Executive Officer shall establish conditions that are enforceable. These conditions shall include the VOC content of the innovative product, dispensing rates, application rates, and any other parameters determined by the Executive Officer to be necessary. The Executive Officer shall also specify the test methods for determining conformance to the conditions established. The test methods shall include criteria for reproducibility, accuracy, and sampling and laboratory procedures.
- (k) For any product for which an exemption has been granted pursuant to this section, the manufacturer shall notify the Executive Officer in writing within 30 days of any change in the product formulation or recommended product usage directions, and shall also notify the Executive Officer within 30 days if the manufacturer learns of any information which would alter the emissions estimates submitted to the Executive Officer in support of the exemption application.
- (l.) Modification of Product Ingredients for an Existing Exemption: Where one or more ingredients in a product for which an exemption has been granted based upon the eligibility criteria in subsection (c) has been modified, the product shall be considered a modified product and:
- (1) the manufacturer must notify the Executive Officer of an ingredient modification within 30 days, but need not apply for a new exemption for the modified product if all of the following three conditions are met:
- (A) The modified ingredient or ingredients meet the definition of fragrance as specified in section 94508(a)(54) and/or do not meet the definition of 'Reactive Organic Compound' as specified in section 94509(r)(1)(l);



(B) The total mass of the modified ingredient or ingredients that meet the criteria in subsection (A) represent no more than 0.5 percent of the total product weight for “Hair Finishing Spray” and “Dry Shampoo” and 2.5 percent of the total product weight for “Personal Fragrance Product”; and

(C) the modification does not increase the product’s ozone forming potential.

(2) If the modified product does not meet all of the conditions in subsections (A) through (C), the manufacturer must apply for a new exemption for the modified product pursuant to subsection (e)(2).

**(m)** If the VOC limits specified in Section 94509(a) are lowered for a product category through any subsequent rulemaking, all innovative product exemptions granted for products in the product category, except as provided in this subsection (~~(h)~~), shall have no force and effect as of the effective date of the modified VOC standard. This subsection (~~(h)~~) shall not apply to innovative product exemptions granted to the following:

(1) those innovative products which have VOC emissions less than the applicable lowered VOC limit and for which a written notification of the product's emissions status versus the lowered VOC limit has been submitted to and approved by the Executive Officer at least 60 days before the effective date of such limits; and

(2) an ‘Automatic Aerosol Air Freshener’ product subject to a 30% VOC standard pursuant to Section 94509(a).

**(n)** If the Executive Officer believes that a consumer product for which an exemption has been granted no longer meets the criteria for an innovative product specified in subsection (a), the Executive Officer may modify or revoke the exemption as necessary to assure that the product will meet these criteria. The Executive Officer shall not modify or revoke an exemption without first affording the applicant an opportunity for a public hearing held in accordance with the procedures specified in Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 1, Article 4 (commencing with Section 60040), to determine if the exemption should be modified or revoked.

### **Conclusion**

The NAA supports CARB’s willingness to provide alternatives to command-and-control regulations and will continue to work with CARB on the Compressed Gas portion of this IPE. Currently, given the unique and restrictive characteristics of compressed gas this endeavor may hinder industry’s ability to innovate to help CARB achieve its goals now and in the future. The





current language proposed is unclear and confusing. In addition, CARB staff has not provided one viable example of a product that could utilize the Compressed Gas IPE.

This proposal adds an additional IPE provision to CARB's original IPE proposal. It still maintains the original goal which is to provide Industry a pathway to limit the use of GWP compound while maintaining the OFP of products. Actually, this proposal could reduce any increase in GWP compounds and could reduce the amount of GWP compounds currently being utilized.

Reactivity is sound science and utilizing it within an IPE allows CARB to leverage the creativity of Industry to help meet our mutual goals. This proposal balances the fine line between Ozone formation and reducing GWP compounds. NAA has proposed this new language for the IPE. However, the most important issue is for CARB to allow the use of Reactivity in the IPE Provision. NAA looks forward to continuing to work with CARB for some type of Reactivity provision in the IPE. Finally, the use of the IPE provision allows CARB to review in detail any product that proposes to use this provision.

CARB maintains the ability to grant or deny any manufacturer the use of this provision, thus ensuring that VOC reductions are maintained. NAA suggests that both IPEs be considered and be subject to a 15-day change.

The NAA looks forward to working with CARB to make this provision workable, and more importantly, useable for the Industry.

Thank you in advance for considering this proposal. Any questions please contact our consultant, Doug Raymond at [djraymond@me.com](mailto:djraymond@me.com) or 440-339-4539.

On Behalf of the NAA,

A handwritten signature in black ink that reads 'Joe Bowen'. The signature is written in a cursive style with a large, looping initial 'J'.

Joe Bowen

Cc: Ravi.Ramalingam@arb.ca.gov

joe.calavita@arb.ca.gov

josh.berghouse@arb.ca.gov

david.edwards@arb.ca.gov



# Comment Log Display

## Below is the comment you selected to display. Comment 2 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: guy  
Last Name: woods  
Email Address: greenpro@sbcglobal.net  
Affiliation:

Subject: no methlene chloride in paint removers

Comment:

Sirs Will there be any changes on the VOC for paint removers since methlene chloride is banned in paint removers by the Department of Toxic Control? Methlene chloride along with acetone was a low VOC in paint removers. Thanks Guy Woods Green Products

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-10 15:42:16

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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# Comment Log Display

## Below is the comment you selected to display. Comment 3 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Joseph  
Last Name: Yost  
Email Address: [jyost@thehcpa.org](mailto:jyost@thehcpa.org)  
Affiliation: Household & Commercial Products Assoc.

Subject: Comments on consumerproducts2021; Agenda Item # 21-2-1  
Comment:

Dear Clerk of the Board,

The Household and Commercial Products Association (HCPA) appreciates the opportunity to provide comments on the proposed amendments the Consumer Products Regulation; Board Agenda Item # 21-2-1. See Attachment.

Respectfully,  
Joseph T. Yost

Attachment: [www.arb.ca.gov/lists/com-attach/3-consumerproducts2021-WzNRNFahUWMFXAhr.docx](http://www.arb.ca.gov/lists/com-attach/3-consumerproducts2021-WzNRNFahUWMFXAhr.docx)

Original File Name: HCPA Comments - consumerproducts2021 - Agenda Item # 21-2-1.docx

Date and Time Comment Was Submitted: 2021-03-12 09:29:42

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Innovative Products For **Home. Work. Life.**

March 12, 2021

sent *via* electronic mail

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on consumerproducts2021; Board Agenda Item # 21-2-1

Dear Board Members:

The Household and Commercial Products Association (HCPA) appreciates the opportunity to provide comments to the California Air Resources Board (CARB) on the proposed amendments to the state's comprehensive Consumer Products Regulation.<sup>1</sup>

HCPA appreciates the open, transparent, and collaborative manner in which CARB staff conducted this complex rulemaking. Despite significant logistical challenges posed by the COVID-19 pandemic, CARB staff worked hard to ensure that all interested stakeholders had the opportunity to participate in the development of the proposed amendments.

HCPA member companies take seriously the environmental health and safety benefits of our products, and continuously seek to improve them. Therefore, HCPA member companies commit to expend the time and money to develop the new technologies necessary to reformulate their products to meet the aggressive and technology-forcing VOC standards that will be established by this proposed regulation.

HCPA's commitment to meet these new VOC standards and other regulatory provisions is consistent with our member companies' long-standing efforts to work constructively and cooperatively with CARB staff, environmental groups, and other stakeholders. During the past 31 years, HCPA member companies spent hundreds of millions of dollars in researching and developing reformulated products to help improve air quality in California while maintaining our industry's ability to supply effective products that consumers can rely upon to contribute positively to their health, safety, and quality of life.

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<sup>1</sup> The text of the proposed amendments to the California Consumer Products Regulation is posted on the CARB website at: <https://ww3.arb.ca.gov/regact/2021/consumerproducts2021/appa.pdf>. The CARB "Staff Report: Initial Statement of Reasons (ISOR)," notice of the public hearing and other relevant documents are posted at: [https://ww2.arb.ca.gov/rulemaking/2021/consumerproducts2021?utm\\_medium=email&utm\\_source=govdelivery](https://ww2.arb.ca.gov/rulemaking/2021/consumerproducts2021?utm_medium=email&utm_source=govdelivery)

## Statement of Interest

HCPA is the premier trade association representing companies that manufacture and sell \$180 billion annually of products used for cleaning, protecting, maintaining, and disinfecting homes and commercial environments. HCPA member companies employ 200,000 people in the U.S. whose products help consumers and workers to create cleaner, healthier, and more productive lives.

## Comments

### I. Comments on Proposed Definitions and VOC Standards for Product Categories

#### A. Aerosol Air Freshener

Air fresheners provide an efficient and cost-effective way to control and disrupt the cycle of malodors in indoor environments. Malodors are not just an annoyance – they can have significant adverse impacts on human health, behavior, and quality of life, as detailed in the review paper titled, “The Impact of Indoor Malodor: Historical Perspective, Modern Challenges, Negative Effects, and Approaches for Mitigation.”<sup>2</sup> This article was published in *Atmosphere*, an international peer-reviewed journal, as part of a special issue on indoor air quality (January 2020). In summary, this publication consolidates into one article the science-based evidence substantiating the fact that exposure to malodor is harmful to individuals’ health and wellness, and summarizes the technological approaches used by air freshening products to help mitigate such harmful malodors. As noted in this study:

Malodors propagate a variety of psychological, social and economic disturbances, many of which are preventable. As defined at the International Health Conference, ‘health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.’ Although crafted in 1946, this definition of health has remained in use by organizations such as the World Health Organization. Combating the sources and mitigating the impacts of malodors therefore represents an important public health undertaking.<sup>3</sup>

The effective control of malodors is particularly important today as people are spending an extraordinary amount of time indoors during the Coronavirus Pandemic. Many people are exposed to the same indoor air almost 100% of the time. In many cases, these homes are not suitable for such intensive use, with little interior space in relation to the number of people and, in many situations, without adequate systems for indoor air circulation. Moreover, residential

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<sup>2</sup> Pamela Dalton, Ph.D., Anna-Sara Claeson, Ph.D. and Steve Horenziak, M.S., “The Impact of Indoor Malodor: Historical Perspective, Modern Challenges, Negative Effects, and Approaches for Mitigation,” *Atmosphere*, Vol. 11 Issue 2 (Jan. 2020); see <https://www.mdpi.com/2073-4433/11/2/126>.

<sup>3</sup> *Id.* at p. 2, citing Card, A.J. Moving beyond the WHO definition of health: A new perspective for an aging world and the emerging era of value-based care: Redefining health. *World Med. Health Policy* 2017, 91, 127–137.

buildings, particularly in low-income communities, may be located in areas with poor outdoor air quality and consequently cannot achieve better ventilation and air circulation by merely opening the windows. Therefore, affordable approaches to mitigating indoor malodor, such as air freshening products, provide an effective option, when eliminating malodor is often not easily achievable.

1. Definitions – Section 94508(a)(6)(B)

CARB's proposal to redefine the aerosol air freshener product forms required a substantial amount of time and effort by both stakeholders and CARB staff to develop new definitions that more accurately reflect current product technology and use. HCPA member companies appreciate CARB staff's efforts to ensure that these new definitions provide the clarity that manufacturers require to formulate products to comply with the regulatory standards.

HCPA member companies support the definitions that CARB is proposing for each of the four new product categories:

- Manual Aerosol Air Freshener
- Automatic Aerosol Air Freshener
- Concentrated Aerosol Air Freshener
- Total Release Aerosol Air Freshener

Within the Automatic Aerosol Air Freshener category, HCPA also supports the proposed definition of, and the requirement for, the use of an "Automatic Air Freshening Dispenser."

2. VOC limits – Section 94509(a)

a. Manual Aerosol Air Freshener

HCPA member companies are committed to reformulating products to comply with the stringent proposed two tiers of VOC standards for this proposed new product category. The "Manual Aerosol Air Freshener" product category will include products that are currently regulated as "Single Phase Aerosol" (30 percent VOC standard by weight) and "Double Phase Aerosol" (20 percent VOC standard by weight) air freshener products.<sup>4</sup> HCPA member companies are confronted with a significant technological challenge to reformulate these products to comply with the proposed two tiers of VOC standards:

- 10 percent VOC standard by weight by 2023; and
- Five percent VOC standard by weight by 2027.

Based on the CARB 2015 Consumer Products Survey data, ethanol constitutes a significant portion the VOC content for this product category.<sup>5</sup> An adequate amount of ethanol is critical to

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<sup>4</sup> ISOR at p. III-35.

<sup>5</sup> Data from the 2015 Consumer Product Survey data (CARB 2019) indicated that ethanol accounts for approximately 40 percent of the VOC content of Manual Aerosol Air Fresheners. Figure III-2: Manual Aerosol Air Freshener Speciation, ISOR at p. III-36. See also CARB, "Regulatory Strategies Work Group



create and retain particle breakup necessary to prevent droplets from falling to the floor and causing a potential slip hazard and/or causing degradation of furniture and floor finishes. Therefore, as an initial matter, it will be technologically challenging for manufacturers to reformulate effective and safe products to comply with the proposed 10 percent VOC standard by the January 1, 2023 compliance date.

Furthermore, manufacturers will be required to reformulate many products a second (and possibly a third) time to comply with the very stringent five percent VOC standard by weight that will take effect on January 1, 2027 with the current two percent fragrance exemption and then again by January 2031 with a 0.25 percent exemption for the VOC content of fragrance.<sup>6</sup> Reformulating products to meet these proposed VOC standards will require manufacturers and fragrance houses to expend a considerable amount of time and money to perform the necessary research, development, engineering and consumer testing for ensuring compliance.

HCPA member companies are committed to producing products that meet these challenging two tiers of VOC standards, meet consumers' expectations, and are safe when used according to label instructions.

b. Automatic Aerosol Air Freshener

HCPA member companies support the proposal to maintain the VOC standard of 30 percent by weight for this product category, which is the currently applicable VOC limit for the "Single Phase Aerosol Air Freshener" category. To comply with this regulatory standard, these niche products<sup>7</sup> must be used with an "Automatic Air Freshening Dispenser," a specific type of device that must meet very prescriptive requirements.<sup>8</sup> Formulating products that meet the requirement to function in this unique device will significantly limit the number of products that can comply with the clear definition for this category of aerosol air fresheners.

c. Concentrated Aerosol Air Freshener

HCPA member companies support the proposed VOC standard for this niche product category.<sup>9</sup> It will be technologically challenging to reformulate products to comply with the proposed VOC standard of 15 percent by weight by the January 1, 2023 compliance date, and the second tier VOC standard of 10 percent by weight by the January 1, 2027 compliance date. In addition to complying with stringent VOC limits, manufacturers must also comply with unique requirements

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Webinar" (Oct 17, 2019) at Slide #13. See [https://ww2.arb.ca.gov/sites/default/files/2020-04/Remediated\\_work\\_group\\_presentation\\_101719.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-04/Remediated_work_group_presentation_101719.pdf).

<sup>6</sup> See proposed Section 94510(C)(4).

<sup>7</sup> Based on the 2015 Consumer Product Survey data (CARB 2019), the "Automatic Aerosol Air Freshener" products accounted for less than three percent of the reported aerosol air freshener products. See ISOR at p. III-35.

<sup>8</sup> See proposed 17 CCR § 94508(a)(6)(B)(1).

<sup>9</sup> Based on the 2015 Consumer Product Survey data (CARB 2019), the "Concentrated Aerosol Air Freshener" products accounted for 0.05 percent for the reported aerosol air freshener products. See ISOR at p. III-37.

that a product: (1) be designed with a unique valve to ensure that the product dispenses no more than 185 microliters with each activation; and (2) is sold in aerosol containers of two ounces or less by weight. HCPA member companies commit to reformulate products to ensure that they comply with these unique and prescriptive requirements.

d. Total Release Aerosol Air Freshener

HCPA member companies support the proposed VOC standard for products in this niche subcategory.<sup>10</sup> To comply with the proposed VOC standard of 25 percent by weight will be challenging since the product must also dispense all or most of the contents during a single application and be sold in containers of five ounces or less by weight. HCPA member companies commit to work to reformulate products to comply with these strict requirements.

3. General comment: empty aerosol air freshener containers are recyclable.

HCPA members respectfully comment on the statement made by CARB staff in the description of the Air Freshener Product category, which in pertinent part states that these products are "...packaged in a disposable aerosol container."<sup>11</sup> While it is true that products packaged in aerosol containers are not refillable, aerosol containers are typically made of steel or aluminum, both of which are recyclable. The California Department of Resources Recycling and Recovery (CalRecycle) states that "Aerosol containers are generally made of steel, which is easily recycled."<sup>12</sup>

In 2016, HCPA (formerly the Consumer Specialty Products Association), the Can Manufacturers Institute, the Aluminum Association, and the Steel Recycling Institute sponsored a study<sup>13</sup> organized by the Sustainable Packaging Coalition, a project of GreenBlue, which found that, as pertains to California, approximately 87 percent of residents have access for recycling aerosol containers curbside and 28 percent have drop-off access for recycling.

B. Aerosol Crawling Bug Insecticide and Bed Bug Insecticide

The efficacy of aerosol crawling bug insecticide products is critically important since these

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<sup>10</sup> Based on the 2015 Consumer Product Survey data (CARB 2019), the "Total Release Aerosol Air Freshener" products accounted for 0.05 percent for the reported aerosol air freshener products. See ISOR at p. III-35.

<sup>11</sup> ISOR at p. III-33.

<sup>12</sup> "[Aerosol and Paint Containers](#)" CalRecycle (Jan. 9, 2020).

<sup>13</sup> 2015-16 Centralized Study on Availability of Recycling is available at: <http://greenblueorg.s3.amazonaws.com/smm/wp-content/uploads/2017/06/SPCs-Centralized-Availability-of-Recycling-Study-3.pdf>

products kill or control pests of “significant public health importance”<sup>14</sup> such as cockroaches, spiders, and scorpions, which can carry infectious diseases. In addition to complying with the applicable CARB VOC standard, these products must meet rigorous efficacy testing requirements established by the U.S. Environmental Protection Agency (EPA). Products with claims to kill or control pests of significant public health importance must provide at least 90 percent efficacy in laboratory trials before the products can be registered.<sup>15</sup> This EPA registration is a prerequisite for a product to be registered by the California Department of Pesticide Regulation for sale or use in the State.

Developing the proposed VOC standards for the Aerosol Crawling Bug Insecticide and the Bed Bug Insecticide product categories required a significant amount of time, effort, and analysis of data by both CARB staff and stakeholders to fully address public health concerns.

#### 1. Aerosol Crawling Bug Insecticide

HCPA member companies are committed to reformulating products to comply with the technology-forcing eight percent by weight VOC standard for this product category. While propellants constitute the majority of the VOCs in these products,<sup>16</sup> these propellants are also solvents that aid in the delivery and the efficacy of the active pesticidal ingredient to control the target pest. Complying with the proposed eight percent by weight VOC standard would likely require product manufacturers to move away from using hydrocarbon propellants, which currently allows product formulators to precisely control the pressure in the aerosol container to achieve the desired safety, efficacy, and spray characteristics.

HCPA member companies do not agree with CARB staff’s stated strategies for meeting the proposed VOC standard. Reformulation will entail more than simply “...substituting VOC petroleum distillates with LVP-VOC petroleum distillates; using other LVP-VOC solvents; reducing the hydrocarbon propellant content; and substitution of VOC propellants with exempt or compressed gas propellants.”<sup>17</sup>

The aerosol delivery form is a complex system – both the formulation’s physical and chemical properties and container stability must be retested after any formulation modification. Further, altering the formulation can modify how the product sprays (*i.e.*, particle size distribution). More

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<sup>14</sup> U.S. EPA Pesticide Registration (PR Notice) Notice 2002-1. Section 28(d) of the Federal Insecticide Fungicide and Rodenticide Act [7 U.S.C. § 136w-3(d)], requires EPA, in coordination with the U.S. Department of Health and Human Services and the U.S. Department of Agriculture to identify pests of significant public health importance and, in coordination with the Public Health Service, to develop and implement programs to improve and facilitate the safe and necessary use of chemical, biological and other methods to combat and control such pests of public health importance. See <https://www.epa.gov/sites/production/files/2014-04/documents/pr2002-1.pdf>.

<sup>15</sup> U.S. EPA, “Guidance on Efficacy Testing for Pesticides Targeting Certain Invertebrate Pests,” see <https://www.epa.gov/pesticide-registration/guidance-efficacy-testing-pesticides-targeting-certain-invertebrate-pests>.

<sup>16</sup> See ISOR, “Figure III-15: Aerosol Crawling Bug Insecticide Speciation,” at p. III-66.

<sup>17</sup> See ISOR at p. III-68.

importantly, particle size distribution can negatively impact efficacy, even if the active ingredient remains unchanged. The formulation is designed to deliver a narrow range of droplet sizes and changes would significantly alter the product functionality. Research has been performed on aerosol products showing that changes in droplet size, even small changes in the range of 14-30 microns, significantly changes the efficacy of an aerosol pesticide.<sup>18</sup>

Aerosol crawling bug insecticides need to deliver the product in a spray pattern and particle size with optimal range for safety and efficacy. Oil based products will have the tendency to create a smaller particle size with the higher pressure from the use of a compressed gas. With water-based products the effect of higher pressure from a compressed gas may be variable depending on formulation.

In addition, the use of non-VOC propellants, such as compressed gas, could raise the pressure in the product containers. This could have a negative effect on product safety. Higher aerosol container pressure will cause more breakup of the spray pattern creating smaller particles. This combination of smaller particles and greater pressure in the delivery could create a situation in which the particles would “bounce-back” towards the applicator (*i.e.*, the consumer).

Furthermore, the use of compressed gases or lowering the amount of hydrocarbon propellants may not produce a sufficient amount of dispersant energy to completely empty the contents of the container, causing the partially empty product container to be disposed in the household hazardous waste stream rather than being recycled.<sup>19</sup> While this consideration is outside the scope of the Consumer Products Regulation, this could have a negative impact on California’s environment and manufacturers’ sustainability profiles.

HCPA member companies do not agree with the statement in the ISOR that, “Staff’s evaluation of the ‘Crawling Bug Insecticide’ (aerosol) product category shows that some complying products already exist.”<sup>20</sup> HCPA members believe that products reported at the eight percent by weight VOC standard in the 2015 survey may not have included pests of “significant public health importance,” or may be “minimum risk pesticides” (*i.e.*, FIFRA 25(b) products),<sup>21</sup> which are exempt from EPA registration requirements, including EPA testing requirements for efficacy and

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<sup>18</sup> “Effect of different droplet size on the knockdown efficacy of directly sprayed insecticides,” Masaaki Subira, Yoshihiro Horibe, Hitoshi Kawadab and Masahiro Takagi, SCI (wileyonlinelibrary.com) DOI 10.1002/ps.2157 (May 11, 2011). See <http://www.tm.nagasaki-u.ac.jp/medical/PDF/Pest%20Manag%20Sci%2067%201115-1123.pdf>.

<sup>19</sup> In pertinent part, the CalRecycle website states, “Aerosol containers are generally made of steel, which is easily recycled; however, full or partially-full aerosol containers cannot be placed at the curb because they are under pressure and may pose a hazard to solid waste workers and others. The best bet with aerosols is to completely use up the contents of the can, including the propellant. If this cannot be safely done, the product should be disposed at your local household hazardous waste (HHW) collection site or at a locally sponsored HHW event.” See <https://www.calrecycle.ca.gov/metals/paintcans>.

<sup>20</sup> ISOR at p. III-68. See also Table III-15 “Crawling Bug Insecticide (aerosol) Proposal” at p. III-68.

<sup>21</sup> Under section 25(b) of FIFRA, certain pesticides products are considered to be “minimum risk pesticides” if the active ingredients in the pesticide product are listed in 40 CFR 152.25. See also [Title 3 California Code of Regulations Sections 6147-6148](#).

toxicity. Thus, HCPA members believe that the products listed in Table III-15 cannot be compared fairly with the reported products in the survey that comply with the current 15 percent by weight VOC standard.

Moreover, since EPA updated the efficacy testing requirements after the 2015 survey data was submitted, it is possible that the products cited by CARB staff as complying with the eight percent by weight VOC standard may not meet the current EPA requirement for efficacy data to support a “knockdown,” “quick kill” or “kills on contact” claim.<sup>22</sup>

Notwithstanding the significant technological challenges discussed above, HCPA member companies commit to expend the time, money, and effort necessary to conduct the research and development needed to reformulate products to comply with the proposed eight percent by weight VOC standard by the proposed effective date.

HCPA member companies will maintain an ongoing dialogue with CARB staff to communicate progress in meeting this new regulatory standard while continuing to comply with EPA's current efficacy requirements for controlling pests of significant public health importance.

Finally, as detailed in Section III, “Comments on the Proposed 0.25 Percent Exemption for the VOC Content of Fragrance in Specified Product Categories” of these comments, HCPA respectfully requests that CARB include Aerosol Crawling Bug Insecticide as one of the product categories listed in Section 94510(c)(4) of the final regulation. This will provide product manufacturers the much needed flexibility to comply with the very stringent proposed eight percent by weight VOC standard by allowing an exemption of 0.25 percent of the VOC content of fragrance for these products.

## 2. Bed Bug Insecticide

HCPA member companies support the proposed definition<sup>23</sup> and VOC regulatory standards for this product category. HCPA member companies commend CARB staff’s diligent effort in working with stakeholders to address the significant public health concerns related to bed bugs. The proposed definition of “Bed Bug Insecticide” precisely identifies the target insects by identifying the family, genus, and species of bed bugs, which effectively limits the crawling arthropods that can be included in this product category. Moreover, by maintaining the 15 percent by weight VOC standard for the aerosol form and the 20 percent by weight VOC standard for all (other) forms, CARB’s proposal will ensure that manufacturers can continue to meet the EPA efficacy testing requirements needed to formulate effective products for controlling bed bugs.

## **II. Comments on the Proposed Sunset of the Two Percent Fragrance Exemption - Section 94510(c)(2)**

HCPA members do not support the proposed sunset of the current two percent fragrance exemption which impacts almost all regulated products manufactured on or after January 1, 2031.

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<sup>22</sup> ISOR at p. III-68.

<sup>23</sup> See proposed Section 94508(a)(76)(A).

Fragrance is an important component of almost every consumer product: it encourages proper product use; covers base malodors; and creates a mechanism for product manufacturers to differentiate between brands and products. For the past 30 years, the current exemption that allows product formulators to include a *de minimis* level of fragrance in products<sup>24</sup> has provided much-needed flexibility to comply with CARB's increasingly stringent VOC regulatory standards to meet customers' expectations. Consequently, the proposal to sunset the two percent fragrance exemption will constitute a *de facto* reduction of the VOC standards for almost every product category included in the Consumer Products Regulation.

Manufacturers only use the necessary amount of fragrance ingredients required to cover the malodor of base active ingredients, to prevent over-use by consumers and to differentiate their brands and products. Moreover, CARB's own data provides irrefutable evidence that product manufacturers do not over-use the current fragrance exemption. The sunset of the two percent fragrance exemption is estimated to result in producing only 0.3 tons per day of additional VOC reductions towards meeting California's State Implementation Plan (SIP) commitment for 2031.<sup>25</sup>

A. Proposed sunset of the two percent fragrance exemption will impose significant burdens on product manufacturers while achieving only minimal additional VOC reductions.

If the proposed Section 94510(c)(2) is adopted, the sunset of the two percent fragrance exemption will significantly alter the existing process for formulating and manufacturing consumer products. Manufacturers frequently produce a product that has a single base formulation but is manufactured with different fragrances to meet customer preferences. The fragrance ingredients that create these various scents have different levels of VOC and LVP-VOC content. Currently, manufacturers typically do not need to speciate the fragrance ingredients since the fragrance houses communicate that the supplied fragrance ingredients comply with the requirements of the current two percent exemption in Section 94510(c). However, if this exemption is eliminated, product manufacturers will require detailed speciation for the VOC and LVP-VOC content for each of the different fragrance compounds when formulating a product to determine whether each individually scented variant of that product complies with the applicable VOC limit.

Since California's consumer product VOC limits are so strict and technology-forcing, many manufacturers currently formulate their products to be at – or just below – the applicable regulatory limit. The proposed sunset of the two percent fragrance exemption will require manufacturers to expend extensive amounts of labor and capital resources to review compliant product formulations to ensure that these products will continue to meet applicable VOC limits without the currently allowable fragrance exemption. In many cases, manufacturers may be required to completely reformulate a large number of consumer products. And the fragrance industry may have to reformulate a huge number of fragrances, which could include extensive

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<sup>24</sup> As explained in the CARB Staff's Technical Support Document for the Phase 1 Rulemaking for Consumer Products (August 1990), "This exemption was established to allow manufacturers a *de minimus* [sic] level of these substances in various products such that the products may be marketed in an appealing manner to consumers." See <https://ww3.arb.ca.gov/consprod/regact/ph1cptsd.pdf> at pp.6-7.

<sup>25</sup> ISOR at pp. ES-4 and I-20.

research and development to check base compatibility, consumer product testing and stability testing.

Furthermore, product manufacturers and fragrance houses need the narrowly-tailored fragrance exemption to provide a reasonable degree of flexibility so that they can quickly respond to unforeseen events (disruptions in supply chains, unavailability of essential raw materials) to make necessary changes to product formulations and fragrance ingredients. It is neither reasonable nor realistic to require manufacturers and/or fragrance houses to reassess product compliance every time ingredient adjustments are required in responding to unforeseen circumstances.

B. The proposed sunset of the two percent fragrance exemption will not “simplify compliance determinations.”

HCPA members do not agree with CARB’s statement that the proposal to sunset the current fragrance exemption will “simplify compliance determinations.”<sup>26</sup> Currently, CARB can buy and test a single variant of a product to determine compliance. However, if the VOC content of fragrance is required to be included in determining compliance, the Enforcement Division would have to purchase each differently-scented variant of a particular product and the Monitoring and Laboratory Division (MLD) would be required to include the speciation of fragrance ingredients contained in each differently-scented product as part of its determination of the total volatile material contained in that product. Because the VOC content of each fragrance may be different, there is a potential for the same product to be compliant with one scent and non-compliant using another scent. Moreover, due to the large number and complexity of fragrance ingredients that comprise a single fragrance mixture, MLD will still be required to contact product manufacturers to obtain information about the VOC content of fragrance compounds.

C. The proposed sunset of the two percent fragrance exemption is not needed to “encourage transparency.”

HCPA member companies take umbrage with the erroneous statement that “The Two Percent Fragrance Exemption enables consumer product manufacturers to ignore the properties of fragrance they purchase from third-party vendors... ”<sup>27</sup> Manufacturers and fragrance houses carefully review and assess **all** ingredients used to formulate products to ensure compliance with applicable federal and state regulatory requirements. In addition, HCPA member companies go beyond the boundaries of regulatory compliance and are committed to providing consumers with understandable information about product ingredients and to formulating products using sustainable chemistry.

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<sup>26</sup> ISOR at p. III-75.

<sup>27</sup> ISOR at p. II-30.

- D. If the proposed Section 94510(c)(2) is approved, HCPA requests confirmation that the following compliance calculation is accurate.

Under proposed Section 94510(c)(2), and in conjunction with the proposed revisions to Section 94510(d), HCPA respectfully requests confirmation of the fragrance exemption compliance calculation example below for products manufactured before January 1, 2031:

Product A is subject to a 50% VOC standard, it contains:

- 49% VOC in base formula
- 3% fragrance, which is 20% VOC and 80% LVP-VOC

Fragrance VOC exemption calculation:

$3\% \text{ (fragrance)} \times 20\% \text{ (VOC portion of fragrance)} = 0.6\% \text{ (fragrance VOC)}$

$49\% \text{ VOC (base formula)} + 0.6\% \text{ VOC (fragrance)} = 49.6\% \text{ VOC (total)}$

This product would be compliant with the 50% VOC standard and the current two percent fragrance exemption.

CARB staff's confirmation of the above-stated calculation will provide stakeholders with a clear understanding how to comply with proposed Section 94510(c)(2).

### **III. Comments on the Proposed 0.25 Percent Exemption for the VOC Content of Fragrance in Specified Product Categories**

- A. "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products

HCPA member companies support CARB's proposed Section 94510(c)(1), which will allow manufacturers to use up to 0.25% by weight of monoterpenes for "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products as part of two percent fragrance exemption for products manufactured before January 1, 2031. HCPA appreciates this much-needed flexibility to comply with the very stringent VOC standards for these two product categories.

HCPA respectfully requests that CARB modify the date of this proposed provision to take effect immediately upon publication of the final rule. This will eliminate any potential uncertainty about compliance with applicable VOC standards for these two product categories during the time period between the date the final regulation is published and the January 1, 2023 effective date stated in the proposed amendment. HCPA recommends that the following change be included in text of Section 94510(c)(1) in the final regulation:



§ 94510. Exemptions

\* \* \* \*

(c) Except for Pressurized Gas Duster, the VOC limits specified in Section 94509(a) shall not apply to the following:

(1) For “General Purpose Cleaner” (nonaerosol) and “General Purpose Degreaser” (nonaerosol) products manufactured ~~between January 1, 2023, and December 31, 2030,~~ before January 1, 2031, fragrances up to a combined 2 percent by weight and monoterpenes up to a combined 0.25 percent by weight, not to exceed a combined total of 2 percent fragrances and monoterpenes by weight.

\* \* \* \*

HCPA member companies also support the proposed Section 94510(c)(3), which provides an exemption for fragrances and/or monoterpenes up to a combined 0.25 percent by weight for the “General Purpose Cleaner” (nonaerosol) and “General Purpose Degreaser” (nonaerosol) products that are manufactured on or after January 1, 2031.

B. HCPA respectfully requests that CARB add a definition for the term “monoterpenes” in the final regulation.

As currently drafted, the proposed amendments to sections 94510(c)(1) and (c)(3) use the term “monoterpenes” however, the proposed regulation does not communicate how CARB intends to define “monoterpenes.” A narrowly-defined definition is needed to provide the requisite clarity and to eliminate any uncertainty for regulated parties to determine whether their products comply with the amended provisions of sections 94510(c)(1) and (c)(3) and the applicable VOC standards.

HCPA respectfully requests that CARB add a new section 94509(s) in the final regulation to provide the following definition for “monoterpenes.”

94509. Standards for Consumer Products.

\* \* \* \*

(s) Requirements for Monoterpenes. The provisions relating to sections 94510(c)(1) and 94510(c)(3) apply to:

“Monoterpenes,” which means the following chemicals, as listed in the table below, used in General Purpose Cleaner (nonaerosol) and General Purpose Degreaser (nonaerosol) products.

Table 94509(s)

Specified Monoterpenes relating to sections 94510(c)(1) and 94510(c)(3)

Monoterpene	CAS Registry Number
d-limonene	CAS # 5989-27-5
l-limonene	CAS # 5989-54-8

dipentene (dl-limonene)	CAS # 138-86-3 / 7705-14-8
$\alpha$ -pinene	CAS # 80-56-8
$\alpha$ -Pinene (laevo isomer)	CAS # 7785-26-4
$\alpha$ -Pinene (dextro isomer)	CAS # 7785-70-8
$\beta$ -pinene	CAS # 127-91-3
$\beta$ -Pinene (laevo isomer)	CAS # 18172-67-3

This recommended definition is based on ongoing discussions between HCPA members and CARB staff beginning in April 2016 when CARB issued the compliance guidance document titled, "Guidance Pertaining to the Two Percent Fragrance Exemption and Limonene." (Hereinafter referred to as the "Guidance Document.")<sup>28</sup> HCPA member companies continue to support the definition of "specified monoterpenes" with the addition of the chemical compound "dipentene," which is a racemic mixture of the two stereospecific forms of d-limonene and l-limonene.

HCPA also strongly recommends that CARB include the American Chemical Society CAS Registry Numbers<sup>29</sup> for the specifically listed chemical compounds and their associated isomers. The CAS numbers will provide the necessary clarity for product manufacturers and fragrance houses to comply with the amended provisions of Sections 94510(c)(1) and 94510(c)(3). CAS numbers serve as an internationally observed substance identifier by scientists, industry, and regulatory agencies. Including the CAS numbers will remove any potential ambiguity by ensuring that the exemption applies only to these specified monoterpenes.

There is ample precedent for this request. Other California laws and regulations require that certain chemicals include CAS numbers. For example, the California Cleaning Products Right-to-Know Act (SB 258, Lara) requires that the manufacturer of a designated product sold in the state shall post on its Internet Website the name and CAS number of each intentionally added or nonfunctional ingredients.<sup>30</sup> And, the Cosmetic Fragrance and Flavor Ingredient Right to Know Act of 2020 (SB 312, Leyva) requires the CAS number be provided for each ingredient or allergen that is included on a designated list.<sup>31</sup>

HCPA member companies respectfully request that CARB staff conduct a meeting with industry stakeholders to discuss the definition for "monoterpenes" during the 15-day comment period.

HCPA also respectfully requests that upon publication of the final rule, CARB withdraw the Guidance Document since the issues addressed in this document will be incorporated in the final regulation.

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<sup>28</sup> CARB, "Guidance Pertaining to the Two Percent Fragrance Exemption and Limonene for California's Regulation for Reducing Emissions from Consumer Products," (Apr. 19, 2016). See [https://ww2.arb.ca.gov/sites/default/files/2020-04/Remediated\\_frag\\_exempt\\_guide.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-04/Remediated_frag_exempt_guide.pdf)

<sup>29</sup> A CAS Registry Number is a unique numeric identifier assigned to only one chemical substance. CAS numbers are managed and assigned by the American Chemical Society's Chemical Abstracts Service and are universally recognized and used to provide a unique, unmistakable identifier for chemical substances.

<sup>30</sup> Cal. Health & Safety Code § 108954.5(a)(3).

<sup>31</sup> Cal. Health & Safety Code § 111792.6(b)(1)(D).

C. “Air Freshener,” “Disinfectant,” and “Sanitizer”

HCPA supports the proposed Section 94510(c)(4), which will provide a much-needed exemption for the VOC content of fragrance up to a combined level of 0.25% by weight for “Air Freshener,” “Disinfectant,” and “Sanitizer” products manufactured on or after January 1, 2031.

Manufacturers of air fresheners formulate these products for the purpose of masking odors and scenting the air. Therefore, fragrance is an essential ingredient of these products. Moreover, the use of fragrance ensures proper dosage, which is essential to avoid overuse of the products. This limited exemption for fragrance is needed for air fresheners to retain their efficacy and safety.

Manufacturers of disinfectants and sanitizers use the allowable amount of VOCs for the requisite amount of alcohol and propellant needed to comply with EPA efficacy testing requirements. Without some level of fragrance exemption, manufacturers would likely be required to re-test and revise their EPA Confidential Statement of formula for their product(s). HCPA members appreciate this exemption which is needed to address feasibility concerns and to eliminate the potential for unintended consequences in a “health benefit product.”<sup>32</sup>

D. HCPA requests confirmation of the accuracy of the following calculations for the VOC content of fragrances and/or monoterpenes.

Under proposed Sections 94510(c)(3) and (c)(4), and in conjunction with the proposed revisions to Section 94510(d), HCPA respectfully requests confirmation of the examples below for calculating 0.25 percent of the VOC content of fragrances and/or monoterpenes for specified product categories manufactured on or after January 1, 2031:

Example 1 – Proposed Section 94510(c)(4)

A manual aerosol air freshener will be subject to a 5% VOC standard, it contains:

- 5% VOC in base formula
- 1% fragrance, which is 20% VOC and 80% LVP-VOC

Fragrance VOC exemption calculation:

1% (fragrance) x 20% (VOC portion of fragrance) = 0.2% (the VOC content of fragrance)

Fragrance VOC exemption total:

0.2% (total fragrance VOC) ≤ 0.25% (allowed fragrance VOC exemption)

This product would be compliant with the 5% VOC standard and the exemption for 0.25 percent of the VOC content of fragrance.

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<sup>32</sup> See Cal. Health & Safety Code § 41712(a)(2).

Example 2 (with monoterpenes) – Proposed Section 94510(c)(3)

A nonaerosol GPC is subject to a 0.5% VOC standard, it contains:

- 0.5% VOC in base formula
- 0.3% fragrance mixture
  - 0.1% fragrance, which is 20% VOC and 80% LVP-VOC
  - 0.2% monoterpene

Fragrance VOC exemption calculation:

0.1% (fragrance) x 20% (VOC portion of fragrance) = 0.02% (fragrance VOC)

Monoterpene VOC exemption (at 100% VOC):

0.2% monoterpene

Fragrance and monoterpene VOC exemption total:

0.02% (fragrance VOC exemption) + 0.2% (monoterpene VOC exemption) = 0.22% (total VOC exempted) ≤ 0.25% (total allowed fragrance and monoterpene VOC exemption)

This product would be compliant with the 0.5% VOC standard and the exemption for 0.25 percent of the VOC content of fragrances and/or monoterpenes.

E. CARB Enforcement Advisory Number 131 - Fragrance Exemptions

HCPA respectfully requests that CARB modify Enforcement Advisory Number 131<sup>33</sup> to include an updated explanation of how the CARB Enforcement Division will interpret and apply the proposed changes to sections 94510(c) and 94510(d).

F. Aerosol Crawling Bug Insecticide

HCPA respectfully requests that CARB provide an exemption for 0.25 percent of the VOC content of fragrances for the Aerosol Crawling Bug Insecticide products manufactured on or after January 1, 2031. Based upon the 2015 CARB Consumer and Commercial Product Survey data, the Crawling Bug Insecticide (aerosol) product category reported use of the 2 percent fragrance exemption at the currently applicable 15 percent by weight VOC standard.<sup>34</sup> The proposed eight percent by weight VOC standard constitutes a dramatic reduction from the current VOC limit.

Consequently, some level of fragrance will continue to be needed to ensure the application of proper dosage levels (*i.e.*, the fragrance provides olfactory feedback for gauging the amount of product applied). Fragrance is also needed to mask the strong base odor of the active ingredients. As a practical matter, if the product does not contain an adequate amount of fragrance, the active ingredients' lingering malodor may cause consumers to avoid using (or to

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<sup>33</sup> Enforcement Advisory: 1996-07 Advisory #131 Fragrance Exemptions (July 1996).  
See <https://ww2.arb.ca.gov/sites/default/files/classic/enf/advs/advs131.pdf>

<sup>34</sup> Appendix B: Utilization of the Two Percent Fragrance Exemption (CARB 2021) at p. B-7. See also "Regulatory Strategies Work Group Meeting (CARB, March 10, 2020) at Slide # 46.  
See [https://ww2.arb.ca.gov/sites/default/files/2020-03/Work%20Group%20Presentation%203-10-20\\_0.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-03/Work%20Group%20Presentation%203-10-20_0.pdf).

use an inadequate dosage of) products that have been proven to be effective in killing and controlling disease-carrying insects when used according to label instructions.

Therefore, HCPA respectfully requests that CARB also include “Crawling Bug Insecticide” (aerosol) as one of the product categories listed in Section 94510(c)(4) of the final regulation. This will provide manufacturers with a small degree of flexibility in complying with the very stringent proposed eight percent by weight VOC standard while maintaining the performance, safety, and efficacy of this product category.

#### **IV. Comments on Other Proposed Regulatory Provisions**

##### **A. Energized Electrical Cleaner – Proposed Sections 94508(a)(40) and 94512(f)**

Energized electrical cleaners must be formulated with nonflammable chemicals because these products are used to clean electrical equipment while an electric current is running through it, or when a residual current exists. HCPA members support the proposed revisions to the definition because it provides the necessary clarity for products included -- and excluded -- in this product category. HCPA also supports the proposed requirement for an “Automotive Parts and Accessories Store” to retain current routinely generated sales records for a period of at least five years.

##### **B. Definition and VOC Standard for Plastic Pipe Adhesive – Proposed Sections 94508(a)(1)(A)(2)(f) and 94509(a)**

HCPA members are neutral on the proposal to create a new definition for the “Plastic Pipe Adhesive” category and to establish a VOC standard of 60 percent by weight for this product category.

##### **C. Amend the Definition of “Multi-Purpose Solvent” to exclude denatured alcohol – proposed Section 94508(a)(89)(B)(7)**

HCPA members are neutral on the proposal to amend the definition of "Multi-Purpose Solvent" to exclude denatured alcohol products used exclusively to maintain electrical equipment at public utilities.

##### **D. Proposal to establish prohibitions set forth in Table 94509(m)(1)(B)**

HCPA members are neutral on the proposal to prohibit the use of parachlorobenzotrifluoride, methylene chloride, perchloroethylene, and trichloroethylene for the following product categories that are manufactured on or after January 1, 2023:

- Manual Aerosol Air Freshener
- Concentrated Aerosol Air Freshener
- Total Release Aerosol Air Freshener
- Crawling Bug Insecticide (aerosol)

F. Proposed amendment to Table 94509(n)(1)

HCPA members are neutral on the proposal to prohibit the use of any chemical compound that has a Global Warming Potential (GWP) value of 150 or greater for the following product categories that are manufactured on or after January 1, 2023:

- Manual Aerosol Air Freshener
- Concentrated Aerosol Air Freshener
- Total Release Aerosol Air Freshener
- Crawling Bug Insecticide (aerosol)

G. Restriction on innovative product exemption for products that claim to reduce VOC via combustion – proposed Section 94511(f)

HCPA members are neutral on this proposed restriction for granting an innovative product exemption (IPE) for this narrowly-defined type of product.

H. Innovative product exemption for the use of compressed gas propellants in specified product categories – proposed Sections 94511(c)-(e)

HCPA member companies support CARB's intention to create a pathway for exempting an aerosol product using compressed gas propellants from its VOC standard if certain criteria are met. However, as currently written, HCPA members are concerned that the proposed regulatory language does not provide enough clarity and workable direction necessary to achieve CARB's stated intention of encouraging the development of innovative products to reduce the use of GWP compounds.

While HCPA member companies recognize that the proposed provision applies to three specific personal care product categories that are included in the current rulemaking, this IPE provision should be available for future application to other product categories. Thus, it is imperative that the final regulatory language be straightforward, understandable, and clear to all parties involved.

Therefore, HCPA member companies respectfully request that CARB staff conduct a meeting with industry stakeholders to discuss this provision during the 15-day comment period. This requested meeting will address the technical details of this IPE provision and other alternate proposals, including the option for some type of reactivity provision as detailed in the comments filed on March 5, 2021, by the National Aerosol Association. Reactivity is sound science, as evidenced by the fact that aerosol coatings have been subject to CARB's reactivity-based standards since 2002. Thus the requested meeting will ensure that the final regulatory provision will be workable for industry and better achieves CARB's stated intention of encouraging the development of innovative products for limiting the use of GWP compounds.

I. Currently approved IPEs for "Single Phase Air Freshener" - proposed Section 94511(l)(2)

HCPA member companies support the proposed provision because it clarifies that a currently approved IPE for a Single-phase Aerosol Air Freshener product subject to a 30% VOC limit will

continue to be approved and in effect for products that transition from “Single Phase Air Freshener” to “Automatic Aerosol Air Freshener” on January 1, 2023.

J. Adding compounds to the MIR Table of Values – Proposed Section 94700

HCPA member companies support the proposal to add diethyl carbonate, 1-chloro-3,3,3-trifluoropropene; HFO-1233zd and Alkane Mixed - Minimally 90% C13 and higher to the MIR Table of Values.

K. Proposed Amendments to Method 310

HCPA members are neutral on the proposed updates to Method 310.

**V. Economic Impact Assessment**

HCPA members generally concur that the economic impact assessment for this proposed regulation was conducted in a manner consistent with other CARB rulemakings. HCPA commends CARB staff’s efforts during this rulemaking process in contacting consumer product industry stakeholders in September 2020 to provide input on updated product ingredient costs for use in developing the estimated cost impacts of the proposed amendments.

However, industry has been impacted significantly by the outbreak of the COVID-19 Pandemic, which has disrupted supply chains, and the availability of essential product ingredients, causing prices to increase for some ingredients. Manufacturers, suppliers, and fragrance houses have been focused on making necessary modifications to product formulations. Consequently, HCPA member companies could not give the appropriate time and attention to properly assess the future costs of reformulating products to comply with the new or revised VOC standards and the other provisions of this proposed regulation.

A. Aerosol Air Fresheners Products

As stated previously in these comments, eliminating the source of malodor is often not achievable, particularly in low-income communities. Affordable approaches to mitigating indoor malodor, such as air freshening products, provide an effective option. Recent market data indicates that buying rates of air care products are highest in households with annual incomes less than \$20,000.<sup>35</sup> This may be due in part because lower-income households are disproportionately affected by environmental odors, odors arising from crowded conditions, and by economic limitations on their ability to deal with odor sources, such as those associated with sub-standard housing.<sup>36</sup> Therefore, HCPA would like to comment that any price increase due to the significant cost of reformulating air freshener products will most likely have a disproportional impact on low-income consumers.

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<sup>35</sup> Nielsen Holdings Plc. Data Retrieved through a Paid Subscription on March 2019. For More Information about the Nielsen Homescan Database is available online: <https://catalog.data.gov/dataset/nielsen-homescan>.

<sup>36</sup> Dalton, Claeson and Horenziak, *supra*. at p. 9.

## B. Aerosol Crawling Bug and Bed Bug Insecticide Products

As an initial matter, CARB staff assumes that manufacturers will not begin to incur costs for reformulating Aerosol Crawling Bug Insecticide products until 2028.<sup>37</sup> This timeframe is inadequate for reformulating these products to comply with the January 1, 2030,<sup>38</sup> compliance date set forth in Section 94509(a). This process will require approximately five to six years before a reformulated crawling bug insecticide can be sold or offered for sale in California as detailed below:

- 1 year for developing new formulation
- 1 year efficacy, physical chemistry, and toxicity testing
- 1 year (and possibly two years)<sup>39</sup> for storage stability testing
- 1 year for EPA to evaluate any new formulation (which can take longer if EPA requires additional information/tests), longer if inert ingredient registration is also required
- 1 year to for CDPR to register the product for sale and use in California

Therefore, HCPA member companies will likely begin work to reformulate these FIFRA-registered products in 2023. Consequently, CARB cost estimates in Table IX-1 should be revised to reflect costs beginning in 2023 and continuing through 2035.

Furthermore, CARB's total direct recurring and non-recurring costs of approximately \$10,000,000 for Aerosol Crawling Bug Insecticide<sup>40</sup> appear to be too low. HCPA member companies estimate the cost for reformulating the 66 products identified in the ISOR<sup>41</sup> to comply with the proposed eight percent VOC standard by weight would range from approximately \$14,850,000 (*i.e.*, \$225,000 per product) on the low-end to approximately \$23,100,000 (*i.e.*, \$350,000 per product) on the high-end. In addition, CARB cost estimates do not include the costs of re-labeling and re-packaging Bed Bug Insecticides.

Finally, the above-stated HCPA estimated cost range does not include future increased costs of EPA reviewing and approving reformulated Aerosol Crawling Bug Insecticide products. The registration fees established under the Pesticide Registration Improvement Extension Act of 2018 (also referred to as "PRIA 4") will expire on September 30, 2023.<sup>42</sup> HCPA and our member

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<sup>37</sup> "Table IX-1: Total Direct Recurring and Non-Recurring Cost of Proposed Amendments," ISOR at p. IX-224.

<sup>38</sup> Pursuant to Section 94509(d), FIFRA-registered have one additional year to comply with applicable VOC standards.

<sup>39</sup> EPA requires one year of stability testing. [Product Properties Test Guidelines: OPPTS 830.6317 Storage Stability [EPA 712-C-02-026]: <https://www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0151-0019> [see (b)(2)(ii)]. However, many companies perform two years of testing to ensure that the product will continue to perform until the contents in the can are completely used.

<sup>40</sup> ISOR at p. IX-224.

<sup>41</sup> ISOR at p. IX-233.

<sup>42</sup> Congress approved the Pesticide Registration Improvement Act (PRIA) in 2004, creating a service fee system for registering pesticide products and their ingredients. The goal of the fee system is to create a more predictable evaluation process for pesticide products and link the collection of individual fees with



companies have already begun preliminary talks with congressional committees of jurisdiction, along with other key stakeholders, on the parameters of the next reauthorization, which is likely to include increased fees for registering new product formulations or new active ingredients. Because the legislation has not yet been approved, it is impossible to know with certainty what additional costs will be incurred by pesticide registrants, but CARB should be aware that additional costs may result from Congress' effort to update and reauthorize the pesticide registration fee system under PRIA.

## **VI. Recommendation for CARB to Consider in a Future Rulemaking**

### **Revise the Definition for the "Institutional Product" or "Industrial and Institutional (I&I) Product"**

HCPA respectfully requests that CARB revise the current definition for the "Institutional Product" or "Industrial and Institutional (I&I) Product" category to more clearly define products that are subject to the Consumer Products Regulation.

HCPA member companies support CARB's authority to regulate consumer and commercial products at the statewide VOC standard. While it is abundantly clear that CARB's complex Consumer Products Regulation applies to "household products," there is some potential ambiguity as to whether products sold to industrial facilities are subject to statewide VOC standards. Therefore, HCPA believes that CARB should revise the current definition for the "Industrial and Institutional (I&I) Product" category to provide a clear "bright line" regulatory delineation between: (1) consumer and commercial product categories that are subject to these statewide VOC limits; and (2) industrial products that are used only in the manufacturing process, which are outside of the scope of CARB's comprehensive statewide regulation.

CARB Advisory Number 307 provides some clarity in determining whether "industrial" products are regulated by the stringent statewide VOC limit. In pertinent part, the Advisory states that the current regulatory definition for the term "Institutional Product" or Industrial and Institutional (I&I) Product" excludes "... products that are incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment ...".<sup>43</sup> However, as a practical matter, it is often difficult for both CARB and product manufacturers to determine whether products sold to industrial facilities throughout the state fit into this narrowly-drawn exclusion.

To remove potential ambiguity about the applicability of CARB's statewide VOC standards to products that are sold to industrial facilities, HCPA respectfully recommends that CARB consider the following revision to the current definition of "Institutional Products" or "Industrial and Institutional (I&I) Products,"

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specific decision review periods. These PRIA fees have been reauthorized four times, most recently by the Pesticide Registration Improvement Extension Act of 2018 ("PRIA 4").

<sup>43</sup> 17 CCR § 94508 (a)(77).

§ 94508. Definitions.

(a) For the purpose of this article, the following definitions apply:

\* \* \* \*

- (77) “Institutional Product” or “Industrial and Institutional (I&I) Product” means a consumer product that is designed for use in the maintenance or operation of an establishment that: (A) manufactures, transports, or sells goods or commodities, or provides services for profit; or (B) is engaged in the nonprofit promotion of a particular public, educational, or charitable cause. “Establishments” include, but are not limited to, government agencies, factories, schools, hospitals, sanitariums, prisons, restaurants, hotels, stores, automobile service and parts centers, health clubs, theaters, or transportation companies. “Institutional Product” does not include household products and products that are: ~~incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment~~ (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only."

This recommended revision is identical to the narrowly-tailored exemption provision in the current definition for the General Purpose Degreaser, Lubricant and Single Purpose Degreaser product categories.<sup>44</sup>

HCPA believes that this revision will eliminate potential ambiguity as to the applicability of the CARB’s statewide regulatory standards. Moreover, HCPA believes that this revision will promote efforts by the CARB Staff to restrict the sale of unregulated products to consumers.

## Conclusion

As a result of this open and transparent rulemaking process, CARB staff developed and proposed challenging new VOC and GWP limits that will provide significant emission reductions. The proposed new and revised VOC limits and related enforcement provisions present very serious and costly reformulating and marketing challenges. Notwithstanding these significant challenges, HCPA member companies believe that the proposed VOC standards may prove to be feasible in the time frames allowed for compliance. HCPA members commit to initiate action necessary to reformulate products to meet these new VOC standards with the understanding that CARB staff will address several issues in the 15-day notice period subsequent to Board’s adoption of this proposed regulation.

HCPA expresses our appreciation for CARB staff’s concerted efforts in working through the significant logistical challenges posed by the COVID-19 pandemic to ensure that all stakeholders

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<sup>44</sup> 17 CCR §§ 94508 (a)(59)(C); (a)(82)(B); and (a)(123).

March 12, 2021

Page 22 of 22

had an opportunity to participate in the development of this complex proposed rulemaking process.

Please contact me if you have questions regarding any of the issues raised in HCPA's comments.

Joseph T. Yost

Vice President, Strategic Alliances & Industry Relations

Household and Commercial Products Association

Phone: 202-833-7325

[jyost@thehcpa.org](mailto:jyost@thehcpa.org)

cc: Ravi Ramalingam, P.E., Branch Chief, Consumer Products and Air Quality Assessment Branch

Joe Calavita, Manager, Implementation Section, Consumer Products and Air Quality Assessment Branch

Jose Gomez, Manager, Technical Development Section, Consumer Products and Air Quality Assessment Branch

Josh Berghouse, Air Pollution Specialist - Rulemaking Lead Staff, Consumer Products and Air Quality Assessment Branch

HCPA Air Quality Council

Nicole Quiñonez, Madden Quiñonez Advocacy



# Comment Log Display

## Below is the comment you selected to display. Comment 4 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: djraymond@me.com  
Affiliation:

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

WD-40 Company appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/4-consumerproducts2021-UCcHZQAsUDcGMAVa.docx](http://www.arb.ca.gov/lists/com-attach/4-consumerproducts2021-UCcHZQAsUDcGMAVa.docx)

Original File Name: WD-40 45 day CARB comments 32021 (003-1).docx

Date and Time Comment Was Submitted: 2021-03-16 18:06:21

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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P.O. Box 80607, San Diego, CA 92138-0607

March 16, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

WD-40 Company appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation. The WD-40 Company is a California company that markets Consumer Products. WD-40 Company has worked extensively with CARB to improve the Air Quality of the State of California. CARB has been a leader in directing the Consumer Product Industry to innovate their products to reduce VOC emissions. WD-40 Company and CARB have a shared interest to clean the air for California.

#### Comments

WD-40 Company has worked with staff throughout this rulemaking on several issues. Two issues remain, the first issue is the VOC exemption of the compound Solstice® HFO-1233zd(e). This compound has the following characteristics: being negligibly photochemically reactive thus not available to create ozone, low Global Warming Potential (GWP) and Low Maximum Incremental Reactivity (MIR), which makes this compound an excellent candidate for WD-40 Company to use to create better products for the environment. We request the staff to continue work toward exempting this compound as a VOC in the Consumer Products Regulation. This compound is exempt in the South Coast Air Quality Management District (SCAQMD).

Second issue is the Compressed Gas Innovative Product Exemption (IPE) for compressed gases. WD-40 Company has a long history of working with compressed gases such as CO<sub>2</sub>. While our product works well, and we applaud the staff's initiative to provide another provision to assist in reformulation, as written, the IPE for Compressed Gases is unclear and confusing. While WD-40 Company does not make any of the product categories this IPE is targeted for use in, we are hopeful that provisions such as this may expand to other categories. Thus, we believe that the staff should explain or clarify the criteria by adding in calculations. In addition, we support the National Aerosol Association (NAA) IPE comments to add a Reactivity provision.

Reactivity is sound science and most recently a Reactivity Option was added to allow Multi-Purpose Lubricant an alternative way to comply. WD-40 Company supports Reactivity and would request that the staff find a way to include Reactivity in the IPE.

### Conclusion

WD-40 Company supports continued work on the compound HFO-1233zd(e). WD-40 Company cannot at this time support the staff's proposal on the compressed gas IPE unless it is clarified. We do commend the staff for the concept. Lastly, WD-40 Company request the Board to instruct the staff to add a Reactivity provision to the IPE. Both the Compressed Gas issue and the Reactivity issue can be dealt with in a 15-day comment period.

Thank you in advance for considering our comments. Any questions or comments feel free to contact our consultant Doug Raymond at 440-339-4539 or at [djraymond@me.com](mailto:djraymond@me.com).

Respectfully,

*Ernest Bernarducci*

Ernest Bernarducci, PhD  
Vice President, Global Research and Development  
WD-40 Technical Center  
20 Chapin Road, Unit 1013  
Pine Brook, NJ 07058  
[Ernieb@wd40.com](mailto:Ernieb@wd40.com)  
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Cc: [Ravi.Ramalingam@arb.ca.gov](mailto:Ravi.Ramalingam@arb.ca.gov)  
[Joe.calavita@arb.ca.gov](mailto:Joe.calavita@arb.ca.gov)  
[Josh.berghouse@arb.ca.gov](mailto:Josh.berghouse@arb.ca.gov)  
[Jose.gomez@arb.ca.gov](mailto:Jose.gomez@arb.ca.gov)  
[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)  
[djraymond@reg-resources.com](mailto:djraymond@reg-resources.com)



# Comment Log Display

## Below is the comment you selected to display. Comment 5 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Alexandra  
Last Name: Scranton  
Email Address: alexs@womensvoices.org  
Affiliation: Women's Voices for the Earth

Subject: Comments on Consumer Products Regulation Amendments

Comment:

Comment uploaded by CARB from email sent to CARB staff due to technical difficulties.

Attachment: [www.arb.ca.gov/lists/com-attach/5-consumerproducts2021-VyBXJ1M3UFxQnQlo.pdf](http://www.arb.ca.gov/lists/com-attach/5-consumerproducts2021-VyBXJ1M3UFxQnQlo.pdf)

Original File Name: WVE CARB comments March 17 21.pdf

Date and Time Comment Was Submitted: 2021-03-17 14:38:15

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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# WOMEN'S VOICES FOR THE EARTH

OUR HEALTH. OUR FUTURE. TOXIC FREE.

March 17, 2021

Clerks' Office,  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814

*Re: Comments on Consumer Products Regulation amendments – Public Hearing March 25, 2021*

To the California Air Resources Board:

I am writing on behalf of Women's Voices for the Earth, a national environmental health advocacy organization whose mission is to eliminate the toxic chemicals that harm our health and communities. We represent thousands of people in the state of California, interested in protecting environmental and human health from toxic chemical exposure.

Again, we are writing **to strongly support the proposal to sunset the 2% fragrance exemption in the CARB regulations.** We continue to be concerned about the impact fragrances in products have on public health. For example, fragrance exposure has been linked to exacerbations of asthma and COPD.<sup>1,2,3</sup> Neurological impacts such as migraines have also been associated with fragrance exposure.<sup>4,5</sup> Skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to

---

<sup>1</sup> Sama SR, Kriebel D, Gore RJ, DeVries R and Rosiello R. (2015) Environmental triggers of COPD symptoms: a cross sectional survey. *COPD Research and Practice* (2015) 1:12

<sup>2</sup> Ritz, T.R., Steptoe, A., Bobb, C., Harris, A.H., and Edwards, M. (2006) The Asthma Trigger Inventory: validation of a questionnaire for perceived triggers of asthma. *Psychosomatic Medicine*. Vol. 68. pp: 956-965. 2006.

<sup>3</sup> Kumar, P., Caradonna-Graham, V.M., Gupta, S, Cai, X, Rao, P.N. and Thompson, J. (1995) Inhalation challenge effects of perfume scent strips in patients with asthma. *Annals of Allergy, Asthma and Immunology*. Vol. 75, pp: 429-433. November 1995.

<sup>4</sup> Peris F, Donoghue S, Torres F, Mian A and Wöber C. (2017) Towards improved migraine management: Determining potential trigger factors in individual patients. *Cephalalgia*. 2017 Apr;37(5):452-463.

<sup>5</sup> Silva-Neto RP, Peres MP and Valenca MM (2014) Odorant substances that trigger headaches in migraine patients. *Cephalalgia*, Vol. 34 (1) pp 14-21. (2014)

fragrance.<sup>6,7</sup> A 2020 study found that contact dermatitis from personal care products in the U.S. has doubled in the last two decades, with fragrance identified as the allergen responsible for largest percentage of skin reactions.<sup>8</sup>

We believe fragrance components should not be given special treatment in regulation compared to any other types of ingredients in products. Fragrances are not necessary to the function of a product – but are merely an aesthetic choice that impacts marketing and sales. CARB has already established a need for reductions in VOCs from consumer products - and this should be applicable across the board for all types of ingredients in products.

We believe that the 2% fragrance exemption gives manufacturers of fragranced products an unfair (and unnecessary) advantage by allowing them to continue to be ignorant of the specific VOC contributions of each of the fragrances they use.<sup>9</sup> VOC contributions from fragrances can vary widely depending on their ingredients. Manufacturers need to be held responsible for understanding those variations – and the environmental impacts they have – just as is required for any other VOC-contributing ingredient in any other consumer product subject to these regulations. There is no valid reason for fragrance to be treated differently than any other VOC-contributing ingredient to a product.

---

<sup>6</sup> Schnuch, A., Lessmann, H., Geier, J., Frosch, P.J. and Uter, W. (2004) Contact allergy to fragrances: Frequencies of sensitization from 1996 to 2002. Results of the IVDK. Contact Dermatitis. Vol. 50. pp. 65-76. 2004.

<sup>7</sup> Schafer, T., Bohler, E., Ruhdorfer, S., Weigl, L., Wessner, D., Filipiak, B., Wichmann, H.E. and Ring, J. (2001) Epidemiology of contact allergy in adults. Allergy. Vol. 56. pp: 1992-1996. 2001.

<sup>8</sup> Warshaw EM, Schlarbaum JP, Silverberg JI, DeKoven JG, Fransway AF, Taylor JS, Maibach HI, Fowler JF Jr, Atwater AR, Reeder MJ, Zug KA, Belsito DV, Sasseville D, DeLeo VA, Pratt MD. Contact Dermatitis to Personal Care Products is Increasing (but Different!) in Males and Females: North American Contact Dermatitis Group (NACDG) Data, 1996-2016. J Am Acad Dermatol. 2020 Oct 8:S0190-9622(20)32754-7.

<sup>9</sup> Specifically, the HCPA's comments of March 12, 2021 state this clearly:

*“Currently, manufacturers typically do not need to speciate the fragrance ingredients since the fragrance houses communicate that the supplied fragrance ingredients comply with the requirements of the current two percent exemption in Section 94510(c). However, if this exemption is eliminated, product manufacturers will require detailed speciation for the VOC and LVP-VOC content for each of the different fragrance compounds when formulating a product to determine whether each individually scented variant of that product complies with the applicable VOC limit.”*

We believe there is no reason that manufacturers should not be responsible for knowing the specific VOC contributions for each product they manufacture. Each individually scented variant is a different product which can have different VOC emissions. Clearly, manufacturers should have this information both to make informed decisions and to be transparent to their customers about the environmental impacts of their products.

Also, we cannot understand the logic of various industry commenters who both agree with CARB that eliminating the 2% exemption would result in a very small additional VOC reduction (which is based on the estimation that few manufacturers are actually using the exemption) AND claim that the sunset of the exemption would result in significant burdens on product manufacturers. You simply cannot have it both ways. If few manufacturers are using the exemption, then clearly few manufacturers will be affected by the sunset. If the CARB estimations are incorrect and a significant number of manufacturers are in fact using the exemption, then the additional VOC reduction the sunset achieves must be significantly greater than estimated – and therefore justified for the health of the environment.

In addition, we were appalled to see that when CARB specifically surveyed 1,300 manufacturers asking for input on what it might potentially cost to comply with the sunset, only 41 manufacturers responded (and of that, only 15 identified specific technical challenges with compliance). This weak response to a request for input, and the paucity of data supplied simply does not support the claim that a significant number of manufacturers would be unduly burdened.

Given the lack of data to support a claim that numerous products would need to be reformulated<sup>10</sup> in order to comply with the sunset of the exemption, it appears the only work that would need to be done by most manufacturers, would be to obtain from their fragrance suppliers the detailed speciation for the VOC and LVP-VOC content for each of the different fragrance compounds in order to confirm compliance. While this may be cumbersome paperwork in the short term for manufacturers with products marketed in numerous scents, we do not understand the need to extend the sunset deadline to 2031, simply to accomplish this task. **For the sake of our health and the environment, which needs VOC reductions now, we do not support the proposal to extend the deadline for sunseting the exemption until 2031.**

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<sup>10</sup> The Fragrance Creators Association comments submitted to CARB on June 29, 2020 specifically make this claim: *“The Two Percent Exemption thus enables product manufacturers to deliver efficacious products to the market that meet consumers’ needs; without it, it is likely that some products and scents would no longer be technologically and/or commercially feasible. At a minimum, many product manufacturers—across a wide range of product categories and products—would have to expend a significant amount of time, money, and effort to reformulate products that were developed with the reasonable expectation that the long-standing exemption for fragrance would remain in effect.”*

No documentation or data to support this claim has ever been provided to CARB. As mentioned above, CARB’s 2020 survey of manufacturers specifically asking for information on potential compliance costs associated with sunseting the 2% fragrance exemption resulted in less than a 3% response rate.

Lastly, we appreciate the data supplied by CARB that both consumer product usage (and consumer product emissions) have increased in the last few years. Given this fact, it is all the more important to continue restricting VOC emissions from consumer products which comprise such a significant proportion of statewide emissions. **For the sake of our health and the environment we support CARB's efforts to reduce VOC emissions as soon as possible.**

Thank you for your consideration of these comments.

Alexandra Scranton

A handwritten signature in black ink, reading "Alexandra Scranton". The signature is written in a cursive style with a light grey background behind it.

Director of Science and Research  
Women's Voices for the Earth



# Comment Log Display

## Below is the comment you selected to display. Comment 6 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: [djraymond@me.com](mailto:djraymond@me.com)  
Affiliation: Diversified CPC International

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

Diversified CPC International (Diversified) appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/6-consumerproducts2021-VDBcM1AnUWcBdQFy.docx](http://www.arb.ca.gov/lists/com-attach/6-consumerproducts2021-VDBcM1AnUWcBdQFy.docx)

Original File Name: Diversified CPC 45 day CARB comments ltr 03\_18\_21.docx

Date and Time Comment Was Submitted: 2021-03-18 09:38:06

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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Pure Innovation with **YOU** in mind.

**William N. Auriemma**  
President & Chief Executive Officer  
wna@diversifiedcpc.com

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March 18, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

Diversified CPC International (Diversified) appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Diversified CPC International is a supplier to the Consumer Products Industry. Diversified is a propellant supplier of liquefied propellants as well as HFC-152a and HFO-1234ze to the Aerosol Industry. Our company has a facility in the South Coast Air Quality Management District. Diversified CPC manufactures high purity natural gas liquid aerosol propellants at its processing facility in Anaheim, CA.

Diversified has worked closely with CARB on the Consumer Products VOC Regulation since the early 1990's. These regulations not only effect California but our spread throughout the United States. Our comments are the following.

**Adding Compounds to MIR Table**

Diversified supports the proposal to add diethyl carbonate, 1-chloro-3,3,3-trifluoropropane, HFO-1233zd and alkane mixed-minimally 90% C13 and higher to the MIR table of Values. Diversified has supported the Reactivity Concept since it began.

**CARB IPE Compressed Gas provision**

Nearly two and a half years into the rule development, CARB staff proposed an IPE provision for the use of compressed gas as a way to reduce or offset the use of Global Warming Potential compounds used in Hairspray, Dry Shampoo's and Personal Fragrances. Initially we applaud the staff's creative thinking in using the IPE Provision. However, after closer review we cannot support this provision as proposed. This provision was released with less than 90 days to comment. Why would staff wait so long into the rule development process to release such a new concept?



As stated, after significant review and comment to the staff the provision is unclear and confusing. In addition, compressed gases have physical limitations which make formulating with these compounds difficult. Diversified requests that CARB staff add language to clarify the IPE such as calculations for volume and ozone formation potential in the criteria section of the IPE.

Diversified also supports the National Aerosol Association (NAA) provision to the IPE on Reactivity. CARB has used Reactivity in the past and Reactivity is sound science. The use of Reactivity allows for manufacturers to have more flexibility in reformulating.

### **Conclusion**

Diversified thanks the staff for their hard work and ingenuity. Diversified supports the addition of compounds to the MIR table. Unfortunately, at this time we cannot support the Compressed Gas IPE. However, we do request that the board direct staff to add the NAA proposal on Reactivity, or an alternate Reactivity provision for the IPE. This addition can be done during a 15-day notice period.

Thank you in advance for considering our comments. Any questions or comments feel free to contact our consultant Doug Raymond at 440-339-4539 or at [djraymond@me.com](mailto:djraymond@me.com).

Sincerely,



William N. Auriemma  
President & CEO

Cc: [Ravi.Ramalingam@arb.ca.gov](mailto:Ravi.Ramalingam@arb.ca.gov)

[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)

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[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)



# Comment Log Display

## Below is the comment you selected to display. Comment 7 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: [djraymond@me.com](mailto:djraymond@me.com)  
Affiliation: Wilsonart Adhesives

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

Wilsonart Adhesives appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/7-consumerproducts2021-B3AFaIM+AiJROAJs.docx](http://www.arb.ca.gov/lists/com-attach/7-consumerproducts2021-B3AFaIM+AiJROAJs.docx)

Original File Name: Wilsonart 45 day CARB comments Draft 031821B.docx

Date and Time Comment Was Submitted: 2021-03-19 10:24:53

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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March 18, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

Wilsonart Adhesives appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Wilsonart Adhesives is a supplier of contact adhesives for the High Pressure Decorative Laminate (HPDL or HPL) industry.

Most of the amendments in this rulemaking do not have an effect on our company. However, we are aware that CARB staff is evaluating the potential VOC exemption for Solstice HFO-1233zd. This compound has been VOC -exempted by the US EPA, it has low Maximum Incremental Reactivity (MIR) and Low Global Warming Potential (GWP). Thus, this compound is a necessary tool to add to our reformulation options. Currently in California there are no options to formulate a non-flammable contact adhesive product. Manufacturers have customers that need a non-flammable VOC compliant formula in the state of California. HFO-1233zd is an excellent candidate to fill this need.

Therefore, Wilsonart respectfully requests the Board to direct staff to continue to consider HFO-1233zd for a VOC exemption at the earliest possible date.

Thank you in advance for considering our comments. Any questions or comments feel free to contact our consultant Doug Raymond at 440-339-4539 or at [djraymond@me.com](mailto:djraymond@me.com)

Sincerely,

A handwritten signature in black ink that reads 'Eric Kendall'.

Eric Kendall, Ph.D.

Research Fellow

Wilsonart Adhesives

Cc: Ravi.Ramalingam@arb.ca.gov

joe.calavita@arb.ca.gov

josh.berghouse@arb.ca.gov

[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)

[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)



# Comment Log Display

## Below is the comment you selected to display. Comment 8 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Jean  
Last Name: Cheesman  
Email Address: bjwych@aol.com  
Affiliation:

Subject: fragrance  
Comment:

As someone with Multiple Chemical Sensitivity, I can get very ill from AHY exposure to fragrances! Please keep those out of all products. Thank you.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:43:03

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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## Comment Log Display

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### Below is the comment you selected to display. Comment 9 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: James R

Last Name: Monroe

Email Address: randy@monroescienceed.com

Affiliation: Monroe Science Educational Services

Subject: Air Quality and Fragrances

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:46:14



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# Comment Log Display

**Below is the comment you selected to display.  
Comment 10 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Cynthia  
Last Name: Ratliff  
Email Address: [peace4alllife@sbcglobal.net](mailto:peace4alllife@sbcglobal.net)  
Affiliation:

Subject: Fragramced  
Comment:

The fragrances that are included in many products are offensive and cause serious reactions to my body and many others. No fragrances added should be the norm! Please consider all of us who are adversely sometimes extremely affected by unnecessary added fragrances.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:48:47

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# Comment Log Display

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## Below is the comment you selected to display. Comment 11 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: Caryn

Last Name: Graves

Email Address: caryn@lmi.net

Affiliation:

Subject: Please support the reduction of public exposure to fragrances

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:50:17

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# Comment Log Display

## Below is the comment you selected to display. Comment 12 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Ron  
Last Name: Schmidt  
Email Address: ronstreehouse@comcast.com  
Affiliation:

Subject: Unwanted aerosol/aromas

Comment:

I can't believe I'm having to write this message opposing unwanted aromas/odors/smells in our environment, but here I am doing just that. DO NOT ALLØW SUCH INTRUSIONS IN OUR DAILY LIVES, FOR GOD'S SAKE!

Ron Schmidt

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:46:27

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# Comment Log Display

## Below is the comment you selected to display. Comment 13 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Diana  
Last Name: Bohn  
Email Address: nicca@igc.org  
Affiliation:

Subject: restrict fragranced products!

Comment:

Please make final regulations that will pose strict restrictions on VOCs from fragranced products in California!

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:58:44

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## Comment Log Display

### Below is the comment you selected to display. Comment 14 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Nikki  
Last Name: Nafziger  
Email Address: nikkinashmusic@gmail.com  
Affiliation:

Subject: Voc's/fragrance pollution

Comment:

Voc's/volatile organic compounds pollute our air/make it hard to breathe/cause and exacerbate asthma. Fragrance pollution is a serious threat that must be regulated/curbed. I personally have asthma since I was a little girl and have to use a preventative inhaler twice a day. The only time I have to use my rescue inhaler is when I 'm exposed to certain fragrances. I'm not alone. Many people like me, can't breathe because of fragrance pollution; both from cleaning chemicals and perfume chemicals. They are both life threatening.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 10:57:45

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# Comment Log Display

## Below is the comment you selected to display. Comment 15 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Thoi  
Last Name: Pham  
Email Address: thoipham@gmail.com  
Affiliation:

Subject: Fragrance pollution regulation  
Comment:

Hi, I developed multiple chemical sensitivity about 5 years ago and have become one of the many experiencing terrible reactions to fragrance, smoke the other chemical pollution. It is ubiquitous and makes it hard for me to live my life. My symptoms vary in severity and type. I get nausea, headaches and burning pain in my throat that can last for hours. The under part of my chin and my throat get sore and swollen, sometimes making it hard to breathe and swallow. These chemicals are unsafe for the environment and human health and other forms of life. Please regulate them and ban the dangerous ones all together.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:06:06

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# Comment Log Display

**Below is the comment you selected to display.  
Comment 16 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Sherrill  
Last Name: Futrell  
Email Address: safutrell@ucdavis.edu  
Affiliation: - Select -

Subject: Fragrances Harm Asthmatics

Comment:

I am asthmatic and need you to reduce public exposure to fragrances asap. They cause health problems like migraines, shortness of breath and allergies for many people.

Thank you.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:06:22

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## Below is the comment you selected to display. Comment 17 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Harriet

Last Name: Lit

Email Address: portlandharriet@gmail.com

Affiliation:

Subject: Fragrances

Comment:

As someone who has become more allergic to fragrances as the years pass, I request that fragrances be eliminated from all products. When someone nearby wears perfume, deodorant, or hair spray, I immediately get a sore throat and feel ill. When teaching children with emotional problems, I noticed that their behavior worsened when there were people in the room wearing some type of fragrance. This cannot be a coincidence. Fragrances are harmful to our physical and emotional health.  
Thank you.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:03:35

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## Comment Log Display

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### **Below is the comment you selected to display. Comment 18 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: Bret  
Last Name: Polish  
Email Address: brednjam1@yahoo.com  
Affiliation:

Subject: Stop Fragrance Pollution

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:12:25



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## Comment Log Display

### Below is the comment you selected to display. Comment 19 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Deborah

Last Name: Wardly

Email Address: [deborahwardly@yahoo.com](mailto:deborahwardly@yahoo.com)

Affiliation: American Academy of Pediatrics

Subject: Regulation of VOCs from fragranced products

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance. Also, 60% of autistic people have been found to be sensitive to fragrance, therefore not regulating these VOCs could be construed as discrimination against this vulnerable group.

I am very chemically sensitive and I have an autistic son who is also chemically sensitive. We live on 20 acres down the end of a private road, in order to get away from the chemicals that society uses. Unfortunately, I have a new neighbor who uses fragranced laundry products and I am not sure what else, and my driveway is on an easement on their property. I can no longer use my driveway for recreation; walking, biking, or skiing, because of the toxic chemicals emanating from my neighbors house. Even when I go way



down the hill on my property and walk on the fire road, I can sometimes smell their chemicals. My neighbors are not sensitive and I'm sure they don't realize that they are polluting the air not only on my property, but also in our forest which is home to deer, turkey, fox and bear, plus the occasional cougar and not to mention all the birds and squirrels, etc. This has to go back to the manufacturer so that they are constrained in the amount of these VOCs that are in their products. It is important to protect vulnerable disabled groups as well as our wildlife.

My children have been home during the pandemic, but they are supposed to return to high school as soon as it is safe. And I have no idea how this will go, because of our society's addiction to fragrance. My children's education may suffer because of this, if they become ill in school or if we are forced to have them continue their education at home because of the use of fragrances at the school. Regulation of fragranced products is the first step to educating people regarding the dangers posed by these toxic VOCs, and eliminating access problems for disabled people as required by the Americans with Disabilities Act.

Thank you for your consideration of these comments.

Sincerely,  
Deborah Wardly, MD

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:12:18

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## Comment Log Display

### Below is the comment you selected to display. Comment 20 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Susan

Last Name: Watts

Email Address: susanmwr@aol.com

Affiliation:

Subject: Exposure to fragrances

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

I suffer from Rosacea and any facial product that contains fragrance of any kind causes redness and inflammation. I can only purchase and use fragrance free products.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:34:53



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## Comment Log Display

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### **Below is the comment you selected to display. Comment 21 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: Sylvia

Last Name: Valentine Henrichsen

Email Address: valentinesylvia@gmail.com

Affiliation:

Subject: No more fragrance pollution

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 11:59:40



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# Comment Log Display

## Below is the comment you selected to display. Comment 22 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Christopher  
Last Name: Pearce  
Email Address: [cpearce@scj.com](mailto:cpearce@scj.com)  
Affiliation: SC Johnson

Subject: Proposed Amendments to the Consumer Products Regulation

Comment:

SC Johnson appreciates having the opportunity to provide the attached written comments re. proposed amendments to the Consumer Products Regulation.

Thank you in advance for your consideration.

Christopher Pearce  
SC Johnson

Attachment: [www.arb.ca.gov/lists/com-attach/22-consumerproducts2021-BnVSNwZYVm9SO1Q8.pdf](http://www.arb.ca.gov/lists/com-attach/22-consumerproducts2021-BnVSNwZYVm9SO1Q8.pdf)

Original File Name: SC Johnson-Comments-CARB-Proposal-03192021.pdf

Date and Time Comment Was Submitted: 2021-03-19 12:03:52

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March 19, 2021

*sent via electronic mail*

Clerk's Office  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

**Subject: Comments on Proposed Amendments to the California Consumer Products Regulation**

Dear Members of the California Air Resources Board:

S. C. Johnson & Son, Inc. (SC Johnson) appreciates the opportunity to provide comments to the California Air Resources Board (CARB) on proposed amendments to the Consumer Products Regulation. As a consumer products manufacturer, we share CARB's goal of improving air quality for all California residents by reducing VOC emissions in a manner that is both technologically and commercially feasible, and we have been pleased to engage with the rulemaking staff throughout the process to develop and refine this significant rulemaking.

SC Johnson also greatly appreciates the open, transparent, and collaborative manner in which CARB staff has conducted this complex rulemaking, despite the logistical and other challenges posed by the pandemic, and we look forward to continued dialogue with the staff as the agency moves towards finalizing and implementing these regulatory amendments.

About SC Johnson

SC Johnson is a family company dedicated to innovative, high-quality products, excellence in the workplace and a long-term commitment to the environment and the communities in which it operates. Based in the United States, the company is one of the world's leading manufacturers of household cleaning products and products for home storage, air care, pest control and shoe care, as well as professional products. It markets such well-known brands as GLADE®, KIWI®, OFF!®, PLEDGE®, RAID®, SCRUBBING BUBBLES®, SHOUT®, WINDEX® and ZIPLOC® in the U.S. and beyond, with brands marketed outside the U.S. including AUTAN®, BAYGON®, BRISE®, KABIKILLER®, KLEAR®, MR MUSCLE® and RIDSECT®. The 135-year-old company, which generates \$10 billion in sales, employs approximately 13,000 people globally and sells products in virtually every country around the world.

Our views on several specific elements of the current proposed amendments are outlined below. We are also aligned with and support comments submitted by the Household

and Commercial Products Association (HCPA) and the Fragrance Creators Association (FCA). SC Johnson is an active member of both organizations.

### Aerosol Crawling Bug Insecticide

Aerosol Crawling Bug Insecticide products play a critical role in helping consumers in California and across the country mitigate pests that are recognized by the U.S. Environmental Protection Agency (EPA) as “pests of significant public health importance,” particularly cockroaches that can spread asthma, allergy, and food contamination. As such, it is equally important that these products are able to meet the rigorous efficacy testing requirements of EPA’s product registration process, as well as registration by the California Department of Pesticide Regulation.

While we appreciate that CARB has amended its previous proposal to lower the current 15% VOC limit down to 6% in response to feasibility concerns, the new proposed VOC limit of 8% applicable on January 1, 2030 will still require significant reformulation to ensure optimal product efficacy and delivery of product to the target pest. While Liquified Petroleum Gas (LPG) propellants constitute the majority of VOCs in these products, these propellants in their liquid phase play an important role in the solvent phase of our water based emulsion formulas. They help to form the proper emulsion, which in turn aids in the delivery and efficacy of the active pesticidal ingredient necessary to control the target pest. Simply switching from one type of propellant to another, as suggested by CARB in its Initial Statement of Reasons (ISOR, page III-68), addresses only one part of the reformulation challenge. Additional research will have to be performed to ensure that a change in propellant to comply with a much lower VOC limit does not negatively impact emulsion formation, spray pattern and particle size in a way that compromises product efficacy.

SC Johnson is committed, however, to achieving this reduction and we look forward to keeping in touch with CARB staff to share progress toward meeting the significantly lower VOC limit proposed for this product category.

Additionally, because the proposed 8% VOC limit represents a significant reduction from the current 15% VOC limit, we would ask that CARB also provide a 0.25% fragrance exemption in 2031 for this product category. CARB’s consumer products survey data shows that the fragrance exemption was utilized by some reporting companies at the 15% VOC limit. Accordingly, we respectfully request CARB to allow a minimal amount of fragrance exemption for this category to give formulators added flexibility to comply with the reduced 8% by weight VOC limit without making changes to the formulation that could negatively affect product performance or efficacy.

### Bed Bug Insecticide

SC Johnson supports the proposed definition for "Bed Bug Insecticide" and the proposed 15% by weight VOC limit for the aerosol form, as well as the proposed 20% by weight VOC limit

for all forms. We appreciate that CARB has clearly stated an effective date of January 1, 2030 for aerosol and “all forms” of Bed Bug Insecticide in the Table of Standards.

### Dry Shampoo

SC Johnson can support the proposed two-tiered VOC limit for dry shampoo products of 55% by January 1, 2023 and 50% by January 1 2029, and the draft proposed definition included on page A-13 of the Proposed Regulation Order (excerpted below).

(36) “Dry Shampoo” means a product labeled to be applied to hair and massaged or brushed/combed through the hair for the purpose of cleaning the hair without needing to be rinsed.

Consistent with comments previously submitted by the Personal Care Products Council, we request that CARB add wording to the definition that recognizes the product’s ability to make a “volumizing” claim in addition to a cleansing claim. Because the purpose of dry shampoo is to remove oil from the hair, which results in making the hair fuller in body and volume, we believe it’s reasonable for CARB to affirmatively recognize that dry shampoos can make this claim.

### Loss of the Two Percent Fragrance Exemption

CARB proposes to eliminate the Two Percent Fragrance Exemption by 2031, with a modified 0.25 percent fragrance exemption for select product categories, including general purpose cleaners and degreasers, air fresheners, disinfectants, and sanitizers. While SC Johnson appreciates that CARB has pushed the effective date for “sunsetting” the Two Percent Fragrance Exemption to 2031 and has called for retaining a modified exemption for a very limited number of product categories, we continue to have concerns about the impact of eliminating the exemption for almost all regulated consumer products.

As we and our industry partners have described, fragrance is an important component of many consumer products and serves multiple purposes – encouraging proper use of a product by the consumer (thus helping consumers to avoid over-use of a specific product); helping to mask base malodors; and enabling manufacturers to differentiate between products and brands in a highly competitive marketplace.

CARB recognized these functions when it established the exemption in 1990, explaining in a technical support document that the exemption was established “to allow manufacturers a de minimis level of these substances in various products such that the products may be marketed in an appealing manner to consumers.” As a result, the exemption has provided product manufacturers with much-needed flexibility to achieve VOC limits that have become increasingly more stringent over the past thirty years. Put simply, the exemption has become a familiar and critical tool in the formulator’s toolkit that has helped manufacturers bring

effective products to market that meet CARB VOC standards and consumers' expectations for product performance and a pleasant user experience.

The loss of the current Two Percent Fragrance Exemption will impact almost every product category regulated under Article 2 of the Consumer Product Regulations, triggering significant and costly reformulation efforts – even among product categories that will be allowed to retain a modest exemption level. Yet, CARB's own calculations show that doing away with the exemption will result in a relatively minor reduction in VOC emissions – only 0.3 TPD of additional VOC reductions to meet California's SIP commitment.

We are also concerned that among the stated benefits of eliminating the exemption is the consideration of "public health concerns." As discussed in more detail in comments filed by the Fragrance Creators Association, addressing concerns about the health effects of fragrance in consumer products in the context of a rulemaking project whose principal focus is to achieve VOC reductions necessary to attain state and federal ambient air quality standards seems very out of place. In the alternative, we would be pleased to participate in a separate and meaningful science-based discussion with CARB, its sister agencies, such as the Office of Environmental Health Hazard Assessment or the Department of Toxic Substances Control, and other interested stakeholders about the safety of fragrance ingredients used in consumer products.

For these and other reasons that have been ably described by the Household and Commercial Products Association and Fragrance Creators Association, we urge CARB to reconsider its proposal to "sunset" the Two Percent Fragrance Exemption.

If, however, CARB proceeds with plans to eliminate the exemption as of January 1, 2031, SC Johnson fully supports CARB's proposal to provide a much-needed 0.25% fragrance exemption for General Purpose Cleaners and Degreasers, Air Fresheners, Disinfectants, and Sanitizers to assist with reformulation concerns – specifically, product performance and customer acceptance. We appreciate that CARB is proposing to retain at least a small portion of the exemption for these product categories.

#### Product Label Definition / Web-Based Claims

SC Johnson supports CARB's decision to defer consideration of this issue for a future rulemaking. This is a complex matter and we look forward to continued engagement with CARB staff to determine a regulatory response that appropriately addresses the agency's concerns about excess VOC emissions and ensuring greater consistency between a manufacturer's product label and internet claims. Because of this issue's complexity, it's vital that the "solution" fits the "problem" that CARB seeks to resolve.



## Conclusion

The proposed amendments to the Consumer Products Regulation represent significant progress toward balancing the goal of reducing VOC emissions from consumer products sold in California with the need to ensure that regulatory solutions are both technologically and commercially feasible. SC Johnson greatly appreciates CARB staff's willingness to work and engage with us and many other stakeholders to further refine these proposals, while at the same time working through the technological and logistical challenges posed by the ongoing pandemic. We look forward to continued engagement with CARB throughout the final stages of this rulemaking.

Please do not hesitate to contact me if you have any questions about issues addressed in these comments.

Respectfully submitted,



Christopher P. Pearce  
Director – Government Relations

## COPIES TO:

Ravi Ramalingam, P.E., Branch Chief, Consumer Products and Air Quality Assessment Branch  
Joe Calavita, Manager, Implementation Section, Consumer Products and Air Quality Assessment Branch  
Jose Gomez, Manager, Technical Development Section, Consumer Products and Air Quality Assessment Branch  
Josh Berghouse, Air Pollution Specialist - Rulemaking Lead Staff, Consumer Products and Air Quality Assessment Branch



# Comment Log Display

## Below is the comment you selected to display. Comment 23 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Cassandra

Last Name: Hanrahan

Email Address: reichenbc@yahoo.com

Affiliation:

Subject: CARB

Comment:

strongly support the proposal to sunset the 2% fragrance exemption in the CARB regulations.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 12:05:26

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# Comment Log Display

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## Below is the comment you selected to display. Comment 24 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: Kathleen

Last Name: Wright

Email Address: thru2kat@yahoo.com

Affiliation:

Subject: Proposed Amendments on Antiperspirants & Deodorants

Comment:

I would like to add my voice to the many people who suffer from over-scent load. Everything has "scents" to it these days, and people like myself, who have immune issues, are unable to cope with this overload. This is becoming more and more prevalent. I urge you to further your controls on "scents" that must be endured rather than lessen them.

There are a whole army of folks who are living in exile, in their vehicles, because this onslaught has become so pervasive. Please do not add to this unfortunate, necessary way of life. I urge you, please, to consider why on God's earth we need anything more than what is naturally emitted?

Thank you.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 12:14:50

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## Comment Log Display

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### **Below is the comment you selected to display. Comment 25 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: darynne

Last Name: jessler

Email Address: darynnej@yahoo.com

Affiliation:

Subject: Fragrances are VOCs

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 12:57:20



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# Comment Log Display

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## Below is the comment you selected to display. Comment 26 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: Leda  
Last Name: Olinger  
Email Address: Ledakomail@gmail.com  
Affiliation: Firehorse Salon

Subject: Regulate Fragrances Used in California Now  
Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 13:50:34

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## Comment Log Display

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### Below is the comment you selected to display. Comment 27 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: Stephanie

Last Name: Taylor

Email Address: drtaylor@womanswellspring.com

Affiliation:

Subject: VOCs from fragranced products

Comment:

Fragranced products are a significant problem and source of disability for many of the patients in my medical practice. They feel comfortable coming to the office because they know that they will be safe from VOCs that can cause them to feel ill.

I strongly urge you to pass this regulation to control fragrance volatiles in consumer products. There will be significant health benefits.

Yours,

Stephanie Taylor MD PhD

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 14:15:52

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# Comment Log Display

## Below is the comment you selected to display. Comment 28 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Jamie  
Last Name: Ambrosi  
Email Address: jamie.ambrosi@gmail.com  
Affiliation:

Subject: NO VOCs in Fragrance  
Comment:

The overuse of dangerous chemicals in our personal and household products has gone on long enough! We don't want these things on our homes, I have already been boycotting and making my own products for years now. If the industry wants my business back, then they need to. clean up their act!

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 14:20:11

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# Comment Log Display

## Below is the comment you selected to display. Comment 29 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: djraymond@me.com  
Affiliation: PLZ Aeroscience

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

PLZ Aeroscience Corporation (PLZ) appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/29-consumerproducts2021-BXUBa10mVVkDZAZj.pdf](http://www.arb.ca.gov/lists/com-attach/29-consumerproducts2021-BXUBa10mVVkDZAZj.pdf)

Original File Name: PLZ Aeroscience 45 Day CARB Comments.PDF

Date and Time Comment Was Submitted: 2021-03-19 14:34:54

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**PLZ Aerospace Corporation**  
2651 Warrenville Rd., Suite 300  
Downers Grove, IL 60515  
Phone: (630) 543-7600  
[www.plzaeroscience.com](http://www.plzaeroscience.com)

---

March 18, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members,

PLZ Aerospace Corporation (PLZ) appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

PLZ commends the staff for their diligence in developing these amendments. PLZ worked closely with CARB staff on several issues during this rule development. We appreciate the fact that the staff was always open to working with us and made themselves available for numerous meetings in person and virtually.

PLZ is a manufacturer and marketer of consumer products with multiple manufacturing locations throughout the State of California. PLZ manufacturers products in every category under consideration in the current rulemaking.

PLZ makes the following comments by category:

**Air Fresheners**

PLZ appreciates the openness of CARB staff in dealing with the creation of niche categories and their respective VOC limits. Both the Concentrated Aerosol Air Freshener and the Total Release Aerosol Air Fresheners are now niche categories. While these categories are very small in size, these niche categories are important to the Consumer for they perform a much needed function. The definitions created define these new categories well and the VOC limits while technologically challenging, can be met.

**Hair Finishing Spray**

PLZ worked with staff on the VOC limits for Hairsprays. We appreciated that CARB staff removed the future effective limit for the Hairspray category. The future effective limit presented serious technological feasibility challenges. PLZ supports the 50% proposed VOC limit.





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---

### **Dry Shampoo**

PLZ collaborated with CARB staff on the VOC limits for Dry Shampoo. We appreciate the removal of the proposed lower future effective limit of 45% VOC as it presented technological and commercial feasibility challenges. The current future effective limit of 50% VOC will be challenging, but PLZ can support the proposed 55% VOC limit and the future effective limit of 50%.

### **Crawling Bug Pesticide**

PLZ greatly appreciates the multiple changes that occurred on the proposal for this category. Moving to one new regulation versus the initially proposed two prevents the burdensome task of registering products with the EPA twice. PLZ also appreciates the movement from the initial proposed VOC limits and the separation and creation of the Bed Bug category from the Crawling Bug category that was initially proposed. PLZ supports the new definitions and limits for these pesticide categories.

### **Monoterpenes**

PLZ supports the 0.25% exemption for monoterpenes in General Purpose Cleaner non-aerosol and General Purpose Degreaser non-aerosol. This is a good solution to an issue that has been active for several years now. The staff should be commended for their proposal.

### **Addition to MIR Table**

PLZ supports the proposal to add diethyl carbonate, 1-chloro-3,3,3-trifluoropropane, HFO-1233zd and alkane mixed-minimally 90% C13 and higher to the MIR table of Values. PLZ supports and encourages the use of Reactivity in future rulemakings.

### **Innovative Product Exemption (IPE)**

PLZ appreciates the staff for their creative thinking with the proposed IPE on Compressed Gases to lower the use of GWP compounds. However, as written PLZ cannot support this proposal. Currently, the proposal is unclear and confusing making the provision unworkable. Within the proposal there is no calculation to determine how to obtain 50% reduction in GWP compounds. Likewise, there is no calculation to determine the ozone formation potential of a new product. Thus, we believe the provision to be unenforceable.

PLZ does support the National Aerosol Association (NAA) IPE provision using Reactivity. The NAA proposal, unlike the Compressed Gas proposal, provides examples and calculations on how the provision could work. The use of Reactivity has successfully been used by CARB to regulate Aerosol Coatings and Multi-purpose lubricants. This prior work shows Reactivity is a known concept to CARB. In addition, the use of Reactivity will provide additional flexibility for the manufacturer to reformulate products using compressed gas propellants. We believe the NAA proposal is a viable provision and should be considered by CARB.



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---

**Conclusion**

PLZ appreciate the staff's openness and willingness to meet with us either in person or virtually to discuss all of the issues. We believe the Aerosol Air Freshener categories are well defined and the VOC limits are possible. We thank the staff for their work on the Haircare products. Unfortunately, at this time we cannot support the staff's IPE on compressed gas. Possibly with some clarification the provision would be feasible. PLZ does respectfully request the Board to instruct the staff to include the NAA proposal into the regulation. Both of these two issues can be dealt within a 15-day comment period.

Thank you in advance for considering our comments. For additional questions or clarification, please feel free to contact our consultant Doug Raymond at (440) 339-4539 or at [djraymond@me.com](mailto:djraymond@me.com)

Sincerely,

A handwritten signature in black ink that reads "William Wood". The signature is written in a cursive, flowing style.

William Wood  
Vice President, Product Compliance and Strategic Projects  
PLZ Aeroscience Corporation

cc: [ravi.ramalingam@arb.ca.gov](mailto:ravi.ramalingam@arb.ca.gov)  
[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)  
[josh.berghouse@arb.ca.gov](mailto:josh.berghouse@arb.ca.gov)  
[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)  
[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)



## Comment Log Display

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### Below is the comment you selected to display. Comment 30 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: Colleen

Last Name: Thomas

Email Address: colleengthomas@gmail.com

Affiliation:

Subject: Please Regulate VOCs

Comment:

I have lived with chemical sensitivities to VOCs for over 10 years and it is something that has dramatically affected my quality of life. In addition to headaches, I experienced chest pain, muscle weakness and confusion when I am exposed to VOCs. I have had to move to a new home site to this condition and cannot enter our shop at traditional stores (Safeway, Target, Home Depot) door to the cleaning products they use.

Please address the harmful health effects of these products and materials, for those like me and for everyone.

Thank you.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 15:21:08

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## Below is the comment you selected to display. Comment 31 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Greg  
Last Name: Rosas  
Email Address: thestro15@yahoo.com  
Affiliation:

Subject: trictRestrictions on VOCs from fragranced products in California  
Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 15:52:54

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## Below is the comment you selected to display. Comment 32 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Daphne  
Last Name: Raider  
Email Address: daphneraider@yahoo.com  
Affiliation:

Subject: Fragrance amendments

Comment:

I am very sensitive to fragrance. I am constantly trying to avoid places where I get triggered by all these different fragrances, which is a constant battle. If I do I immediately have pain in my lungs and start coughing and triggers my asthma.

Thank you for your support.

Daphne Raider

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 16:07:41

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**Below is the comment you selected to display.  
Comment 33 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Tina  
Last Name: Colafranceschi  
Email Address: Fzypkbunnyslprs@gmail.com  
Affiliation:

Subject: No perfume fragrance

Comment:

I absolutely get sick when I smell perfume or anything type of smell that not an essential oil. Please limit fragrances and perfumes.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 16:35:17

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## Below is the comment you selected to display. Comment 34 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Sylvia

Last Name: De Baca

Email Address: sylviadeba@verizon.net

Affiliation:

Subject: VOC emissions from Fragrance Products

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and environment. I do not support extending the deadline to 2031.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 16:35:09

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## Below is the comment you selected to display. Comment 35 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Liza

Last Name: Grandia

Email Address: professorcanary@gmail.com

Affiliation: Associate Professor UC Davis

Subject: personal care and laundry smog

Comment:

Although tailpipes and smokestacks typically figure in the social construction of urban smog, a startling new study suggests that homes, white-collar offices, and people themselves may contribute more than ever imagined to the volatile organic compounds (VOCs) found in urban air. In 2010, a US National Oceanic and Atmospheric Administration (NOAA) team led by Brian McDonald was puzzled by high levels of VOCs in Pasadena air that could not be linked to vehicular combustion (Carswell, 2018). Though a combination of traditional roadway measurements, plus data from California Air Resources Board (a division of Cal EPA) on indoor emissions from consumer products (specifically pesticides, coatings, printing inks, adhesives, cleaning agents, and personal care products), the team concluded that VOC emission factors from common consumer chemical products in homes and offices were "one to two orders of magnitude higher than from automobile exhaust" (McDonald et al., 2018). VOC pollution was also surprisingly disproportionate to fossil fuel consumption. Ninety-five percent of oil in the U.S. is used for fuel, whereas just five percent gets refined into pesticides, personal care products, adhesives, and the like (Amos, 2018). Albeit a small slice of the overall national energy pie, consumer products nevertheless accounted for an astonishing half of VOCs in Los Angeles smog. News editors frolicked with ironic headlines, "Smog Has As Much Deodorant As Diesel In It" (Forbes), "Want Cleaner Air? Try Using Less Deodorant" (NY Times), "Shampoo is Causing Air Pollution, but Let's not Lose our Heads" (New Scientist). Although a few articles mention cologne or body sprays as a culprit, the titles largely placed blame on women's personal care products. If McDonald's team is correct about one the world's



most infamous cities for traffic jams, then thousands upon thousands of outdoor air quality studies focused on mobile-source pollution emissions could be overestimated by forty percent or more.

That astonishing error rate might be worse, because in reading McDonald's paper with a close gendered eye, I noticed that this male-dominated (17/20) team had not factored in dryer vents as another key source of home/personal emissions (personal communication, Chris Cappa). Although McDonald's study team cited another article by Australian civil engineer and world expert, Anne Steinemann (Steinemann et al., 2011), they overlooked another study of hers that quantified acetylaldehyde emissions from house laundry vents. Her team concluded that VOC pollution from just one synthetically scented dryer load would be equivalent to three percent of vehicular emissions in a Seattle neighborhood (Steinemann, Gallagher, Davis, & MacGregor, 2013). Add together the daily laundry of a whole community, and the portrait of urban air quality would change dramatically (personal communication, Anne Steinemann). Many severely chemically sensitive people cite laundry fumes as one of the key triggers that keeps them housebound.

I urge you to put teeth into this regulation. I am among the 1-3% of the population severely incapacitated by synthetic fragrances. Most stores, schools, theaters are inaccessible to me because of everyday personal care smog. Most days, I cannot even be in my yard or take a walk because of the laundry venting in my neighborhood.

Attached are the referenced studies as well as a recent article I was inspired to write on the "ins and outs" of pollution.

I am posting the link to Steinemann's studies here. They are essential reading. <https://www.drsteinemann.com/publications.html>

Her three articles on laundry emissions are here:  
<https://link.springer.com/article/10.1007/s11869-020-00929-0>  
<https://link.springer.com/article/10.1007/s11869-018-0643-8>  
<https://link.springer.com/article/10.1007/s11869-011-0156-1>

Attachment: [www.arb.ca.gov/lists/com-attach/35-consumerproducts2021-AWZWlgRkU24HZQNq.pdf](http://www.arb.ca.gov/lists/com-attach/35-consumerproducts2021-AWZWlgRkU24HZQNq.pdf)

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## Toxic Gaslighting: On the Ins and Outs of Pollution

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### Abstract

Outdoor images predominate in cultural conceptions of “air pollution,” whilst indoor air quality (IAQ) is typically tenfold more contaminated. Recent nonprofit research revealed that “green label” carpet contains up to 44 hazardous substances. How and why do school administrators not know this? When people speak colloquially about “toxic” schools, they typically refer to *social* environments whose power dynamics are manipulated by difficult people (bullies, narcissists, gaslighters, etc.). In this article, I borrow the *cultural* concept of gaslighting to query how and why the literal off-gassing of banal objects like carpet have escaped scientific inquiry. In dialogue with recent innovative air studies in California that blur the boundaries of in/outdoor pollution, this auto-ethnographic paper chronicles a carpet controversy at “Beacon” Elementary, a bilingual school in the Central Valley. Even as outdoor smoke from California wildfires in 2017 pushed PM<sub>2.5</sub> levels past red into unprecedented magenta alerts, children were sickened *inside* school classrooms after new carpets were laid in 2017. By “outing” internal school board communication through repeated public records requests, Beacon mothers discovered how a chemical risk manager on the board manipulated confusion about patterns of pollution to dismiss the mothers’ citizen science of the chemical abuse of their children. When pollution occurs out-of-sight (in locked classrooms) or affects groups rarely studied in exposure (minors), institutions can easily deploy gaslighting techniques of doubt, denial, and disavowal of the chemical abuse of children. Given the slow (Nixon 2011), delayed, incremental, and “gaslighted” nature of modern chemical violence, even those harmed by chronic pollution may misrecognize the symptoms; those that do recognize the symptoms may be perceived or portrayed as delusional in stories worthy of Hollywood noir.

### Keywords

carpet; air pollution; indoor air quality; citizen science; environmental justice

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“So when life is getting scary, be your own illuminary.”  
-Lin-Manuel Miranda, composer and lead leerie, *Mary Poppins II*

“And O! before you hurry by with ladder and with light, O Leerie,  
see a little child and nod to him tonight!”  
-Robert Louis Stevenson, “The Lamplighter”

## Introduction

“Green label” carpet contains at least 44 hazardous substances. How and why do school administrators, much less the general public, not know this? As a subject of normalized risk, synthetic carpet is captivating because most people in the US now spend their lives indoors surrounded by it. More than half of indoor flooring in the US is carpet and Americans lay enough new carpet each year to cover 40% of Rhode Island. While early industrial rugs wove together natural ingredients, a carpet factory in Dalton, Georgia stumbled upon a new technique in 1947 for using a styrene-butadiene latex to adhere synthetic fibers onto a vinyl backing. Called “tufted carpet,” it became cheap enough to be laid wall-to-wall. Sales skyrocketed fiftyfold in a decade. By the mid-1970s, 95% of all US carpet production was synthetic (Berry and Rondinelli 2000).

Home tastes change, however. By the period of late industrialism (defined by Fortun as late-1980s), sales began to stagnate (Berry and Rondinelli 2000). Through its trade association (the Carpet and Rug Institute, CRI), the multi-billion-dollar carpet industry began aggressively advertising to hospital administrators and school facilities managers with a series of “fact sheets” to override commonsense concerns about germs and allergens. Within a generation, carpet spread to places previously considered unhygienic: restaurants, daycare facilities, elementary schools, even premier cancer hospitals. Transcending the threshold between the indoors/outdoors, carpet surrounds children's lives—from their bedrooms to their classrooms to their stadiums to the interiors of recreational vehicles that transport them to and fro. In drought-prone California, turf is also enjoying an outdoor resurgence as a supposed “eco” alternative to water-intensive lawns. To enjoy a carpet aesthetic after death, some even put astroturf on gravesites.

All-American, ubiquitous, soft, silent...but is it safe? After a fifth of the US Environmental Protection Agency's own staff were sickened by carpet in the late 1980s, the carpet industry responded by creating its own privately-certified “green” label in 1991. As reports of carpet-related illnesses continued across the country, Congressional representatives Bernie Sanders and Joe Lieberman commissioned laboratory tests of these “green” labeled carpets. In shocking footage on the CBS evening news, exposure to these supposedly “eco” carpets paralyzed and killed laboratory mice. CRI president Ron VanGelderan responded with classic corporate disavowal, “We have no evidence that exposure to carpet will cause any ill health effects. If it happens to mice, it does not necessarily mean that it's going to happen to human beings. That relationship has not been established. All of the tests . . . we are convinced

that it is not carpet as it is being manufactured [killing the mice].” He continues to externalize the blame, saying, “There is *something that happens somewhere out in the field*, and we’ve got to identify that” (Rather 1992, emphasis mine).

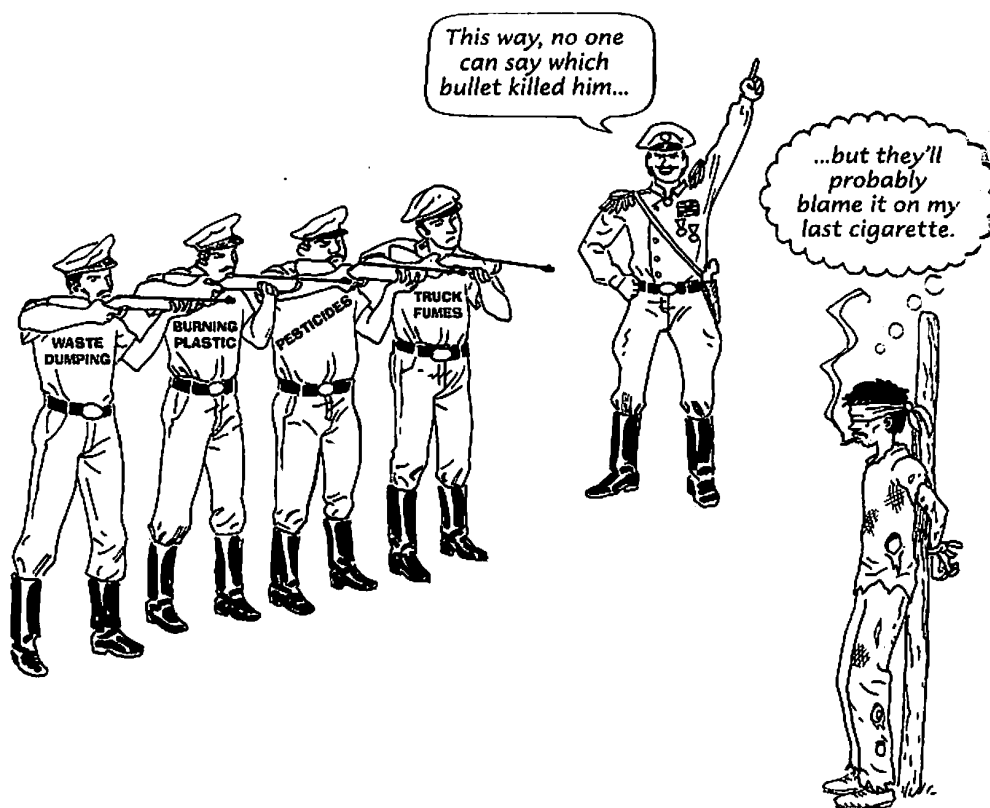


Figure 1: Firing Squad, Hesperian Foundation

Like other chemical executives, he knows that humanity is so awash in synthetic chemicals that it becomes virtually impossible to prove causality of any one product, as the macabre cartoon above illustrates (Conant and Faden 2008). With limited liability, the corporation as a legal person (stitched together Frankensteinian style from a long series of court cases) exhibits a number of narcissistic if not downright psychopathological tendencies: disregard for the safety of others, deceit, absence of remorse, selfishness, aggression, narrow economic self-interest focused on shareholder profits, absolute denial of wrongdoing, and other classic gaslighting techniques to cover their tracks and avoid liability for environmental harm (Babiak and Hare 2006). Above all, corporations have honed the legal tricks of externalizing blame—a smoke and mirrors game of deceit, denial, and doubt (Michaels 2008). Like gaslighters, through

the ploy of “public relations” and greenwashed labels, they deliberately dim the illumination of attention away from their environmental crimes and cast their critics as crazed (Stauber and Rampton 1995). Corporate spin strategies are so commonplace that they have been internalized and absorbed by governmental entities themselves, even local school boards.

Because so much of indoor-air science remains undone (Fricke et al. 2010; Allen and Macomber 2020), even those looking for causes of late-industrial illness seem to be measuring in the wrong places. Blinded by binary ontologies (Fortun 2014):

- In air quality research, outdoor pollution > indoor pollution.
- In health problems, acute > chronic or developmental harm.
- In planetary disasters, climate/energy > toxicity.

The academic literature on the anthropocene overwhelmingly focuses on *al fresco* topics associated with climate change: natural weather disasters, food security issues, and the spread of zoonotic diseases and far less on interior questions of toxicity. Like Boudia (2018), I am interested in disrupting the “outdoorsy” narrative of the anthropocene by drawing attention to the irreversible residue in bodies, especially those of children, from banal objects like carpet. As I will show, when pollution occurs out-of-sight (in locked classrooms) or affects groups rarely studied in exposure (minors), institutions can easily deploy techniques of doubt, denial, and disavowal of the chemical abuse of children.

Sunny California is an iconic place for rethinking the hazy in/outdoor boundaries of late-industrial pollution. Once territory to a quarter of the original peoples of North America, California has become an occupied settler land of homogenous office complexes and suburban tract housing—all cheaply made and falling into disrepair. From red-carpet Hollywood to dot.com cubicles, new carpet is a symbol of luxury, excess, wealth, and refurbishment. A place of constant change, renewal, and renovation, California now represents an astounding third of carpet sales in the US. Although carpet is synthesized entirely from petroleum-derivatives and coal by-products, as a polluting object, it had escaped regulatory scrutiny until California non-profit coalitions released a series of shocking reports in 2017-19 about the toxicity of “green label” carpet. These coincided with a new carpet crisis at “Beacon” Elementary, a bilingual Mexican-American school in the Central Valley. Despite evidence that a dozen children were ill, the school board ignored— or perhaps deliberately gaslighted—the problem for two years.

In this auto-ethnographic account of the mothers’ grassroots struggle to seek remedy for this indoor air crisis, I make sociological use of the psychological concept of *gaslighting* (drawn from a 1944 Bergman film) to understand how/why the worried words of the Beacon mothers were both literally and paradigmatically muffled in the school board’s own carpeted meeting room. Through this “conceptual haze” (Fortun 2014), a chemical risk manager who occupied a seat on the school board of trustees easily manipulated confusion about indoor/outdoor patterns of pollution to dismiss mothers’ citizen science and deflect liability. Although environmental health scientists agree that children are uniquely and disproportionately affected by pollution, we have remarkably few studies about how children experience toxicity (Rudestam et al. 2004),

especially in indoor settings in which they spend nine-tenths of their lives (Allen and Macomber 2020). When exposures occur round-the-clock and from cradle-to-grave, how can someone pinpoint a ubiquitous object like carpet as a lingering cause of ill health?

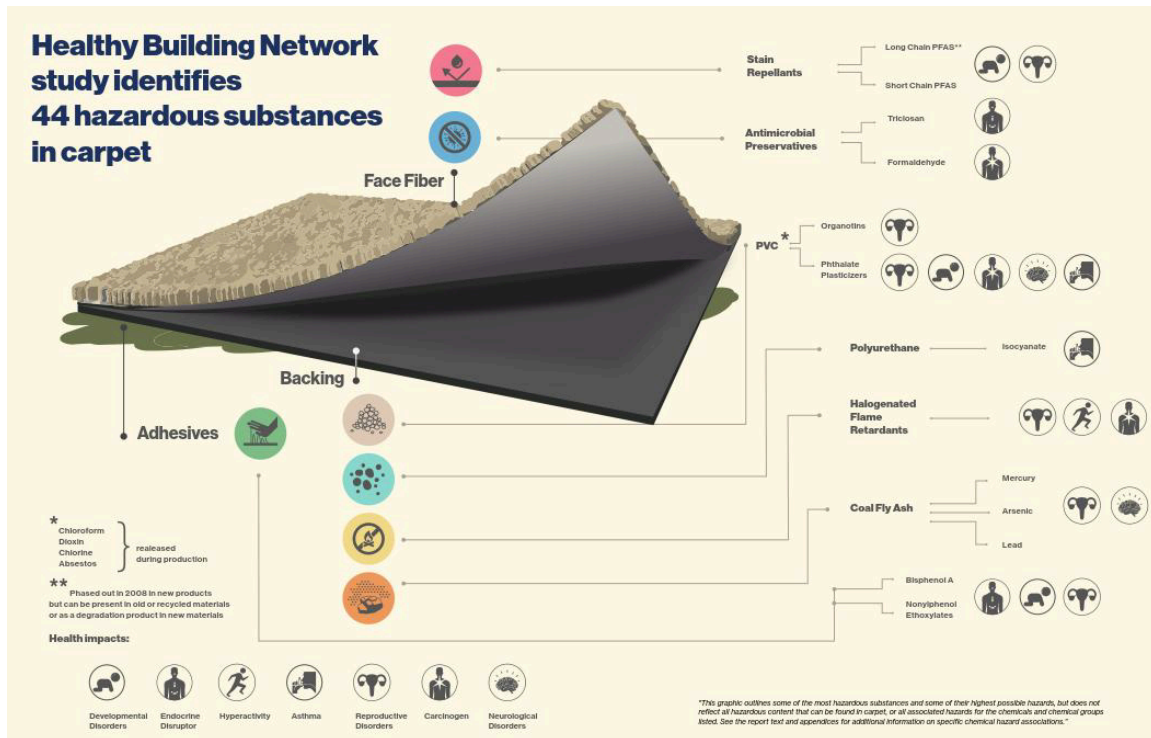


Figure 2: Changing Markets Foundation in Valette, Stamm and Lent (2017)

Given the slow (Nixon 2011), delayed, incremental, and “gaslighted” nature of modern chemical violence, even those harmed by chronic pollution may misrecognize the symptoms; those that recognize it may be perceived or portrayed as delusional in stories worthy of Hollywood noir. When people speak colloquially about “toxic” schools, workplaces, and relationships, they typically refer to *social* environments whose power dynamics are manipulated by difficult people (bullies, narcissists, gaslighters, etc.). The script of this article, therefore, opens with gender and critical race scholarship about deeper structures of *gaslighting* within and by institutions. Similarly casting their critics as crazed, the carpet industry used an eco-label to deflect scientific inquiry into the toxicity of its product for almost three decades. In the interim, believing it to be green, thousands of school districts have installed carpet. Culpabilities for this toxic tragedy can be partly attributed to the undone science of indoor air pollution and disinterest in how pollution moves across borders. Further investigative research in the “cold case” of EPA’s own toxic carpet episode revealed an unexpected villain with a smoking gun that connected the EPA’s failure to regulate the carpet industry and the promotion of carpets to

school. Following an account of my own school district's carpet drama, a hopeful finale awaits the patient reader.

### **Gaslighting, Some Theoretical Illuminations**

For most of human history, lighting fuels were naturally derived (olive oil, whale oil, nut or seed oils, beeswax, beef tallow, etc.), but leerie-lit lamps with industrially-produced gas began to illuminate the industrial worlds by the 1820s. Factory pollution from coal-fired gas production triggered the earliest Victorian environmental case law (under "nuisance" ordinances) (Tomory 2012). Tar by-products of the coal plants also began to supply the synthetic production of dyes, glues, and perfumes that are now some of the key sources of indoor air pollution. The carpet industry, incidentally, "recycles" coal incinerator fly ash as a filler in carpets, thereby contaminating them with lead, mercury, and arsenic (Lent 2012), for which there are no safe exposures in children. Suffice it to say, the ins/outs of pollution have always been intimately interconnected, even if scientific paradigms later bifurcated them.

The social concept of "gaslighting" derives from a 1938 play set in foggy London, then made famous by a 1944 film adaptation starring Ingrid Bergman. To steal her family jewels, the husband attempts to institutionalize his wife by slowly manipulating contextual details of their home like dimming the gas lights to convince her that she is mistaken, delusional, and clinically insane. A serendipitous Scotland Yard investigation into a cold case reveals her husband's criminal intentions and Bergman is vindicated and freed from the mental abuse. Psychologists adopted the term in the 1970s to describe how victimizers like child abusers or verbally violent spouses externalize blame onto their victims. Narcissists employ similar tactics to wear down their targets, isolate them from friends and family, and convince them that they are "overly sensitive," "overreacting," imagining things, paranoid, or even insane (Abramson 2014).

Barton and Whitehead (1969) first introduced the Victorian theatrical plot of the "gaslight phenomenon" into the medical literature to recommend that psychiatrists make home assessments before committing patients to asylums to avoid erroneous institutionalizations signed by felonious relatives. Yale psychotherapy scholar Robin Stern further popularized the "gaslight effect" in her eponymous 2007 book about how this particular type of emotional abuse causes the victim to question memory, perception, sensory inputs, and even his/her own sanity. Gaslighters mislead and destabilize their victims' sense of reality and self-esteem by trivializing, minimizing, projecting, denying, twisting, filtering, and suppressing information. Gaslighting, in short, is the attempt to rewrite another person's reality. As survivors of abuse know, batterers (whether verbal or physical) know how to combine their assaults with sufficient charm to sustain the relationship (Waldman 2016). Over time, this unbalancing mix leaves victims doubting their own perceptions and mistrusting their judgments. As small creatures shaped by magical thinking, children are particularly vulnerable to gaslighting.

Are aggressors aware of what they are doing? In debates among psychologists about "confabulation," Spear (2018) asserts that because abusers may selectively filter memories or information, they may perceive themselves as honorable. While the abuser's self-awareness may

be of psychological interest, for me the more interesting sociological question is *how they get away with it*. As Paige Sweet (2019) suggests, the grease of gaslighting is social inequality. The projection of blame works best in power-laden settings in which the victim internalizes the sexist/racist structures of the dominant society. When protected by privilege, perpetrators can insist upon their epistemic innocence. As she notes, “abusers mobilize gendered stereotypes; structural vulnerabilities related to race, nationality, and sexuality; and institutional inequalities against victims to erode their realities” (Sweet 2019). Feminist scholars have long demonstrated how gendered ideas of women’s “irrationality” and “hysteria” were built into legal, medicinal, and business institutions that normalize white masculinity. More recently the Black Lives Matters movement has challenged us all to scrutinize structures that pathologize those who resist institutional racism (Davis and Ernst 2019). In a poignant piece, “Dear White America,” Bjerstedt (2016) intersectionally transforms her own experiences of domestic verbal abuse into a critique of how institutions and media systematically deny, avoid, or conveniently forget historic atrocities against people of color. Whether Indigenous, Black, or Brown, people of color are perpetually gaslighted by a white settler state.

At its far extreme, gaslighting is a tool used by sociopaths, but in diluted form, it is the usual way of doing business for many institutions. It is systematic but also systemic—what STS scholars might describe as a “regime” that perpetuates paradigms through a particular type of circuitous institutional power complex. If, in its interpersonal form, a gaslighter prevents or actively thwarts his/her/their victim from seeking remedy or outside intervention, so as “to destroy even the possibility of disagreement—to have his/[her/their] sense of the world not merely confirmed, but placed beyond dispute” (Abramson 2014, 1), then it can be useful to examine how, likewise, those in bureaucratic power may similarly insulate themselves through groupthink (Janis 1982), strategic deployment of ignorance (Shapiro 2014), or other “controlling processes” (Nader 1996) to destabilize or discredit their environmental critics and invisibilize the harm. Like social gaslighting, problems of indoor air quality are slow, corrosive, and may be hard to disaggregate from other public health problems compounded by institutional racism and historical impoverishment, as described more below.

### **The Great Indoors**

Through the nineteenth century, both doctors and tenement reform activists regarded the indoors as the source of illness. However, after a cold inversion called the Great London Smog of 1952 killed an estimated 12,000, both the British and US governments respectively passed Clean Air Acts in 1956 and 1963 that focused on criteria air pollutants in the outdoors. Since then, legions of scientists have developed sophisticated linear regressions to predict and monitor outdoor air quality by geography, time, season, traffic, and even sunlight exposure (with ozone levels highest in the afternoon). Many more regulators, lawyers, and community activists diligently monitor the 4.1 billion pounds of toxic chemicals legally released outdoors each year in the US from industrial sites. However, *ten times* that number of chemicals—an estimated 42 billion pounds—are brought daily into our indoor lives, largely through consumer products that we relentlessly

touch, wear, eat, and sleep upon in our homes and places of work (Smith and Lourie 2009: 10). Pollution is not just something “out there,” but also inside our bodies.

My moonlight—or, perhaps more apropos, lamplit—activism on carpet and school air quality once seemed remote from my daytime scholarship as a cultural anthropologist on the enclosure of agrarian environments in Guatemala. However, it was Elizabeth Hoover’s (2017) elegant depiction of disempowering, psycho-social effects of pollution, as well as the Mohawk community’s inspirational partnership with environmental health scientists that inspired me to re-trust my own relational, motherly intuition about toxic indoor harm. I also began to recognize “the great indoors” as another type of enclosed geographic space from which to consider the classic subjects of scale, nature, place, and power in interdisciplinary political ecology (Biehler and Simon 2010). Not only has American cultural and familial life migrated indoors, but as visible outdoor air pollution worsens in global megacities, much of humanity necessarily spends or aspires to spend a growing proportion of time and breaths indoors (ibid.). The enclosure of domestic life has gendered implications for women’s reproductive labor under neoliberal reconfigurations of state, society, and corporate power. In this new confinement to the home or other institutional settings (daycare, schools, indoor sports, and more), children suffer disproportionately from the decline in public space (Ansell 2009)—trends, of course, only magnified by the 2020 COVID-19 pandemic.

From feminist analysis, however, in almost the same breath, I would note that borders can be malleable. As Biehler and Simon (2010) caveat:

The physical walls that enclose such spaces suggest impermeability, but, as with outdoor spaces, assumptions of complete enclosure are fallacious. Inside and transcending the bounds of any building are networked social, economic, and ecological systems that engage human bodies, animals, plants, and microbes both welcome and unwelcome; air, water, and their pollutants; and building materials, infrastructure, and furnishings. (173)

Pollutants themselves are often defined as substances that traverse boundaries. As anthropologist Mary Douglas (1966) argued in her germinal study of purity as a cultural construction, dirt lies in the eye of the beholder. When “clean” substances cross socially established boundaries, they may become polluted and vice versa. Because pollution is residual matter rejected from our “normal scheme of classifications,” people are troubled/worried by substances from the outdoors brought indoors, or the indoors brought outdoors, or the indoors mislocated in the indoors. As Fortun puts it, “sludge is supposed to stay in the sludge pond” (2014). The indoors is supposed to be “safe” from the world.

While gross estimates suggest that indoor air quality (IAQ) typically is ten, even a hundredfold worse than outside air,<sup>2</sup> remarkably little research focuses on how VOCs traverse borders or persist in gendered home environments or institutional contexts. In part, this is

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<sup>2</sup> Of course, “indoor” time can also be mobile. Americans now spend at least an hour technically *inside* sealed vehicles, whose “new car smell” may contain VOC emissions several magnitudes higher than outdoor tailpipe emissions from even the most jammed LA highway.

because the dynamic chemical mixtures of indoor air spaces are so scientifically difficult to capture and almost impossible to prosecute legally (Dickson 1994). As Murphy (2006) emphasizes, the very definition of a "sick building" derives from the very *impossibility* of defining a specific cause for the inhabitants' ailments. Because our regulatory structures have no mechanisms for assessing the synergistic harm of chemical mixtures, sick building investigators must rely on thresholds for single chemicals based on occupational workplace data or what they actually call "lamppost" data—that is, chemicals which are more easily quantified, but which may or may not be the actual causes of morbidity. Even more amazing, when measuring for indoor pollution, technicians calibrate their machines according to "normal" or more "objective" outdoor pollution.<sup>3</sup>

Not until the mid-1970s did the influential private Bell Labs initiate indoor air quality research—not because of human health concerns, but simply because their telephone wires were corroding at unusual rates in American homes (Twilley 2019). Indoor air captured a bit more attention in the 1980s after ASHRAE (the Association of Heating and Cooling Engineers) responded to the energy crisis by dramatically reducing outdoor ventilation standards, resulting in a rash of "sick buildings" (Murphy 2006). Among them was the Environmental Protection Agency's own headquarters where a fifth of the workforce fell ill in 1987-88 after new carpets were laid.

### **An Off-gassed and Gaslit EPA**

While the longer history of the EPA carpet scandal is beyond the scope of this paper [but see Duehring 1994; Johnson 2008; Lawson 1993; Murphy 2004; and Grandia (forthcoming)], some of its other indoor/outdoor ironies are worth repeating. The earliest impacted EPA workers were from a division assigned to investigate hazardous waste sites. In other words, they were people who felt fine in some of the most contaminated outdoor places on earth, but were immediately stricken ill by their offices.

After nine months of failed negotiations to remove the carpet, EPA unions secured an investigation led by one of the world's first indoor air scientists, Dr. Lance Wallace (EPA 1991). His team initially described it as a problem of "tight building syndrome." After the oil embargo, to conserve energy, the EPA had reduced its fresh air circulation from 15 cubic feet per minute (CFM) to just 5 CFM. In practice, the air circulation was even less, because the blowers turned off at 3:30 pm, even though many employees regularly worked until 7 pm. In certain overcrowded offices, desks and filing cabinets completely blocked air vents. As Local 2050 union president, Dr. Bill Hirzy, remarked, the stagnant energy-saving building was like "a gas chamber" (personal communication). Desperate workers brought in their own personal air filters until forbidden to

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<sup>3</sup> There are other dirty secrets and contradictions in outdoor pollution studies. Although "big data" sets from the latter are represented as being impeccably objective, these measurements actually rely upon technicians' embodied calibration and "feeling for error," as well as the hunches of scientists in "cleaning" the data (Garnett 2016).



do so by chief of EPA's Health and Safety Division—ostensibly to avoid outdoor air pollution associated with the production of electricity (Johnson 2008).

When the carpets were at long last removed two years later, EPA began to note indoor air quality as one of the nation's top four environmental concerns (Soviero 1992). As far back as 1984, Congress had instructed EPA to explain why they were receiving so many indoor air complaints. In trying to understand why EPA dropped the ball on carpet, I discovered a smoking gun worthy of Hollywood noir: the very same man, Michael A. Berry, tasked with directing EPA's Indoor Air Quality research program between 1986-1994, *already* had friendly relations with the carpet industry based on speaking engagements and self-cited work for carpet cleaners in his annual reports (Berry 1990). When he retired, those connections became overt—with the Carpet and Rug Institute hiring him specifically to promote carpet *in schools* and hospitals. Wielding the credentials of being a retired EPA director, he organized a conference of pro-carpet advocates at University of North Carolina's business school, where he taught as an adjunct professor apparently even whilst employed by EPA. In those proceedings, he insisted that “the science clearly indicates that modern carpet is manufactured to be environmentally safe and that clean carpet poses no risk to public health” (Berry 2003, 14)—whereby he cited the dearth of contrary evidence from EPA that *he himself failed to produce* as a deputy director tasked to “identify and coordinate research needed to fill existing information gaps” in indoor air science (Berry 1990, 35). In June of his retirement year, he was already amplifying the carpet industry's counterattack against environmentalists in academic journals by citing his own managerial negligence in pursuing research into the carpet industry as proof of its safety. For example:

Although no credible scientific or medical evidence was uncovered by the U.S. Environmental Protection Agency (EPA) or independent testing laboratories to show that carpets are a cause of multiple chemical sensitivity or allergic reactions in humans (the “sick-building” syndrome), continuing claims that carpets may be a cause of chemical irritation required carpet manufacturers to take measures to reassure customers of the safety of their products (Rondinelli and Berry 1998, 23).

Across various other fora, he gaslighted blame for environmental illnesses from chemical emissions to poor custodial services and “wetness” in schools. Berry later specialized in mocking “perceptions” of environmental health concerns about industrial chemical cleaners as “junk science” and “eco babble” (Cleaning Business Magazine 2007).<sup>4</sup> A white paper he authored for the Carpet and Rug Institute was entered as evidence during a rare Congressional committee investigation into environmental problems in public schools (107th Congress 2002). Manipulating fluorescent lights rather than gaslights, he argues that “glare from hard surfaces is distracting” and carpet, therefore, helps children “focus on the front of the classroom.” If properly vacuumed, “carpet floor coverings are essential in making classrooms work” and

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<sup>4</sup> In a keynote address that might cause Mary Douglas to turn in her grave, as an evident germaphobe, he asserts that green cleaning is “all about polluting” (Berry 2010: 22).

improving educational performance (Berry 2002, 3 & 15). He repeatedly vouched for the healthfulness of properly vacuumed carpet, “You could eat off it. It’s just plastic. That’s what you want your kids crawling around on...” (Berry 2010, 19)

Beyond Berry, the rest of EPA’s indoor air research and regulatory team was absurdly small with just 15 full-time staff. From that group, the person who eventually took helm of EPA’s indoor air quality program was the same senior staff scientist (Bob Axelrad) who thwarted Local 2050’s proposal to regulate 4-PC carpet emissions (Hirzy and Morison 1991) during a 51-meeting “dialogue” with carpet industry (Grandia forthcoming). After that, Axelrad was noted as a key contributor to the “Schools Action Kit,” which endorses the Carpet and Rug Institute’s green labeling program (Thompson 2000). It provides zero warning about potential hazards to school administrators.

Thirty years later, Axelrad continues to lead EPA’s IAQ division. Rather than investigating toxic consumer products that can be traced back to specific corporations, the division focuses on more “natural” (and perpetrator-free) threats to indoor air like radon, dust mites, roach droppings, mold, or domestic cooking emissions (Twilley 2019)—again, with tacit gender blame shifted to sloppy housekeeping. Even before Trump eviscerated the EPA, its Obama-era website reflected minimal attention to the volatile synthetic chemicals off-gassing from interior designs, renovations, and maintenance. Meanwhile, outdoor air continues to consume the lion’s share of federal research, regulatory dollars, and scientific brains. Micro-soot (PM<sub>2.5</sub>) became the new hot topic at EPA, while much higher rates of chemical dust and fumes inside homes and schools were ignored (Allen and Macomber 2020).

### **Ins and Outs of Pollution**

Yet, soot is no longer as simple as Percivall Pott’s (1775) foundational occupational study of scrotal cancer in chimney sweeps (Sundell 2004). Outdoor particulate matter now includes synthetic molecules known as volatile and semi-volatile organic compounds (VOCs and SVOCs) derived from fossil fuels. By definition, they are chemicals with low boiling points that form gases at room temperatures—physical properties that also make them very reactive in the air. In the presence of nitrogen oxides, VOCs degrade through diverse chemical reactions into secondary aerosols. They eventually will break down into ozone, CO<sub>2</sub>, and water (some over minutes, others over months), but in their unstable, intermediate stages, these dynamic aerosols can produce adverse effects on human and wildlife health. Although it was once difficult to capture this chemical complexity, advances in mass spectrometry now enable air quality scientists to “fingerprint” and measure the thousands of different structures of VOCs (Lewis 2018) that compose fine particulate matter in the air. Yet, are they looking in the right places?

Although tailpipes and smokestacks are the stereotyped origins of city smog, a startling study of Los Angeles pollution suggested that everyday indoor consumer products accounted for an astonishing *half* of that city’s infamous pollution. Led by Brian McDonald, a US National Oceanic and Atmospheric Administration (NOAA) team was puzzled by high levels of volatile organic compounds (VOCs) in Pasadena air that could not be linked to vehicular combustion

(Carswell 2018). By combining traditional roadway measurements with data from California Air Resources Board on consumer product emissions (specifically pesticides, coatings, printing inks, adhesives, cleaning agents, and personal care products), the team concluded that VOC emission factors from people's own bodies, homes, and offices were "one to two orders of magnitude higher than from automobile exhaust" (McDonald et al. 2018). News editors frolicked with this irony in headlines like: "Smog Has As Much Deodorant As Diesel In It" (Forbes) and "Shampoo is Causing Air Pollution, but Let's not Lose our Heads" (New Scientist). Put another way, the US dedicates fifteen times more petroleum to vehicular combustion than to making consumer products, but the latter emit roughly the same amount to VOCs into urban air as the former.

This is true even for some of California's most polluted "airscares."<sup>3</sup> The "Northern California Household Exposure Collaborative" discovered that homes around the infamous Richmond refinery actually had higher PM<sub>2.5</sub> levels *indoors* than outdoors, even during flares requiring "stay inside" (shelter-in-place) orders (Brody et al. 2009). In another remarkable study, they compared the indoor air pollution of a wealthy coastal community (Bollinas) with that of Richmond's poor neighborhoods and found disturbing levels of indoor air pollution in both—to the surprise of study participants who misperceived the home as a safe haven (Adams et al. 2011).<sup>4</sup>

As Michelle Murphy has emphasized through her concept of "alter-lives," indoor threats to even wealthy communities may be imperceptible because of the permanent chemical alteration of post-industrial bodies. Odors may provide warning of harm, but not always, as chemical corporations add synthetic fragrances to their products to mask other dangerous odors. In memoirs, social media testimonials, and quiet conversations among folks with environmental illnesses, they/we describe the experience of coming to chemical consciousness as something like un-peeling onion layers to "unmasking" the deeper causal threat(s). As any person who returns home from a long vacation may note, an empty house smells newly strange until one has re-immersed sensorially to the habitat. In other examples of olfactory adaptation/smell fatigue, people with body odor may not smell themselves; the overly perfumed cannot perceive their own pungency; and so on. In her pathbreaking theory of "Toxicant Induced Loss of Tolerance (TILT)" Miller points to inflammatory "masking" as a key etiological problem in diagnosing the external causes of environmental illnesses. As Nading (2020: 210) puts it, "toxic effects seem more like affects." When people are chronically habituated to irritants or suffer apposition (successive or overlapping reactions), they may misperceive the cause or be mislabeled as inherently "sensitive" rather than having been *sensitized* by chemical injury.

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<sup>3</sup> For the concept of "airscares," I was inspired by British artist Michael Pinsky's dome installations that contrast air from the Norwegian countryside with Delhi, Beijing, London, etc. (Yeginsu 2018)

<sup>4</sup> To be sure, a sense of home is not always indoors. In trying to understand the affects of contaminated places, the juxtaposition of industrial pollution on a Chippewa reserve in Ontario, Canada, Jackson (2011) describes this profound sense of alienation from ancestral homeland as "displacement."

## Methods

In using this story about carpet injury to rethink the above air pollution paradigms, I was inspired by “creative tension” in Sandra Steingraber’s autobiographical style that blends hard toxicological science and cultural critique with the ecology of family (Bryson 2001). I also share her sense of the deep mobilizing power of maternal care (Brown 1992). Motherly worry has certain atmospheric qualities—a kind of “suspension” from the present to project concern into the future (Choy and Zee 2015). Feminist time studies demonstrate that the work of worry is a capitalist externality that falls disproportionately upon women (Schulte 2014). While some worry can be productive, anxiety reflects an overload of external quandaries relentlessly lodged into the brain about which a person can do little.

Dominated by technical disciplines, early hazard studies once assumed that scientists (engineers, doctors, statisticians, epidemiologists) understood the “real” risk, while the “perceived” worries of the public were subjective, uninformed, false, illusory, or irrational. STS scholars began to question this hierarchy, noting that scientists themselves disagree. Meanwhile, following their intuition, like the mothers of Love Canal, the public began collecting their own data through citizen science. Through worry as proxies for their little ones, mothers, teachers, and caretakers must necessarily pay close attention to the details of our children’s health and humor to recognize incremental threats that others might see as harmless (Rudestam et al. 2004). Squatting to talk to children, we understand that children have a bodily intimacy with surrounding airspaces and niches into which adults do not fit (Ansell 2009). Private kitchen table discussions about embodied exposure experience (Adams et al. 2011) therefore remain an essential consciousness-raising zone for transforming maternal worry into public environmental justice.<sup>7</sup> Perhaps more than any other type of anti-toxics organizing, the “intimate activism” (Tironi 2018) of mothers is driven by ethics of “agency-as-obligation” (Liboiron, Tironi, and Cavillo 2018).

As an inductive medium that shares an appreciation for the observational knowledge of citizen science, ethnography is a prime medium for “worrying through” (Fortun 2012) intellectual problems. In turn, auto-ethnography illuminates emic perspectives not perceptible to even the most sympathetic or allied observer.<sup>8</sup> More than the filtered haze of memoir, auto-ethnography implies that one has taken pro-active care to record detailed notes and triangulate them with additional documentary research. As a self-same process of participant observation, it shares attention to experiential detail.

That said, none of this carpet investigation was planned as academic research. It was, first and foremost, a single mother’s extracurricular struggle to protect her only child from bodily

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<sup>7</sup> At one point in the struggle, we contacted the teachers’ union, which chose to remain uninvolved. However, because the union representatives used district emails to communicate with us, we later learned from public records that they were reluctant to attend a meeting *inside* a private home—an odd excuse since unions have always organized through meetings around kitchen tables away from the bosses’ ears.

<sup>8</sup> As I am learning from my Native American graduate students, anthropology is no substitute for indigenous epistemology. This is not a question of blood quantum, but how emergent Native scholars are building new kinds of theory through embodied insights illuminated by transgenerational mentoring and wisdom.

harm. Nonetheless, the tools of good activism are remarkably similar to those of good qualitative research. In retrospect, I can see they also share similarities with therapeutic recommendations for victims of gaslighting.<sup>9</sup>

- Refer to history (recollect one's sense of self prior to life with an abuser).
- Take careful note to reestablish control in asymmetrical power situations.
- Check facts and document everything.
- Triangulate/validate observations with outsiders or third parties.
- If possible, step away from the context for perspective.
- Make use of legal tools for investigation.

Following similar defense principals for our carpet-removal campaign, I corresponded with a multitude of experts and interviewed several octogenarian actors from the EPA's own 1987-88 carpet scandal who (like me) kept scrupulous archives that they generously shared. I connected with the authors of unfolding nonprofit reports on the carpet industry that documented a shocking 43 hazardous substances in carpet (Valette, Stamm, and Lent 2017). As illustrated by Figure 2, these include a carcinogenic styrene butadiene latex that binds fibers to a toxic backing that contains PVC, phthalates (plasticizers), BPA, and residual heavy metals from coal fly ash filler. Additional toxic coatings on the fibers include: antimicrobials (triclosan banned in personal care products but permitted in carpets); flame retardants; PFAs and PFOAs ("forever chemicals") for stain resistance, which are linked to illnesses ranging from testicular cancer to thyroid disease, as well as several thousand lawsuits against Dupont; and even perchlorate, a chemical used in rocket fuels that is associated with cancer and thyroid issues. Many of these were discovered in even the carpet industry's most "eco"-friendly lines and brands (Changing Markets 2018). I called flooring companies; queried salespeople; screen captured the Carpet and Rug Industry's website for years; and cultivated conversations with an industry whistleblower. As a last resort, another mother and I filed a battery of public records requests to understand the school district's inner logic.

I also drew from past embodied experiences of carpet-related environmental illness (Grandia 2020) that enabled me to immediately recognize symptoms in my daughter and to dialogue with other mothers about their children's ailments—in ways not possible in traditional ethnographic research. As developmentally dynamic and often mercurial beings, children are especially vulnerable to the masking of toxic harm, especially neurological effects. Beyond classic allergic responses (eye irritation, stuffy nose, skin rashes, etc.) to common chemical irritants, children can also suffer cognitive and emotional transformations (cf. Randolph 1962). As documented by environmental pediatrician Doris Rapp (1997) in chamber studies, toxicants can not only trigger a limbic "fight or flight" response, but also anger from the amygdala. Parents can easily dismiss as "just a phase" the kinds of irritated outbursts, muscular aches, nervous tics, cognitive decline, poor handwriting, and other flickering emotional gaslights that the Beacon

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<sup>9</sup> At a national level, journalists are using similar tools to deconstruct Trump's twitter feed.

mothers observed in our children after the new carpets were installed. In unusual moments of friendship and emotional vulnerability, we confided to one another how our once cherubic children came home from school so chemically addled that they began punching their mothers in the face. Had their brains been injured, were we bad mothers, or were we just imagining things? Much as therapists recommend to gaslighted clients to write a comprehensive counterstory for “narrative repair” (Waldman 2016), the nonfiction sketch that follows represents a final step in our struggle to reclaim agency and clear the air.

### **Clearing the Air**

Having experienced a “carpet bombing” at my first university (Grandia 2000), when I moved to California, I bought an old house with hardwood floors. Unable to find daycare centers without carpet, I juggled my daughter’s preschool years at home. Her first exposure to institutional carpet was, therefore, in kindergarten. To my repeated horror, she came home from the first day of school with welts on her legs. Without other schooling options, I thereafter dressed her in leggings and tights, bought an air filter for the classroom, and tried not to worry. When re-delivering that filter two years later to her new second-grade teacher at Beacon Elementary, the stench of new carpet smacked me in my tracks. With horror, I realized that my introverted daughter’s after-school stomach cramps, headaches, twitching, myalgia (muscle pain), crying jags, listlessness, and exhaustion that week were not from the presumed social stress of a new school year, but the wretched indoor air quality of her classroom (cf. a similar set of symptoms reported in Norbäck and Torgen [1989] or Anderson, [1997] for studies of carpet exposure in rats).

Compounding the situation, northern California temperatures climbed the following week into the 110s. Smoke spilled down from the Shasta/Trinity wildfires and lay trapped in the valley. Yet even as PM<sub>2.5</sub> levels soared past red into unprecedented magenta alerts that same week, the newly carpeted classroom air reeked far more than the outdoors. A grandmother in a calm respiratory state waiting outside with me in the hazy schoolyard then suffered an asthma attack after stepping inside the classroom for just a minute. I found myself oddly hoping the principal would not cancel outdoor recess due to the smoke, so the children might have at least some temporary relief from the carpet fumes.

Terrified, I immediately filed a formal complaint to the school district and requested an immediate increase in the air circulation. Fearful of the long-term repercussions of carpet injury, I quickly decided to offer my daughter’s college savings to the school district to immediately remove the carpet. A few days later, I secured a second donation for a classroom’s worth of “marmoleum” (natural linoleum) tile from one of the eco flooring companies I called for replacement quotes.

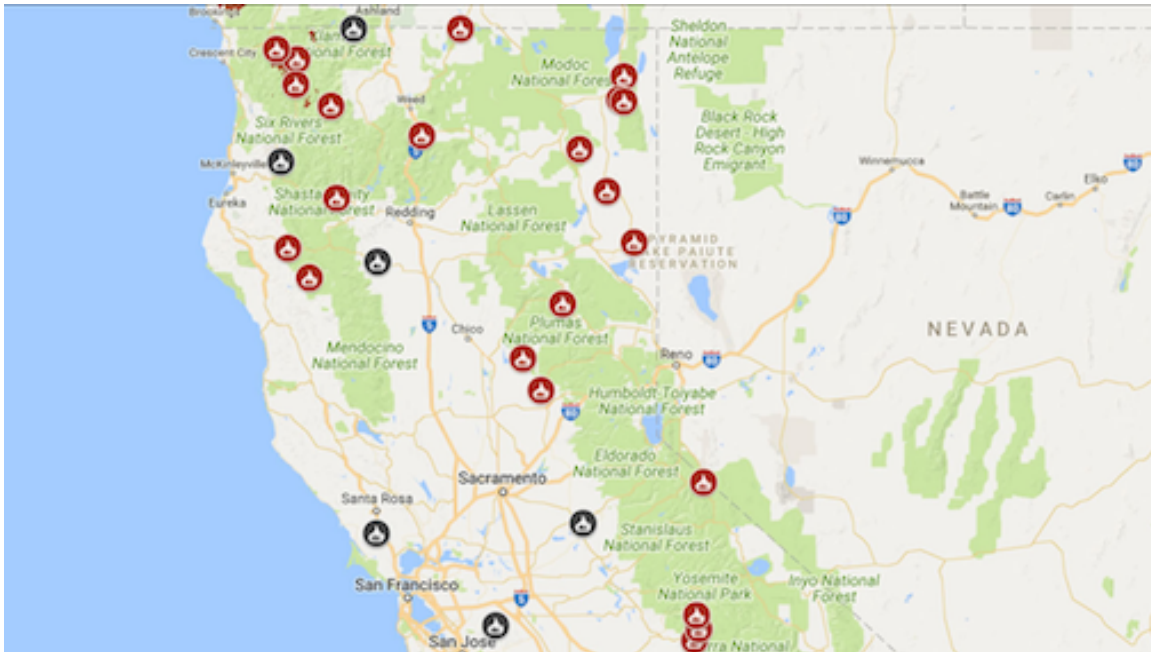


Figure 3: 2017 California Fires

The school district declined both my donations. They said, Ms. [sic] Grandia, if labeled “green,” the carpet must be safe.

I began to mobilize for a one-woman-activist-carpet-show. Teacher after teacher began to approach me in the schoolyard to whisper about the stench of that room and other air quality concerns, including a history of mold problems throughout the portable trailers. They wondered if they should just mask the carpet fumes with Febreze or plug-in air “fresheners” (please no!). In those conversations, I learned that the teachers were forbidden to leave open doors and windows for fear of school shootings. Yet, in defending against external “stranger danger,” the schools had inadvertently intensified another kind of chemical violence to children’s and teachers’ bodies.

Preparing to take my concerns to the school board, I met some other mothers from the school who were petitioning for an air conditioning system after children collapsed from heat strokes in the after-school program. The school with the highest Mexican-American enrollment was also the only one in the district without AC in its multi-purpose room. I became friends with the HVAC petition group, and in solidarity with me, they signed up for my “coalition for green schools.” An illegal pesticide spraying incident at Beacon Elementary in October recruited more upset mothers, many of whom were daughters or granddaughters of farmworkers. Then, in November, we learned that the same new carpet had been installed over the summer in three other classrooms. Some of the HVAC mothers belatedly made a connection between the carpet in those classrooms and changes in their children’s own health, including stomach aches, headaches, red eyes, concentration and memory problems, fatigue, and declining grades. We

eventually tallied a list of eight chronically sick children (adding three more later) for a total of eleven among the four classrooms in both the before and afterschool programs.

Intense months of organizing followed. Carpet was a formidable issue with which to mobilize a movement for "green schools." It was challenging to create an "event" out of the deeper problem of decaying school infrastructure (Ahmann 2018). So, in early December, the mothers and sick children marched down Main Street in the holiday parade as proverbial canaries in the mineshaft (Figure 4). A young newspaper reporter for the local paper picked up our story and accompanied us to a December meeting with the school district, where at last the Superintendent agreed to accept my two donations and match them to remove all four carpets—or so we thought.



Figure 4: Mama and Daughter Canaries

After the winter break, he disappointed us with the news the donations could only remediate one classroom and the contract for the other three classrooms would need board approval—a routine matter, we were told, but inexplicably postponed to February 8. We continued our lobby. Before the holidays, two trustees offered to roll up their sleeves to do the



work themselves if needed. Two others spoke on our behalf, including "Becky," who held a day job in environmental risk management. We thought we surely had four of seven votes for remediation of the other three classrooms. However, given Becky's prior history working for the chemical industry and her self description as a "proud member" of the American Chemical Society, I should have anticipated her politics of disavowal (Fortun 2014).



Figure 5: Before and After, author's daughter on the carpet removal

Before the carpet removal from my daughter's classroom in late January, I requested a thumbnail size sample of the discarded material for testing. Claiming potential problems with the chain of custody, the Superintendent responded that "the district is unable to collect or give out samples of the carpet." However, public records later revealed that the district did, in fact, hire a laboratory to place into storage an eighteen square inch sample of the removed carpet. As for the rest, like the Grinch on Christmas Eve, the subcontracted company carted away every last thread in a rental U-Haul. (Other mothers checked the dumpsters the next day . . . nary a scrap was left).

At the February 8 board meeting, the routine budget items were put last on the agenda. The meeting's surreality was heightened by the unprecedented presence of two armed policemen stationed at the doors. The usual two-hour meeting droned for four hours until ten o'clock p.m. Mothers went home to put their children to bed and came back. Some began to worry that none of the trustees would look at us. Nah, I thought, we have this in the bag. It'll be 5-2 in favor of remediation, and then our green coalition will gladly help them pass a sorely needed school bond in the next election. Even if the trustees were not convinced by the health hazards of carpet, when taking into account maintenance and replacement budgets, we had clearly shown that carpet was costing the school district several times more than tile or natural linoleum floors.

At last, the agenda item came. A sympathetic trustee motioned to approve, but no one seconded. What? In a haze, the mothers broke Robert's Rules and demanded discussion. One trustee said the air tests prove it can't be the carpet? Huh? What air tests? Confused, we asked again, what air tests? Huh? The Superintendent had secretly ordered air tests? When? Although the trustees had apparently not seen the results either, they trusted the Superintendent's word that "the results were fine; everything's fine."

The policemen arched their muscles and the president of the board gaveled me into stunned silence. Despite having just discussed the discovery of an unrestricted surplus budget of one million dollars for facilities improvements, the trustees then voted 6 to 1 not to spend \$31,432 to remove the carpet from the other three classrooms. Five trustees exited out the back to avoid the weeping mothers.

I filed a midnight public records request for a copy of these covert air tests and saw immediately that the "baseline" test in my daughter's classroom failed to screen for the key chemical of concern, 4-PC (4-phenylcyclohexene). The other three classrooms were not tested until *six months after* the new carpet installation. A California air regulator who reviewed the results as a favor to the mothers wondered why the tests were inexplicably conducted at 11 pm, with no observers, and no notes about where the canisters were placed, nor levels of air circulation.

Those questions remained unanswered. That month our sympathetic local reporter gave up journalism and moved to the Bay Area for another career. The town newspaper editor ignored our press release about the air tests. Of a generation convinced of "better living through chemistry" and a former chemistry teacher himself, the Superintendent countered with a press release vouching for the safety of the carpets:

The carpets of concern are Green Label Plus Certified carpets, which meet and exceed the Collaborative for High Performance Schools (CHPS) criteria for low emitting materials. This is some of the best carpet on the market, and it is approved for use in schools by the State. This carpet was installed properly and by a professional installer.

To be sure, carpet companies sit on CHPS's board. Although I had spoken for months about how the carpet industry invented the unverified "Green Label" in 1991 to avoid regulation after the EPA headquarter's scandal, "legality" became the district's mantra.

Since ostensibly Becky had voted against the carpet removal until the "pilot" classroom could be evaluated, the mothers requested a meeting with district executives in late spring to report notable health and cognitive improvements among the children in the one remediated classroom (illustrated by my daughter) and for another child who was relocated from an unremediated class to a new homeroom. My daughter's teacher confided that the whole remediated class's third-quarter test scores were unusually high. She herself was not so fortunate, having just been diagnosed with breast cancer after five months of exposure to the new carpet before it was removed. Facing a new level of liability, the school district went silent.

### **An Inside View from Public Records**

To break the stalemate, another mother and I filed a public records request, which the district hired an expensive law firm to handle. In the 2,600 pages returned to us, we learned that the new carpet had been installed in not just four classrooms at our school, but another 23 across the district. Behind the scenes, certain trustees described the mothers as "bullies" and "terrorists." The trail of shifting excuses discussed behind the scenes included:

- "Let's go with the 'bad batch' theory..."<sup>10</sup>
- "Time will fix it."
- "How can they prove it's the carpet not something else in the portables?"<sup>11</sup>
- "If we fix the carpet, they will ask for something else."
- "It's legal."
- "If they have a problem with the carpet industry, they [the mothers] should change the law."
- "This is perfectly good new carpet."

Becky, the trustee who works by day as a professional chemical risk manager, appears to have provided key advice to the Superintendent about how to renege on his December 2017 promise to the mothers to remove all four carpets. By email she commiserated with the Superintendent for "heading into the lion's den" to deal with an "ambush" of six mothers who, horrors, cried at the meeting and brought "pictures of students who they claimed had symptoms ranging from red eyes to neurological problems." Agreeing that the mothers' emotional expression "feels like bullying and blackmail," Becky counseled:

There is no empirical evidence the carpet is toxic. We live in one of several non attainment areas the Air Quality Management District monitors closely[.] Our air quality is poor to begin with. In September October we were experiencing one of the worst fires in California history less than 60 miles from us. Of course[,] there would be health effects

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<sup>10</sup> Incomplete polymerization of the styrene-butadiene latex in carpet backing had been implicated in elevated levels of 4-PC in other sick building scenarios (Anderson 1997).

<sup>11</sup> As noted above, the fourth homeroom with the sickest child was a brick-and-mortar classroom, which meant that the children's illnesses could not be blamed on the portables alone.

from the fires. The carpet manufacturer, Department of Public Health, Consumer Product Safety Commission, California Department of Education, our unions, local medical professionals—none of them have brought any carpet problems to our attention.

Though the children remained ill months after winter rains cleared California's fires, Becky blamed their illness on the outdoor smoke. Full circle, she cleverly understood that outdoor air pollution can always be scapegoated in the public imagination. From the playbook of the tobacco industry and climate deniers, doubt was Becky's product.

### **Rugrats for Reform**

In the classic, unadorned words of Charles Perrow (1984) about nuclear meltdowns, "The issue is not risk, but power." While public records do not provide sufficient material to speculate on the motivations of the diverse people that enact amateur bureaucratic power on local school boards, it appears most of them just ignored the nonprofit reports and books we gave them and simply trusted the carpet industry's "green label." Decades of relentless corporate manufacture of uncertainty has primed even local public officials to demand proof over precaution. As one trustee impossibly demanded of the mothers, "How can you prove it's the carpet?" Without samples, we obviously could not. Trained in the language of risk assessment and counterfactuals, Becky understood that the board could dismiss their constituents' realities as false. Due to the dearth of indoor air science, in general and in research into carpet, in particular, they would be protected from legal reprisal.

Ultimately, STS is not about disputing the legitimacy of science, *per se*, but about using a social constructivist lens to "question what [scientists] are measuring and not measuring" (Tarr 2004)—and then reflect upon who benefits and who suffers from the uneven sedimentation of scientific curiosity. If, as DuPuis notes, the "smoke" of air pollution is a "mirror" of social relations of power, my contribution here to that ongoing discussion was to emphasize that our perceptions of contamination and its locations can be easily gaslighted—due to the etiological uncertainties of environmental illness and multiple exposures, but also by the collective (scientific, institutional) disinterest in how indoor air quality may be harming children's emotional and intellectual development. For me, the real villains of this story were the EPA staff members who might have done this research but instead protected the carpet industry's bottom line over US schoolchildren's health and safety (Berry 2010).

Like David Noble in his masterful history of engineering, *America by Design*, scientific research may be a complex hegemonic system, but one can nonetheless trace its directionality to the complicity of key figures—what anthropologist Laura Nader characterizes as "controlling processes" (1996). Unlike Bourdieu's (1980) smoother notions of power as "conductorless conduct," this carpet story points to how toxic uncertainty can be manipulated at multiple levels. While villainous gaslighters at the top eschallons of power make for good Hollywood drama, the more interesting figures are the supporting characters in the wings. As I quip to my students, pay attention to the anonymous "men in grey suits." Behind the closed doors of conferences,

clubs, convention exhibits, consulting reports, these middling “grey suits” can orchestrate or ignore environmental crimes largely without repercussion. In modern-day allegory of Plato’s cave, chained in the semi-darkness, refusing to read unfolding research of renegades, local institutions can hold fast to their epistemic innocence even when challenged by constituents.

Yet, as we know from popular culture, the final awakening of interpersonally gaslighted victims often results in a breakage—resignations, divorces, disownments. Gaslighted publics also suffer feelings of civic betrayal and distrust of governing institutions following toxic tragedies (Beamish 2001; Szasz 1994). As I conclude this article, millions across the US have taken to the streets in protest not just of police brutality but of an entire system of racialized gaslighting. In less spectacular ways, local environmental crises such as the Beacon carpets can generate momentum to shift structural power imbalances. In fact, one of the Beacon carpet mothers vigorously campaigned to win a seat on the school board and is leading a broader democratization of their decision-making processes based on genuine community consultation. With another new allied trustee, she seized a procedural opportunity in 2018 to call for a new floor policy.

Perhaps the most redemptive character from the final scene of this story is “Scott,” the facilities manager who installed the carpet. Early in the mothers’ struggle, this was a person who said with a straight face on camera to a local television reporter that he had called the carpet company and was reassured it was safe. I retorted on social media, “Sure, the carpet industry tells you its product is safe. Philip Morris will also assure you that smoking doesn't cause cancer.” Although Scott was once clearly gaslighted by the carpet industry into believing the safety of the “green” label, when tasked with writing a new floor policy, he and a new assistant began to read the nonprofit reports and other evidence presented to the board and train themselves about “red listed” chemicals of concern. Building on their excellent draft, we easily came to an agreement on a pathbreaking policy in two short meetings. With precautionary principle sentiment, our joint statement details skepticism for the industry’s own certifications, commits to purchasing decisions based on the total cost of ownership, and excludes specific chemicals of concern. The next month when we presented our joint policy together at the podium, several trustees verbally marveled at this outsider/insider alliance (Figure 6). With a pained face, even Becky joined with the others to pass our sustainable floor policy.<sup>2</sup> It is now being evaluated in committee as a model for the whole University of California procurement system.

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<sup>2</sup> For the moment, the policy remains aspirational due to budget constraints and numerous other facilities issues ahead of carpet removal. An awakening public, however, has noted that California is among the worst states for the ratio of per capita spending on prisoners (\$64,642) compared with public school students (\$11,495), and our community will hopefully pass a needed bond for general school maintenance.



Figure 6: Town newspaper coverage of the floor policy, courtesy of Carlos Guerrero 2019

Meanwhile, two branches of California’s EPA have launched separate investigations into flame retardants (PBDEs) and stain repellants (PFAS or “forever chemicals”) in carpets—both of which pose special dangers for vulnerable populations like children who share close intimacy with carpet throughout their developmental years. It is my hunch that twenty-first-century ecological revolutions will not arise from the factory but from the frail bodies of child activists like Greta Thunberg and the Beacon children whose labored breaths are awakening my wall-to-wall comforted and comfortable generation into action. For the investments needed to move the deferred maintenance of late-industrial school districts into sustainability, I hope our story may provide a beacon of hope.

### Author Biography

Liza Grandia, cultural anthropologist, is an Associate Professor of Native American Studies at University of California-Davis. She is the author of several books and monographs on threats to Q’eqchi’ territory and autonomy in the northern Maya lowlands into which she is layering a new line of research on pesticides, agroecology, and environmental justice. Making intellectual

lemonade from life's lemons, she is pursuing a number of projects about cultural perceptions on toxics in everyday life.

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To my carpet comrades whose names I protect per standard anthropological ethics, I am grateful for the friendships we developed through this struggle. Alysa Meyer of Legal Services of Northern California aided two of us in filing public records requests and an appeal to the state. Sierra Club's recognition of our coalition as northern California's "best activist group" of 2019 reassured us of the sanity of our cause when the lights of morale were low. Above all, I thank my daughter for her patience with all the meetings and for inspiring this article's luminary themes through her passion for Harry Potter's "defense against the dark arts" and for Mary Poppins's dancing with the leeries. During this period, I also had the fortune to be engaged in a formal course of study in toxicology and environmental epidemiology through a mid-career Mellon "New Directions" Fellowship that gave me the scientific tools to peer through the gaslight. I am grateful for reviewers' comments that challenged me into additional research that led to the discovery of the smoking gun described herein. Any errors, of course, are mine.

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## Comment Log Display

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### **Below is the comment you selected to display. Comment 36 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: David

Last Name: Burtis

Email Address: [dbsorbit@earthlink.net](mailto:dbsorbit@earthlink.net)

Affiliation:

Subject: Proposed Amendments to the Antiperspirants and Deodorants Regulation, etc.

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 18:22:23



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# Comment Log Display

## Below is the comment you selected to display. Comment 37 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: djraymond@me.com  
Affiliation: Honeywell International Inc.

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:  
Honeywell International Inc. (Honeywell) appreciates the opportunity to submit comments on the Initial Statement of Reasons (ISOR) for the Consumer Products Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/37-consumerproducts2021-WjJWP1I9AzUDfAN0.pdf](http://www.arb.ca.gov/lists/com-attach/37-consumerproducts2021-WjJWP1I9AzUDfAN0.pdf)

Original File Name: Honeywell 45 day CARB comments.pdf

Date and Time Comment Was Submitted: 2021-03-19 19:07:16

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March 22, 2021

Clerks' Office  
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Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Re: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

Honeywell International Inc. (Honeywell) appreciates the opportunity to submit comments on the Initial Statement of Reasons (ISOR) for the Consumer Products Regulation.

Honeywell is a global leader in providing technologies and innovations that can help the world solve its environmental and energy challenges. Our Fluorine Products business is a recognized leading innovator in the development of environmentally preferable fluorocarbons for use as aerosol propellants, solvents, refrigerants, foam blowing agents, and other uses. Since the 1990s, we have helped businesses replace ozone-depleting substances in these applications with alternatives that have less impact on the stratospheric ozone layer and climate change.

As relevant for these comments, Honeywell manufactures Solstice® HFO-1234ze(E) (CAS# 29118-24-9) that is already being used or can be used as an alternative to high-global warming potential (GWP) propellants and Solstice HFO-1233zd(E) (CAS #102687-65-0) as an alternative to VOC solvents in several of the products that would be affected by the amendments to the Consumer Products Regulation being discussed.

Honeywell has the following comments.

#### **Proposed Category VOC limits**

Honeywell commends the staff on their tireless work on developing the proposed VOC limits. At this time the VOC limits appear to be technologically feasible with the exception of the Personal Fragrance category, which has a technology review that will ultimately determine the feasibility of the VOC limits. Honeywell's VOC-exempt compound, Solstice® HFO-1234ze(E), provides aerosol product formulators with a beneficial tool to comply with the proposed limits.

Honeywell respectfully request the Board to direct staff to continue work on the exemption process for another environmentally preferable compound, Solstice® HFO-1233zd(E). Staff has worked diligently on this process, but the process was not finished in time for this Board Hearing.

Solstice HFO-1233zd(E) is VOC-exempt by US EPA, has an ultra low GWP (<1), and low Maximum Incremental Reactivity (MIR), which makes this compound an excellent candidate for manufacturers to use to comply with the new proposed VOC limits for Hairspray and Dry Shampoo products.



# Honeywell

In order to meet the VOC reduction target, many formulators are considering using additional HFC-152a to lower ethanol in hairspray and hydrocarbons in dry shampoo. In this scenario, the VOC content decreases, but the greenhouse gas emissions would increase.

A better alternative is Solstice HFO-1233zd(E), which is a multi-functional solvent with a favorable environmental profile (low MIR). Solstice HFO-1233zd(E) is a technically viable solution in both hairspray and dry shampoo formulations to reduce the use of ethanol. Thus, granting Solstice HFO-1233zd(E) a VOC exemption would provide haircare formulators the ability to develop VOC compliant hairspray and dry shampoo formulations with minimal increased GWP emissions by significantly reducing the amount of HFC-152a that would be required.

## **Other Existing VOC limits**

In addition, Solstice HFO-1233zd(E) could be used in place of toxic compounds in existing product categories, such as adhesives and aerosol contact cleaners.

### **Adhesives**

In California currently there are no non-flammable, VOC compliant contact adhesive formulations available; only flammable formulations are available. However, there is a market need for a non-flammable, VOC compliant contact adhesive formulations. Exempting Solstice HFO-1233zd(E) from the VOC definition would give contact adhesive formulators the ability to sell a non-flammable, VOC compliant contact adhesive formulation in California.

### **Aerosol Contact Cleaners**

General aerosol contact cleaners, and specifically aerosol contact cleaners for live electrical circuits, require a non-flammable, VOC-compliant, low toxicity formulation solution. If VOC-exempt by CARB, Solstice HFO-1233zd(E) would provide aerosol contact cleaner formulators the ability to sell a non-flammable, VOC compliant aerosol contact cleaner that has lower toxicity than existing options. CARB has granted application exemptions for the use of TCE, nPB, and/or PERC to be used for aerosol cleaning of live electrical circuits because other options such as Solstice HFO-1233zd(E) are not available due to the pending VOC exemption request.

Solstice HFO-1233zd(E) is VOC-exempt by US EPA and in Rule 102 in the South Coast Air Quality Management District. We urge CARB to move as quickly as possible to give formulators an additional option to meet tightening VOC requirements and market demand for environmentally preferable and non-flammable alternatives like Solstice HFO-1233zd(E).

## **Innovative Product Exemption IPE**

Honeywell applauds the staff for considering an alternative pathway to reduce the use of GWP compounds to increase compliance flexibility. However, the Compressed Gas IPE provision currently being proposed in the Regulation is insufficient to provide a workable alternative pathway and can be improved.

### **Section 94511(c)(7)**

This first criterion refers to propellant ingredients in the complying IPE product. This subsection describes the percent volume needed in the product is 50%. However, it is unclear as to how to calculate the 50% volume; would it be by percentage of the container or of the product? It is also not

# Honeywell

clear if the 50% volume refers to all propellant ingredients as stated or is just for compressed gases, CO2 and nitrogen. It would help to include an example of how to calculate the propellant percent volume in the text, to provide clarity for the user.

Both section 94511(c)(3) & (4) would be made clearer by including example calculations so formulators could determine whether the provision would aid compliance.

In addition, staff states that there is a disincentive for Compressed Gases due to the weight calculation in the regulation. Honeywell believes the disincentive to use compressed gases in products is more due to the technical limitations of compressed gas compared to liquified gases. Liquified gases have a constant pressure throughout the life of the product compared to a sharp drop in pressure from compressed gases.

## Reactivity IPE Provision

Honeywell requests the staff to consider the National Aerosol Association (NAA) proposal to add an additional IPE Provisional utilizing Reactivity. CARB has been a pioneer in the use of Reactivity for reducing ozone formation. CARB adopted a Reactivity Regulation on Aerosol Coatings and more recently adopted a provision to use Reactivity for Multi-purpose Lubricants. The use of Reactivity in Reducing Ozone Formation is sound science. Utilizing Reactivity with an IPE provision allows CARB to leverage the creativity of the Industry to meet mutual goals. Also, the IPE Provision allows CARB to ensure VOC reductions.

Honeywell requests that both types of IPE approaches be considered during a 15-day comment period.

## Conclusion

Honeywell appreciates the staff work on this Regulation. We urge the Board to direct staff to continue working on the exemption for Solstice HFO-1233zd(E) and move it forward as quickly as possible. Honeywell believes the IPE provisions are worthwhile and should be considered. Adding the Reactivity IPE Provision would improve flexibility for manufacturers and provide sound science for moving forward.

Honeywell looks forward to working with the staff during the 15-day comment period.

Thank you in advance for considering this proposal.

Sincerely,



Laura Reinhard  
Vice President, General Manager  
Honeywell Foam & Industrial Products

Cc: Ravi.Ramalingam@arb.ca.gov  
joe.calavita@arb.ca.gov  
josh.berghouse@arb.ca.gov  
david.edwards@arb.ca.gov  
jose.gomez@arb.ca.gov



# Comment Log Display

**Below is the comment you selected to display.  
Comment 38 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Doug  
Last Name: Raymond  
Email Address: [djraymond@me.com](mailto:djraymond@me.com)  
Affiliation: Shield Packaging of PLZ Aeroscience

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:  
Shield has the following comments on the Amendments to the Consumer Product Amendments.

Attachment: [www.arb.ca.gov/lists/com-attach/38-consumerproducts2021-U2EHMQMwVTdXfwU1.docx](http://www.arb.ca.gov/lists/com-attach/38-consumerproducts2021-U2EHMQMwVTdXfwU1.docx)

Original File Name: 2021.03.19 Shield PLZ Aeroscience CARB Comment 21-2-1.docx

Date and Time Comment Was Submitted: 2021-03-19 19:19:16

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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March 19, 2021

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<https://www.arb.ca.gov/lispub/comm/bclist.php>

**Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agenda Item # 21-2-1**

Dear Board Members:

PLZ Aeroscience appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

PLZ is a manufacturer and marketer of aerosol and liquid consumer products. Shield Packaging of California is a business within PLZ Inc that is a formulator and packager aerosol personal care products in the State of California.

Shield has the following comments on the Amendments to the Consumer Product Amendments.

**Comments**

Shield supports the VOC limits for the Hairspray category and the Dry Shampoo category. Shield met several times with the staff to discuss these categories. We even had an on-site visit from the staff to discuss our concerns with the categories. CARB staff was always willing to discuss the categories with Shield.

Shield appreciates CARB's interest in creative measures to reduce emissions from consumer products. The most recent Innovative Product Exemption (IPE) compressed gas alternative is a good example of these measures. However, we all know that only one marketer is pursuing that option.

Shield wants to go on record that this IPE for compressed gas has potential downsides. One being increasing packaging which contradicts CalRecycle's efforts to reduce single use packaging. Another reason is that we believe based on work done using nitrogen as the propellant that consumers will lose internal pressure in the can and may dispose of the product before the liquid portion in the container is used up thus adding to the hazardous liquid waste stream. The negatives to compressed gas were shown during your on-site visit. The manufacturing process of charging aerosol cans with nitrogen presents safety concerns since a very small amount of nitrogen increases internal pressure of the can exponentially. Aerosol cans can easily burst in the manufacturing process. These concerns to compressed



gas was discussed during your on-site visit. Our most recent concern is product performance which may result in short lived consumer acceptance to the nitrogen technology.

Our last comment is that we are asking that "reactivity" remain an option for consumer products like hair sprays and dry shampoos. It is one more alternative that may help reduce consumer product emission reductions. The National Aerosol Association (NAA) proposed IPE shows how a Reactivity provision in the IPE could be successful in the reduction Global Warming Potential (GWP) compounds and provide greater flexibility to the manufacturer. The Reactivity concept needs to be incorporated.

### **In Conclusion**

Shield appreciates the staff cooperation in developing these amendments. Unfortunately, at this time Shield cannot support the Compressed Gas IPE as written. Lastly, CARB staff should add an option for using Reactivity in the IPE provision. Both the Compressed Gas IPE and Reactivity Option IPE could be dealt with in the 15-day comment period.

Thank you for your consideration to these comments. Any questions or comments please feel free to contact Bill Wood, Vice President Product Compliance and Strategic Projects @ 816-564-5969 or [bwood@plzaeroscience.com](mailto:bwood@plzaeroscience.com).

Sincerely,

A small, square image showing a handwritten signature in black ink on a light-colored background. The signature is stylized and appears to be "S. Dickstein".

Steve Dickstein  
President Shield Packaging of CA, Inc.  
Senior Vice President, PLZ Personal Care

Cc: [bwood@plzaeroscience.com](mailto:bwood@plzaeroscience.com)  
[Ravi.Ramalingam@arb.ca.gov](mailto:Ravi.Ramalingam@arb.ca.gov)  
[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)  
[josh.berghouse@arb.ca.gov](mailto:josh.berghouse@arb.ca.gov)  
[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)  
[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)



# Comment Log Display

## Below is the comment you selected to display. Comment 39 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: djraymond@me.com  
Affiliation: The Western Aerosol Information Bureau,

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

The Western Aerosol Information Bureau, Inc. (WAIB) commends the staff for all their hard work and time spent in developing the proposed amendments to Consumer Product VOC Regulations.

Attachment: [www.arb.ca.gov/lists/com-attach/39-consumerproducts2021-B2RQNwNwBzYEXQdk.docx](http://www.arb.ca.gov/lists/com-attach/39-consumerproducts2021-B2RQNwNwBzYEXQdk.docx)

Original File Name: CARB Comments 031921\_Executed.docx

Date and Time Comment Was Submitted: 2021-03-19 19:27:22


If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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western aerosol information bureau

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March 18, 2021

Clerk's Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

The Western Aerosol Information Bureau, Inc. (WAIB) commends the staff for all their hard work and time spent in developing the proposed amendments to Consumer Product VOC Regulations.

WAIB is a regional association of companies supporting the production, marketing and use of aerosol products. The membership consists of approximately 50 companies ranging in size from small to large and in scope from national to international.

WAIB has worked with CARB staff to develop reasonable VOC limits while maintaining viable products for the public and achieving the agency's clean air goals.

Our comments are the following.

**Air fresheners**

WAIB supports the proposal for the Aerosol Air Freshener categories. The addition of the definitions for the new categories as well as the new VOC limits are supported by WAIB. The Association would like to thank the staff for their work with the Industry through numerous meetings in person and virtually to provide a reasonable and workable outcome for these categories. Adding the niche categories concentrated Aerosol Air Freshener and Total Release Air Freshener is valuable to the Industry.

**Hairspray, Dry Shampoo and Personal Fragrance**

WAIB supports the proposal for Hairspray, Dry Shampoo and Personal Fragrance. However, the Personal Fragrance VOC limits are technology forcing. The Technology review will be needed to ensure these stringent limits are able to be met.

**Sunset of Two Percent Fragrance Exemption**

WAIB supports sun setting the two percent fragrance exemption.

### **Monoterpenes**

WAIB supports the inclusion of the 0.25% VOC of Monoterpenes for General Purpose Cleaners and General Purpose Degreasers non-aerosol. This has been a long term issue and the staff proposal will hopefully settle this issue. We appreciate the staff's approach to the issue.

### **Energized Electrical Cleaner**

WAIB supports the proposed definition change for this category. Energized Electrical Cleaner must be non-flammable to prevent the potential for a fire when used on a live electrical connection. The current change allows for the formulation of nonflammable products. Also the wording that only "currently generated sales records be maintained" does not add additional burden to the Industry.

### **Plastic Pipe Adhesive**

WAIB supports the new definition and VOC limit for Plastic Pipe Cement.

### **Innovative Product Exemption (IPE)**

WAIB cannot support the IPE provision for Compressed Gas. The provision lacks clarity and needs to be amended. There are no calculations for volume of compressed gas or for figuring out ozone formation potential. Both of these issues need to be clarified. Also, the use of compressed gases has limitations and restrictions due to the chemistry.

WAIB has extremely disappointed that staff did not include the National Aerosol Association (NAA) IPE language into the proposal. The NAA proposal was submitted only 30 days after the staff proposal, both provisions were submitted very late in the process. However, the NAA proposal uses Reactivity to reduce Global Warming Potential (GWP) compounds. Reactivity is a known and respected science in Consumer Products. The use of Reactivity is known to CARB due to being utilized in Aerosol Coatings and Multi-purpose lubricants. The use of Reactivity allows more flexibility to manufacturers to reformulate.

### **Addition of Compounds to MIR Table**

WAIB supports the proposal to add diethyl carbonate, 1-chloro-3,3,3-trifluoropropane, HFO-1233zd and alkane mixed-minimally 90% C13 and higher to the MIR table of Values. WAIB supports the use of Reactivity.

### **Conclusion**

WAIB supports the VOC limits and definitions for Air Freshener, Hair care products and Personal Fragrance with the exceptions noted above. The staff worked hard on these amendments. Unfortunately, WAIB cannot support the IPE for Compressed gases. More work is needed on this provision. WAIB does respectfully request that the Board direct staff to incorporate the NAA Reactivity provision or an alternative Reactivity provision. The compressed gas IPE and addition of the Reactivity provision both can be handled in a 15-day comment period.

Thank you in advance for consideration to these comments. Feel free to call me with questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'John Davis', with a vertical line extending downwards from the first letter 'J'.

John Davis  
President  
Western Aerosol Information Bureau

Cc: [Ravi.Ramalingam@arb.ca.gov](mailto:Ravi.Ramalingam@arb.ca.gov)  
[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)  
[josh.berghouse@arb.ca.gov](mailto:josh.berghouse@arb.ca.gov)  
[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)  
[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)



# Comment Log Display

## Below is the comment you selected to display. Comment 40 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Virginia  
Last Name: Cusick  
Email Address: RunesOfGaia@aol.com  
Affiliation:

Subject: VOC fragrances

Comment:

If cigarette fumes are so bad that folks can't even smoke on the beach then please explain how these VOC'S are ok in our homes, malls, gyms, schools, grocery stores tc..

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 19:27:12

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## Comment Log Display

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### **Below is the comment you selected to display. Comment 41 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: Anne

Last Name: Parzick

Email Address: alw4@sbcglobal.net

Affiliation:

Subject: No sweetheart deal for the fragrance industry

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031. Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 21:55:47

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# Comment Log Display

## Below is the comment you selected to display. Comment 42 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Zoe  
Last Name: Harris  
Email Address: zoehzoeh@yahoo.com  
Affiliation:

Subject: fragrances in products

Comment:

PLEASE TAKE ARTIFICIAL FRAGRANCES OUT OF PRODUCTS. THEY ARE TOXIC!

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-19 22:11:23

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# Comment Log Display

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**Below is the comment you selected to display.**  
**Comment 43 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: sharon

Last Name: wilcox

Email Address: 1866bid2win@gmail.com

Affiliation: WVE supporter

Subject: Fragrance Chemicals

Comment:

Please, for the love of all that is good and healthy, do not give an inch to manufacturers of products that cause harm to humans! As a person who was made permanently sick from breathing in the toxic vapors from air freshener machines in my workplace, I can tell you that these chemicals are devastating to human health. My life has been dramatically changed from this chemical exposure and I don't want this to happen to anyone else. It's time to put an end to the proliferation of poisons in consumer products. They have both short term and long term effects and, unfortunately, most people are under the misconception that if it's allowed to be sold, it must be safe. That's the way it should be, but that is not the reality. Let's draw the line with powerful chemical companies and make it clear: Money doesn't trump human health. Ever.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-20 06:46:57

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## Comment Log Display

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### **Below is the comment you selected to display. Comment 44 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

---

First Name: Rose Ann

Last Name: Witt

Email Address: rawitt@verizon.net

Affiliation: Rose Ann Witt

Subject: End Fragrance Pollution in California

Comment:

I stopped buying perfume and fragranced products a decade ago, because I refuse to trust my health, and that of my family, to companies which refuse to disclose potentially toxic ingredients used in personal care and household products.

As a biologist and parent of a young woman, I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment; I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:



Original File Name:

Date and Time Comment Was Submitted: 2021-03-20 17:30:20

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# Comment Log Display

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## Below is the comment you selected to display. Comment 45 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

---

First Name: Erica  
Last Name: Stanojevic  
Email Address: ericast@gmail.com  
Affiliation:

Subject: Regulating VOCs

Comment:

I support changes to regulations which could reduce the overall public exposure to fragrances. The elimination of the exemption should occur as soon as possible for our health and our environment, I do not support extending the deadline to 2031.

Whether VOCs come from fragrance chemicals or from any other sources, they affect our outdoor air pollution and our health. CARB should be treating all industries equitably when it comes to reducing VOC emissions. Research has shown that there is a considerable proportion of the population that have reported adverse reactions to fragranced products. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products. In addition, skin allergies to fragrance are well documented in the scientific literature. Between 2-11% of the general population experience skin allergies to fragrance.

Thank you for your consideration of these comments.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-21 10:44:26



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# Comment Log Display

**Below is the comment you selected to display.  
Comment 46 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Lauren  
Last Name: Schiffman  
Email Address: crackmagazine@hotmail.com  
Affiliation:

Subject: Regulate fragrance

Comment:

I urge you to mores strongly regulate antiperspirant and deodorant products.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-21 22:57:09

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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# Comment Log Display

**Below is the comment you selected to display.  
Comment 47 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Lauren  
Last Name: Schiffman  
Email Address: crackmagazine@hotmail.com  
Affiliation:

Subject: Regulate fragrance

Comment:

I urge you to mores strongly regulate antiperspirant and deodorant products.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-21 22:57:09

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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# Comment Log Display

## Below is the comment you selected to display. Comment 48 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: djraymond@me.com  
Affiliation: Aeropres Corporation

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

Aeropres Corporation appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/48-consumerproducts2021-Uz9XNAF0AyQFZgFz.pdf](http://www.arb.ca.gov/lists/com-attach/48-consumerproducts2021-Uz9XNAF0AyQFZgFz.pdf)

Original File Name: Letter to CARB.pdf

Date and Time Comment Was Submitted: 2021-03-22 06:50:51

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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March 18, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814

<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agenda Item # 21-2-1

Dear Board Members:

Aeropres Corporation appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Aeropres Corporation is a major supplier to the Consumer Products Industry and distributes many products helping formulators achieve current regulations. Aeropres supplies Liquefied propellant as well as HFC-152a and HFO-1234ze to the Aerosol Industry. Aeropres has been in business since 1973 and has a facility in the South Coast Air Quality Management District. Aeropres has worked closely with CARB staff over the last three decades to develop Consumer Product VOC regulations that allow manufacturers to produce efficient and effective products while achieving much needed emission reduction to achieve the states Clean Air Goals. Our comments on this most recent rulemaking are the following.

#### **Addition of Compounds to the MIR Table**

Aeropres has been a proponent of the Concept of Reactivity since the early 1990's. Reactivity is sound science. Aeropres supports the addition of HFO-1233zd to the MIR Table of Values.

#### **Innovate Product Exemption (IPE) Provision**

Aeropres commends the staff for trying to provide flexibility to the regulation through the Compressed Gas IPE. Unfortunately, after closer review the current language in the IPE provision is confusing and unclear. If CARB staff were to clarify the volume and ozone formation potential issues, then the provision would begin to be clearer. Perhaps adding calculations to these two criteria would clarify the issue. Aeropres was surprised that staff proposed this complicated provision so late in the rule development process. This left Industry very little time to comment on this provision.

Aeropres was also disappointed that the staff did not incorporate the National Aerosol Association (NAA) IPE proposed provision on Reactivity into the proposed language for the amendment. This language was submitted to the staff 30 days after their compressed gas provision. The NAA IPE provision uses Reactivity to reduce the use of Global Warming Potential (GWP) compounds. The use of Reactivity has been a viable way to reduce VOC

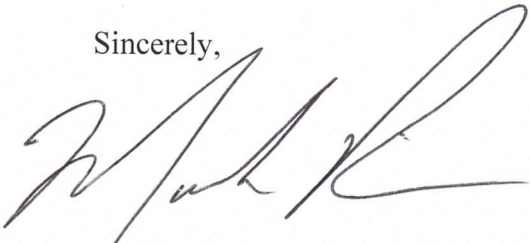
emission and is sound science. The staff has used Reactivity for Aerosol Coatings and Multi-purpose lubricants. The use of Reactivity allows for more flexibility in for formulating while maintaining crucial emission reductions. Staff should incorporate this language into the regulation.

**Conclusion**

Aeropres supports the inclusion of the compound into the MIR Table. At this time Aeropres cannot support the Compressed Gas IPE due to the fact it lacks clarity. Aeropres requests that the Board direct staff to incorporate the NAA provision to the IPE or an alternate Reactivity scheme for the IPE. Both can be accomplished in a 15-day comment period.

Thank you in advance for considering our comments. Any questions or comments feel free to contact me at 318-464-6808 or at [mrivers@aeropres.com](mailto:mrivers@aeropres.com)

Sincerely,



Mark Rivers  
Vice President of Technical Services  
Aeropres Corporation

Cc: Ravi.Ramalingam@arb.ca.gov  
joe.calavita@arb.ca.gov  
josh.berghouse@arb.ca.gov  
[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)  
[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)



# Comment Log Display

## Below is the comment you selected to display. Comment 49 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: [djraymond@me.com](mailto:djraymond@me.com)  
Affiliation: EMD Performance Materials

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

On behalf of EMD Performance Materials please accept the following comments:

EMD Performance Materials appreciates the opportunity to comment on the amendments to the Consumer Products Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/49-consumerproducts2021-AmdVPIQxBwsKb1Q1.doc](http://www.arb.ca.gov/lists/com-attach/49-consumerproducts2021-AmdVPIQxBwsKb1Q1.doc)

Original File Name: EMD CARB 45 day comment.doc

Date and Time Comment Was Submitted: 2021-03-22 07:15:19

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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Raymond Regulatory Resources (3R), LLC

**Doug Raymond** 13808 Duncan Run Rd. Galena, Ohio 43021  
djraymond@reg-resources.com 440-339-4539

March 22, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

On behalf of EMD Performance Materials please accept the following comments:

EMD Performance Materials appreciates the opportunity to comment on the amendments to the Consumer Products Regulation. They are the Performance Materials business of Merck KGaA, Darmstadt, Germany. As the company behind the companies, their purpose is to advance digital living. This company is on an exciting journey to become a leading player in the electronics industry. Every day, they continue to see the development and introduction of new technologies that will continue to change the world as we know it. None of this will be possible without materials suppliers, like EMD, having the vision, commitment, and capabilities to invent new solutions. It is their ambition to be the partner of choice for those creating the innovations of tomorrow. The Performance Materials business of Merck KGaA, Darmstadt, Germany, operates as EMD Performance Materials in the US and Canada. Merck KGaA, Darmstadt, Germany is a global science and technology company with around 57,000 employees in 66 countries.

Our comments are solely on changes to Method 310.

**Method 310**

The following comments should be incorporated into Method 310 to clarify the issues surrounding polysilazane systems. These references will clarify the Method for future testing of these products.

These comments are to the draft Method 310 as accompanying the Public Hearing Notice Posted 2/5/21.

**3 Testing to Determine VOC**

*Please insert a new subsection as follows, which although established for "multi-component" coatings, provides the closest analogy to a polysilazane system, wherein*

moisture in the air provides one of the coreactants needed for a complete chemical reaction to occur. Note that US EPA 24 states that “The sample shall stand for a minimum of 1 hour, but no more than 24 hours prior to being oven dried at 110C+/-5C for 1 hour.” In the multi-component section. Additionally, ASTM D2369 in Table 1, Summary of Methods, under Method E, also notes an induction time of 24 hours at ambient conditions before placement in the oven, for such a system:

“3.3.9 For air-dried materials that may require an induction period for the components to fully cure, allow the sample to stand for up to 24 hours at ambient conditions before heating at 110°C for 60 minutes, using one or more of the following: EPA Method 24, ASTM D2369.”

#### 4 Calculation of VOC Content

For non-aerosol products, please include a factor for ammonia in both equations, those that contain LVP-VOC as well as those that do not. The potential exists for ammonia to be present in either type of product. This calculation clarifies the role of ammonia:

“4.2.2.2 For non-aerosol products containing LVP-VOC, the percent VOC content shall be calculated using the following equation:

$$\% \text{ VOC} = [(1 - H) \times (1 - \text{LVP}) - A - \text{EL}] \times 100$$

A = weight + fraction of ammonia (as NH<sub>4</sub>) in a non-aerosol sample.”

#### Summary

These additions to Method 310 will assist in dealing with polysilazane systems where moisture in the air provides one of the coreactants in a chemical reaction.

Again, we appreciate the opportunity to comment on this important topic.

Any questions or comments please feel free to contact me at [djraymond@me.com](mailto:djraymond@me.com) or at 440-339-4539.

On Behalf of EMD Performance Materials,  
Sincerely,



Douglas Raymond

CC. Ravi Ramalingam @CARB  
Josh Berghouse @CARB  
Jose Gomez @CARB  
Keith Kennedy @CARB  
Joe Calavita @CARB



# Comment Log Display

## Below is the comment you selected to display. Comment 50 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Nelson

Last Name: Lawson

Email Address: [nelson@pinechemicals.org](mailto:nelson@pinechemicals.org)

Affiliation: Pine Chemicals Association International

Subject: Comments on consumerproducts2021; Board Agenda Item # 21-2-1

Comment:

Sirs:

Please accept comments from the Pine Chemicals Association International pertinent to the "consumerproducts2021; California Air Resources Board Agenda Item # 21-2-1.

Thank you,

Nelson Lawson

Staff Support

Pine Chemicals Association

Attachment: [www.arb.ca.gov/lists/com-attach/50-consumerproducts2021-VWcFMwQ3A2FSeQg4.docx](http://www.arb.ca.gov/lists/com-attach/50-consumerproducts2021-VWcFMwQ3A2FSeQg4.docx)

Original File Name: 2021-03- 22 PCA - CARB Letter - Amanda Young signature FINAL .docx

Date and Time Comment Was Submitted: 2021-03-22 08:47:40

If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.

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Phone/Fax +1-404-994-6267

March 22, 2021 sent *via* electronic mail

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California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

**Subject: Comments on consumerproducts2021; Board Agenda Item # 21-2-1**

Dear Board Members:

The Pine Chemicals Association International (PCA) appreciates the opportunity to provide comments to the California Air Resources Board (CARB) on the proposed amendments to the state's comprehensive Consumer Products Regulation.

The PCA is a global trade association composed of 80 companies in over 20 countries with various interests in the pine chemicals industry. It has actively represented the industry's interests, particularly those concerning environmental and regulatory initiatives, since 1947. A fuller description of our activities can be found on our website:  
<https://www.pinechemicals.org/default.aspx>.

Among the many products produced from the natural, renewable and sustainable raw materials of our nation's forests are the terpenes that form the bulk of turpentine. Many useful and irreplaceable products are derived from these terpenes, for example, many flavors and fragrances; resins for adhesives; and disinfectants. Many consumer products are made attractive by the presence of fragrances and many of these are terpene-based. Therefore, we are particularly concerned about the impact of the Proposed Sunset of the Two Percent Fragrance Exemption - Section 94510(c)(2).



P.O. Box 17136 • Fernandina Beach, FL 32035

Phone/Fax +1-404-994-6267

**A. Comments on the Proposed Sunset of the Two Percent Fragrance Exemption - Section 94510(c)(2)**

PCA members do not support the proposed sunset of the current two percent fragrance exemption which impacts almost all regulated products manufactured on or after January 1, 2031. Fragrance is an important component of almost every consumer product: it encourages proper product use; covers base malodors; and creates a mechanism for product manufacturers to differentiate between brands and products. For the past 30 years, the current exemption that allows product formulators to include a *de minimis* level of fragrance in products to meet customers' expectations and provide flexibility to comply with CARB's increasingly stringent VOC regulatory standards. The proposal to sunset the two percent fragrance exemption will constitute a *de facto* reduction of the VOC standards for almost every product category included in the Consumer Products Regulation.

Manufacturers only use the necessary amount of fragrance ingredients required to cover the malodor of base active ingredients, to prevent over-use by consumers – a significant safety issue - and to differentiate their brands and products. CARB's own data provides irrefutable evidence that product manufacturers do not over-use the current fragrance exemption. According to the Household and Commercial Products Association the sunset of the two percent fragrance exemption is estimated to result in producing *only 0.3 tons per day of additional VOC reductions* towards meeting California's State Implementation Plan (SIP) commitment for 2031. This seems to be an insignificant benefit compared to the high costs of reformulating the fragrances and monitoring each individual product to ensure that formulators are meeting the requirements of the regulations. When compared the huge unregulated emissions of natural terpenes from trees in Californian forests, the monoterpenes portion of the Fragrance Exemption pales into insignificance.

**B. Comments on the Proposed 0.25 Percent Exemption for the VOC Content of Fragrance in "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products**

PCA member companies support CARB's proposed Section 94510(c)(1), which will allow manufacturers to use up to 0.25% by weight of monoterpenes for "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products as part of two percent fragrance exemption for products manufactured before January 1, 2031. This will provide much-needed flexibility to comply with the very stringent VOC standards.

PCA also requests that CARB modify the date of this proposed provision to take effect immediately upon publication of the final rule. This will eliminate any potential uncertainty



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about compliance with applicable VOC standards for these two product categories during the time period between the date the final regulation is published and the January 1, 2023 effective date stated in the proposed amendment. We recommend that the following change be included in text of Section 94510(c)(1) in the final regulation:

§ 94510. Exemptions

\* \* \* \*

(c) Except for Pressurized Gas Duster, the VOC limits specified in Section 94509(a) shall not apply to the following:

(1) For "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products manufactured ~~between January 1, 2023,~~

~~and December 31, 2030,~~ before January 1, 2031, fragrances up to a combined 2 percent by weight and monoterpenes up to a combined 0.25 percent by weight, not to exceed a combined total of 2 percent fragrances and monoterpenes by weight.

PCA member companies also support the proposed Section 94510(c)(3), which provides an exemption for fragrances and/or monoterpenes up to a combined 0.25 percent by weight for the "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products that are manufactured on or after January 1, 2031.

**C. PCA respectfully requests that CARB clearly defines the term "monoterpenes" in the final regulation.**

The proposed amendments to sections 94510(c)(1) and (c)(3) use the term "monoterpenes" but this term is not well-defined. A carefully written definition will provide clarity and eliminate the uncertainty for regulated parties to decide whether their products comply with the amended provisions of sections 94510(c)(1) and (c)(3) and the applicable VOC standards.

PCA requests that CARB add a new section 94509(s) in the final regulation to provide the following definition for "monoterpenes."

94509. Standards for Consumer Products.

\* \* \* \*

(s) Requirements for Monoterpenes. The provisions relating to sections 94510(c)(1) and 94510(c)(3) apply to:



“Monoterpenes,” which means the following chemicals, as listed in the table below, used in General Purpose Cleaner (nonaerosol) and General Purpose Degreaser (nonaerosol) products.

Table 94509(s)  
Specified Monoterpenes relating to sections 94510(c)(1) and 94510(c)(3)

<b>MONOTERPENE</b>	<b>CAS REGISTRY NUMBER</b>
d-limonene	5989-27-5
l-limonene	5989-54-8
dipentene (dl-limonene)	138-86-3 / 7705-14-8
$\alpha$ -pinene	80-56-8
$\alpha$ -Pinene (laevo isomer)	7785-26-4
$\beta$ -pinene	127-91-3
$\beta$ -Pinene (laevo isomer)	18172-67-3

This recommended definition is based on the CARB guidance document titled, “*Guidance Pertaining to the Two Percent Fragrance Exemption and Limonene.*” To the definition of “specified monoterpenes” is added “dipentene,” which is a racemic mixture of the two stereospecific forms of d-limonene and l-limonene.

For clarity PCA recommends that CARB include the American Chemical Society CAS Registry Numbers for the specifically listed chemical compounds and their associated isomers. The CAS numbers will provide the necessary clarity for product manufacturers and fragrance houses to comply with the amended provisions of Sections 94510(c)(1) and 94510(c)(3). CAS numbers serve as an internationally observed substance identifier by scientists, industry, and regulatory agencies. Including the CAS numbers will remove any potential ambiguity by ensuring that the exemption applies only to these specified monoterpenes. If desirable PCA would be willing to discuss this definition during the comment period.

We also respectfully request that upon publication of the final rule, CARB withdraw the Guidance Document since the issues addressed in this document will be incorporated in the final regulation.



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**D. For Future Rulemaking PCA Recommends Revision of the Definition for the “Institutional Product” or “Industrial and Institutional (I&I) Product”**

PCA respectfully requests that CARB revise the current definition for the “Institutional Product” or “Industrial and Institutional (I&I) Product” category to more clearly define what products that are subject to the Consumer Products Regulation. It seems to us that there is some potential ambiguity as to whether products sold to industrial facilities are subject to statewide VOC standards. Therefore, PCA believes that CARB should revise the current definition for the “Industrial and Institutional (I&I) Product” category to provide a clear regulatory delineation between: (1) consumer and commercial product categories that are subject to these statewide VOC limits; and (2) industrial products that are used only in the manufacturing process, which are outside of the scope of CARB’s comprehensive statewide regulation.

CARB Advisory Number 307 provides some clarity in determining whether “industrial” products are regulated by the stringent statewide VOC limit. In pertinent part, the Advisory states that the current regulatory definition for the term “Institutional Product” or Industrial and Institutional (I&I) Product” excludes “... products that are incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment ... .43 However, as a practical matter, it is often difficult for both CARB and product manufacturers to determine whether products sold to industrial facilities throughout the state fit into this narrowly-drawn exclusion.

To remove potential ambiguity about the applicability of CARB’s statewide VOC standards to products that are sold to industrial facilities, PCA recommends that CARB consider the following revision to the current definition of “Institutional Products” or “Institutional and Industrial (I&I) Products,”

§ 94508. Definitions.

(a) For the purpose of this article, the following definitions apply:

\* \* \* \*

(77)

“Institutional Product” or “Industrial and Institutional (I&I) Product” means a consumer product that is designed for use in the maintenance or operation of an establishment that: (A) manufactures, transports, or sells goods or commodities, or provides services for profit; or (B) is engaged in the nonprofit promotion of a particular public, educational, or charitable cause. “Establishments” include, but are not limited to, government agencies, factories, schools, hospitals, sanitariums, prisons, restaurants, hotels, stores, automobile service and parts



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centers, health clubs, theaters, or transportation companies. "Institutional Product" does not include household products and products that are: incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only."

This recommended revision is identical to the narrowly-tailored exemption provision in the current definition for the General Purpose Degreaser, Lubricant and Single Purpose Degreaser product categories.

#### **Conclusion**

PCA appreciates the opportunity to comment on a difficult and complex rulemaking process. If CARB has any technical questions concerning our comments, please address them to:

Dr. Nelson Lawson  
PCA Staff Support  
912-441-7752  
[nelson@pinechemicals.org](mailto:nelson@pinechemicals.org)

Yours truly,

A handwritten signature in blue ink that reads "Amanda Young".

Amanda Young  
President and Chief Executive Officer  
[ayoung@pinechemicals.org](mailto:ayoung@pinechemicals.org)  
1-904-207-2181



# Comment Log Display

## Below is the comment you selected to display. Comment 51 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Roya  
Last Name: Adjory  
Email Address: Roya7@aol.com  
Affiliation: Hair Salon owner

Subject: Fragrance in products

Comment:

Artificial fragrances are major part of illness for the hair and nail salon workers . These substances must be controlled and regulated . We understand it is the appeal of some of these products and the way the scent of some of the chemicals are masked by using more chemicals . This is not acceptable since it has caused many issues to me and my family . Everything from sinus issues to major sensitivities and allergic reactions .

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2021-03-22 09:03:03

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# Comment Log Display

## Below is the comment you selected to display. Comment 52 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: djraymond@me.com  
Affiliation: Church and Dwight (C & D)

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agen

Comment:

Church and Dwight (C & D), a leading Consumer Packaged Goods Company, appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/52-consumerproducts2021-ViVSNwFhAj8DKwh4.pdf](http://www.arb.ca.gov/lists/com-attach/52-consumerproducts2021-ViVSNwFhAj8DKwh4.pdf)

Original File Name: scan.pdf

Date and Time Comment Was Submitted: 2021-03-22 09:10:32

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# CHURCH & DWIGHT CO., INC.

Corporate Headquarters:  
Princeton South Corporate Center  
500 Charles Ewing Boulevard  
Ewing, New Jersey 08628  
Main Phone: (609) 806-1200

March 19, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

Church and Dwight (C & D), a leading Consumer Packaged Goods Company, appreciates the opportunity to provide comments on the Initial Statement of Reason (ISOR) for the Consumer Products VOC Regulation.

Our comments are the following.

## **Dry Shampoo**

C & D worked with staff on the Dry Shampoo category. We appreciate the name change to the product category to more appropriately describe the product. In addition, the 55% VOC limit proposed for 1/1/2023 is technologically feasible as is the 50% VOC limit in 2027. C & D can support both these limits. As well the definition was modified slightly again to more appropriately describe the use of the product. Dry Shampoo remains in the hair until eventually washed out. Dry Shampoo is used to clean, refresh and add volume to the hair when shampooing with water is not available. C & D appreciates the staff's willingness to work with us on this category.

## **Innovative Product Exemption (IPE)**

C & D does not support the staff's IPE proposal on compressed gas. The provision as written is confusing and lacks clarity. In addition, there are certain limitations to compressed gas that make the compressed gas IPE difficult to formulate products with.

C & D does support the National Aerosol Association (NAA) IPE using Reactivity. We see the use of Reactivity as a more flexible way to formulate new products.

## **Conclusion**

C & D supports the proposal of the CARB staff on Dry Shampoo. Unfortunately, we cannot support staff's IPE proposal on Compressed Gases. C & D does respectfully request the board to instruct staff to include either the NAA IPE or another Reactivity based IPE. We thank the staff for all their work and willingness to work with us.

Thank you in advance for considering our comments. Any questions or comments feel free to contact our consultant Doug Raymond at 440-339-4539 or at [djraymond@me.com](mailto:djraymond@me.com)





Sincerely,



Jeffrey Shaul  
Director, Global Regulatory Affairs  
Church & Dwight Co., Inc.

Cc: [Ravi.Ramalingam@arb.ca.gov](mailto:Ravi.Ramalingam@arb.ca.gov)  
[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)  
[josh.berghouse@arb.ca.gov](mailto:josh.berghouse@arb.ca.gov)  
[david.edwards@arb.ca.gov](mailto:david.edwards@arb.ca.gov)  
[jose.gomez@arb.ca.gov](mailto:jose.gomez@arb.ca.gov)





# Comment Log Display

## Below is the comment you selected to display. Comment 53 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Denise  
Last Name: Wesleder  
Email Address: dwesleder@comcast.net  
Affiliation:

Subject: Comments Related to Delegation of Authority under H&S Code  
Comment:  
Please see attached comments.

Attachment: [www.arb.ca.gov/lists/com-attach/53-consumerproducts2021-UzJXI1EyU18FYAFu.pdf](http://www.arb.ca.gov/lists/com-attach/53-consumerproducts2021-UzJXI1EyU18FYAFu.pdf)

Original File Name: ARB Coments\_ Questions.pdf

Date and Time Comment Was Submitted: 2021-03-22 09:19:33

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## QUESTION/COMMENT

Exactly who is doing or will do what, when, why, and under what authority, using which records, data, where the data came from, if the data is validated or per reviewed and is very difficult for a member of the public to determine.

The public notice Authority and Reference section states that the proposed regulatory action is proposed under the authority granted in California Health and Safety Code, sections 38500, 38501, 38510, 38551, 38560, 38566, 38580, 39000, 39002, 39003, 39515, 39516, 39600, 39601, 39602, 39607, 39650, 39656, 39659, 39701, 41503.5, 41504, 41511, 41700, and 41712. In addition, the notice states that this action is proposed to implement, interpret, and make specific actions 38510, 38560, 38566, 38580, 39002, 39600, 39515, 39516, 39601, 39607, 39659, 39701, 40000, 41511, 41700, and 41712.

The terms ARB, CARB, state board, Board, and Executive Officer, and CARB staff are used interchangeably throughout the proposed regulatory action. In addition, Health & Safety Code section 39516 presumptively delegates all powers, duties, purposes, functions, and jurisdictions (powers) vested in the state board to the executive officer. This section also authorizes the executive officer to delegate these powers to subordinates.

The term CARB can mean the agency, the state board members, the executive officer, or one or several of the executive officer's subordinates. The term executive officer can mean the executive officer personally or there subordinate to which the executive officer has re-delegated powers.

For the record and the sake of clarity and transparency please provide the information requested below.

### **1. Who can and/or will do what**

A. Please identify and indicate whom each of these terms represents when each of these terms is used in the actions proposed to implement, interpret, and make specific sections 38510, 38560, 38566, 38580, 39002, 39600, 39515, 39516, 39601, 39607, 39659, 39701, 40000, 41511, 41700, and 41712.

B. Please identify and list which powers, duties, purposes, functions, and jurisdictions which the state board may lawfully delegate, the state board, by affirmative vote recorded in the minutes of the state board, specifically has reserved the same for the state board's own action.

C. Please identify and list the powers, duties, purposes, functions, and jurisdictions on which the executive officer is specifically required to act personally.

### **2. What was or will be done by whom**

2. Please provide records of all actions including the date, any related material used to base the actions, metric, and analytics for all actions that affect sections to California Code of Regulations, title 17, sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521, 94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547, 94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700; proposed amendments to sections 1,2,3,4,5,6,8 and Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

### **3. Who checked or will check that what was or will be done, is or will be authorized to do it and that it was or will be done competently**

A. Please identify and list internal parties that reviewed the data, metrics, analytics and the actions that affect sections to California Code of Regulations, title 17, sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521, 94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547, 94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700; proposed amendments to sections 1,2,3,4,5,6,8 and

Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

**4. Who checks CARB's work?**

A. Please identify and list any third parties that reviewed the data, metrics, analytics and the actions that affect sections to California Code of Regulations, title 17, sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521,94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547,94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700; proposed amendments to sections 1,2,3,4,5,6,8 and Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

Thank you

Denise Wesleder



# Comment Log Display

**Below is the comment you selected to display.  
Comment 54 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Doug  
Last Name: Raymond  
Email Address: [djraymond@me.com](mailto:djraymond@me.com)  
Affiliation: CRC Industries

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

CRC Industries appreciates the opportunity to comment on the amendments to the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/54-consumerproducts2021-BWZXIwBiUV0AZVM8.docx](http://www.arb.ca.gov/lists/com-attach/54-consumerproducts2021-BWZXIwBiUV0AZVM8.docx)

Original File Name: CRC comment for CARB hearing.docx

Date and Time Comment Was Submitted: 2021-03-22 09:22:11

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## CRC Industries, Inc.

Global Headquarters: 800 Enterprise Road, Suite 101 | Horsham, PA 19044 | 215.674.4300

Manufacturing and R&D Center: 885 Louis Drive | Warminster, PA 18974 | 215.674.4300

March 22, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: **Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agenda Item # 21-2-1**

Dear Board Members:

CRC Industries appreciates the opportunity to comment on the amendments to the Consumer Products VOC Regulation. CRC Industries is a manufacturer and marketer of specialty chemicals for maintenance and repair professionals and do-it-yourselfers, serving the automotive, heavy trucking, marine, electrical, industrial, hardware and aviation markets.

CRC is only commenting on the Energized Electrical Cleaner definition and Record Retention requirements 94512(f). CRC supports the new language for the Energized Electrical Cleaner definition. The new language aligns the VOC regulations with the Air Toxic rule. In addition, CRC does not oppose the record retention requirement at 94512(f) as long as our understanding that the wording "already routinely generated" implies that no new documents need to be created or stored by the retailer.

We would like to thank the staff for their work on this issue and the continued willingness to meet with us either in person or virtually throughout this process. Thank you in advance for your consideration to this issue. Any questions or comments feel free to contact our consultant Doug Raymond at 440-339-4539 or at [djraymond@me.com](mailto:djraymond@me.com)

Sincerely,  
CRC Industries, Inc.

*Michelle Rudnick*

Michelle Rudnick  
Directory of Regulatory Affairs

Cc: Ravi.Ramalingam@arb.ca.gov  
joe.calavita@arb.ca.gov  
josh.berghouse@arb.ca.gov  
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jose.gomez@arb.ca.gov





## Comment Log Display

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### **Below is the comment you selected to display. Comment 55 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.**

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First Name: Amy  
Last Name: Levitt  
Email Address: amy.levitt@unilever.com  
Affiliation:

Subject: Unilever Comments to CARB ISOR in anticipation of March 25, 2021 Public Hearing

Comment:

Dear Mr. Calavita,

Unilever is pleased to offer comments on the California Air Resources Board Initial Statement of Reasons (ISOR) for the proposed amendments to the Consumer Products Regulation for VOC limits posted to the CARB website on February 2, 2021 in anticipation of the Public Hearing on March 25, 2021.

We appreciate the opportunity to provide these comments and we look forward to our continued dialogue.

Regards,  
Amy and Patrizia

Attachment: [www.arb.ca.gov/lists/com-attach/55-consumerproducts2021-Wi9ROQdvVWoAYwB2.pdf](http://www.arb.ca.gov/lists/com-attach/55-consumerproducts2021-Wi9ROQdvVWoAYwB2.pdf)

Original File Name: Unilever comments to CARB 22 March 2021.pdf

Date and Time Comment Was Submitted: 2021-03-22 12:26:15

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If you have any questions or comments please contact Clerk of the Board at (916) 322-5594.



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22 March 2021

VIA ELECTRONIC SUBMISSION

Joe Calavita  
Manager, Consumer Products Implementation Division  
California Air Resources Board  
Sacramento, CA 95812-0806  
[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)  
[csmrprod@arb.ca.gov](mailto:csmrprod@arb.ca.gov)

RE: **Comments on California Air Resource Board Initial Statement of Reasons (ISOR) for the Proposed Amendments to the Consumer Products Regulation for VOC Limits Posted on February 2, 2021 in anticipation of the Public Hearing on March 25, 2021**

Dear Mr. Calavita:

Unilever United States Inc. is pleased to offer comments on the California Air Resources Board (CARB) Initial Statement of Reasons (ISOR) for the proposed amendments to the Consumer Products Regulation for VOC limits posted to the CARB website on February 2, 2021 in anticipation of the Public Hearing on March 25, 2021.

Unilever is one of the world's largest consumer product companies – our personal care, foods and home care brands have been trusted the world over since 1890. Our personal care products include many leading brands in the United States, such as Axe<sup>®</sup>, Caress<sup>®</sup>, Degree<sup>®</sup>, Dove<sup>®</sup>, Dove<sup>®</sup> Men+Care, Love Beauty and Planet<sup>®</sup>, Nexxus<sup>®</sup>, Noxzema<sup>®</sup>, Pond's<sup>®</sup>, TRESemmé<sup>®</sup>, and Vaseline<sup>®</sup>.

We thank CARB for seeking input from a diverse group of stakeholders and CARB's willingness to work with these stakeholders during the regulatory development process to ensure effectiveness of achieving better air quality and public health through innovation of products with lower VOC (Volatile Organic Carbon) emissions.

## 1. General Comments

Unilever appreciates and supports CARB's proposed VOC standards for Hair Finishing Spray, No Rinse Shampoo (Dry Shampoo), Hair Shine, Temporary Hair Color, and Personal Fragrance Products (PFPs) as proposed on July 28, 2020.

Unilever also supports CARB's "Proposed Technology Assessment of the 2031 Standard," which was presented in the November 10, 2020 Public Workshop. Unilever supports that CARB will conduct another full technical assessment of the 2031 standard to determine if the 50% VOC standard for PFPs with less than or equal to 10% fragrance will be technically and economically feasible. We appreciate that CARB is aware that this standard is a challenge to industry and are willing to assess its feasibility. This technical assessment will require manufacturers to conduct a survey of all potentially impacted products for 2025, and we request an additional 3 months to conduct this survey, changing the deadline to June 30, 2026.

## **2. Sunset of 2% Fragrance Exemption**

In the ISOR, CARB reiterated its intent to eliminate the 2% Fragrance Exemption, but previously has expressed a willingness to consider retaining a portion of the exemption for certain low VOC categories. We request that CARB reconsider the intention of the exemption for certain personal care product categories with a low VOC limit and include this within the final regulation.

## **3. Product Category Definitions**

Unilever supports CARB changing the name of "No-Rinse Shampoo" to "Dry Shampoo." The current proposed definition reads:

*"Dry Shampoo" means a product labeled to be applied to hair and massaged or brushed/combed through the hair for the purpose of cleaning the hair without needing to be rinsed.*

We suggest adding "volumizing" to this definition as an addition to the cleansing benefit, as this is a claim that is traditionally made on 'wet' shampoos and can result from the removal of oil from the hair.

We support the other proposed definitions for the Personal Care product categories, including those for "Hair Finishing Spray," "Personal Fragrance Products," "Hair Shine," and "Hair Styling Product."

## **4. Innovative Product Exemption**

Unilever appreciates CARB staff for proposing to amend Section 94511 Innovative Products to include a provision for products utilizing compressed gases. Developing safe and effective products with compressed gases has its challenges and this provision will go a long way to provide options for companies to introduce products with compressed gas propellant systems. This will also enable companies to reduce the use of greenhouse gases (GHG).

We would like to thank and acknowledge CARB's recognition of the challenges presented to products with compressed gas propellant systems by the current methods for determining product compliance with the applicable VOC standards, and that these challenges may inhibit manufacturers from using these types of propellant systems. When manufacturing a compressed gas product, using a simplistic example of replacing the volume taken up by a liquefied non-VOC propellant (such as HFC-152a) with a much lower density compressed gas (such as nitrogen), the percent weight of VOC in the product would increase even if the actual weight of VOC present in the product remains the same. Without the IPE, it would be impossible to manufacture technically feasible and commercially acceptable products based on compressed gas while meeting CARB regulations based on percent weight VOC, even though these

products can be demonstrated to have lower GHG and OFP (Ozone Forming Potential) emissions than the HFC-152a based alternative. Compressed gases are at a severe disadvantage in a regulatory system based on percent weight limits, including those based on only the solvent/propellant content of a product.

We support CARB's Proposed Amendments to the IPE eligibility criteria, particularly for products that utilize a compressed gas propellant system in place of greenhouse gas propellants, such as HFC-152a (specifically for hair finishing sprays, dry shampoos, and personal fragrance products). The amendment encourages product manufacturers to develop and market innovative products with propellant systems that use compressed air, carbon dioxide or nitrogen by allowing product manufacturers to demonstrate that the features of the new product can lead to a decrease in the GWP and OFP compared to a representative product. We support CARB's proposed amendments, as well as the rationale within the ISOR, which allows for this. We currently have a nitrogen propellant product in the market that with the proposed IPE we would be able to continue to market, whereas if the IPE language was excluded from the proposed regulation, we would have to remove it from the market in 2023. This product, as well as any other products we would develop, would need to meet consumer expectations in terms of fully using all of the product in the can and minimize residual product that might inhibit recycling.

## 5. Suggested Changes to Section 94511 (C)(3) and (C)(4)

Within the discussion of the rationale for Section 94511 (C)(3) it reads:

*"This amendment is needed to help ensure that more of the innovative product is used relative to the innovative product it replaces so that the proposal does not result in an increase in GWP and OFP. If more of the innovative product must be used than the representative product (for example, if one can of the representative product dispenses as much "Hair Finishing Spray" as one can of the innovative product, the OFP and GHG benefits of staff's proposal would be offset by increased product usage."*

We believe there is an error in the language in the first sentence above and have clarified the second sentence so that it is clearer. We are supportive of what we believe the intent of this section is and for the flexibility it gives to the innovative product exemption process for products that use compressed gas propellant systems. We suggest that the above statement be modified to read as follows:

*"This amendment is needed to help ensure that the use of the innovative product does not result in an increase in GWP and OFP relative to the representative product it replaces. If more of the innovative product must be used than the representative product (for example, if more than one can of the innovative product is needed to replace one can of the representative product) then the OFP and GHG benefits of staff's proposal may be offset by increased product usage."*

We would like to highlight Section 94511 (C)(4)(A), which reads:

*"(4) The ozone-forming potential of the proposed innovative product does not exceed that of the representative HFC-152a product.*

*(A) Assignment of a substance's Maximum Incremental Reactivity (MIR) value for the purpose of determining a product's ozone forming potential shall be conducted pursuant to subsections 94509(r)(5)(A)- (D) and (F)-(I)."*

We suggest changing the word "substance" to "ROC" (Reactive Organic Compounds) so that it reads:

*“(4) The ozone-forming potential of the proposed innovative product does not exceed that of the representative HFC-152a product.*

*(A) Assignment of a ROC’s Maximum Incremental Reactivity (MIR) value for the purpose of determining a product’s ozone forming potential shall be conducted pursuant to subsections 94509(r)(5)(A)- (D) and (F)-(I).”*

This change would make it clear that only the MIR of ROC will be used in determining the ozone-forming potential of the proposed innovative products, and not non-reactive compounds.

## 6. Challenges with Formulating with HFO 1234ZE Propellant

We believe that some products using HFO 1234ZE may already be able to be formulated under the existing VOC based regulations; however, the many challenges with formulating with HFO 1234ZE propellant were discussed in our comment letter dated December 6, 2019. These challenges include product compatibility and performance, as well as supply change challenges caused by the single supplier of this propellant. To reiterate, HFO 1234ZE is not the solution for all types of aerosol products.

## 7. Non-Recurring Cost Estimates

We would like to note that the estimated non-recurring cost estimates found in Appendix E (Table E-1), and seen below, are very low for reformulating products.

**Table E-1:  
Total Nonrecurring Cost per Product Formulation  
Based upon the Chemical Engineering Plant Cost Index Methodology<sup>1</sup>**

	Low Cost	High Cost
Manual Aerosol Air Freshener	\$18,159	\$189,830
Hair Finishing Spray	\$14,628	\$133,335
Dry Shampoo	\$14,628	\$133,335
Hair Shine	\$14,628	\$133,335
Temporary Hair Color	\$14,628	\$133,335
Personal Fragrance Products	\$14,628	\$133,335
Aerosol Crawling Bug Insecticide	\$19,334	\$185,631

As seen in Table-1, the estimated non-recurring costs can range from \$14,628-\$133,335 for personal care products. However, artwork alone per product may range from \$2,000-\$8,000 per SKU (Stock Keeping

Unit), and then there are additional costs for product reformulation, stability and efficacy studies, consumer safety assessments, capital investment for changes in manufacturing, validation testing, just to name a few. Even the high estimates included in this table are low.

#### 8. Use of Maximum Incremental Reactivity (MIR) in Regulating OFP of Personal Care Products

As presented in our letters dated December 6, 2019 and April 3, 2020, Unilever supports an MIR-based approach to measure the OFP of personal care products, as an alternative to limits on VOC content. Using a reactivity-based approach as an alternative to VOC targets is a proven approach and it would provide increased flexibility to product formulators to develop new formulations to attain known reduction of smog generation potential in consumer products, while minimizing the use of greenhouse gases, such as HFC-152a. We also hope to continue conversations with CARB on additional IPE provisions that would allow for improved products that can be justified based on lower OFP and GWP.

#### 9. Proposed Toxics Prohibition

In the ISOR, CARB has proposed to prohibit the use of parachlorobenzotrifluoride, methylene chloride, perchloroethylene, and trichloroethylene in hair care and personal fragrance products. We have no objection to this prohibition.

We are appreciative of CARB's willingness to work collaboratively with industry so that we can work together to achieve our air quality goals through product innovation. Unilever appreciates the opportunity to provide these comments and we look forward to future dialogue on the proposed VOC limit regulations. We look forward to the opportunity to work with CARB on developing guidance for how to implement the IPE process for products with compressed gas propellant systems industry-wide.

Respectfully Submitted,



Patrizia Barone, Ph.D.  
Regional Regulatory Affairs  
Vice President, North American Region  
& Global Beauty & Personal Care



Amy Levitt  
Head of Regulatory Affairs, North America  
Beauty & Personal Care



# Comment Log Display

## Below is the comment you selected to display. Comment 56 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Doug  
Last Name: Raymond  
Email Address: [djraymond@me.com](mailto:djraymond@me.com)  
Affiliation: Raymond Regulatory Resources (3R), LLC

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation;  
Board Agen

Comment:

Raymond Regulatory Resources (3R), LLC appreciates the opportunity to comment on the Initial Statement of Reasons for the Consumer Products VOC Regulation.

Attachment: [www.arb.ca.gov/lists/com-attach/56-consumerproducts2021-WmIXlwFfV2dXMFmH.doc](http://www.arb.ca.gov/lists/com-attach/56-consumerproducts2021-WmIXlwFfV2dXMFmH.doc)

Original File Name: 3R CARB 45 day comment.doc

Date and Time Comment Was Submitted: 2021-03-22 12:47:20

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Raymond Regulatory Resources (3R), LLC

**Doug Raymond** 13808 Duncan Run Rd. Galena, Ohio 43021  
djraymond@reg-resources.com 440-339-4539

March 22, 2021

Clerks' Office  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
<https://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Comments on Proposed Amendments to the California Consumer Products Regulation; Board Agenda Item # 21-2-1

Dear Board Members:

Raymond Regulatory Resources (3R), LLC appreciates the opportunity to comment on the Initial Statement of Reasons for the Consumer Products VOC Regulation. 3R is a consulting firm for numerous consumer product manufacturers and suppliers as well as the consultant for the National Aerosol Association (NAA).

3R has been involved with this rule making since it's inception in 2019. We have the following comments.

#### **Air Fresheners**

3R can support the VOC limits for the Automatic Aerosol Air Freshener, Concentrated Aerosol Air Freshener and Total Release Aerosol Air Freshener. These are niche categories but are very important to the consumer. In addition, the newly developed definitions are crafted to prevent any loopholes for other products to move into the category.

The Manual Aerosol Air Freshener VOC limit will be technology forcing for both the 2023 effective date as well as the 2027 effective date. Industry will be working on these new limits.

#### **Haircare**

3R can support the new proposed VOC limits for Hairspray and for Dry Shampoo. For Hairspray we appreciate that CARB staff removed the lower 45% future effective date. This limit would have pushed the Industry to the technological limit for this product. For Dry Shampoo the 55% VOC limit effective in 2023 is challenging the Industry. Currently this product category is not regulated, and typical VOC limits are probably 80% plus in VOC. The future effective VOC limit of 50% will also be challenging. 3R appreciates that the staff moved the future effective limit to 50% VOC from the original proposal of 45% VOC. Also support the Dry Shampoo category name change to more accurately

describe the category. In addition, CARB should add the characteristic of volumizing to the definition. Dry Shampoo's clean the hair without water as well the product also adds body which brings back volume to the hair. This is an essential feature of the product.

#### **Monoterpenes**

3R supports the 0.25% by weight exemption for monoterpenes in General Purpose Cleaner nonaerosol and General-Purpose Degreaser nonaerosol. With the very stringent VOC limit of 0.5% for these categories this exemption is needed.

This issue has been going on for several years. The staff's proposal of the 0.25% monoterpene exemption is a creative solution to this difficult issue.

#### **Energized Electrical Cleaner**

3R can support the proposed new definition for the Energized Electrical Cleaner category. This wording aligns the definition with the Air Toxics Rule. Also, 3R supports the proposed requirement for retaining records as long as the wording "retain currently routinely generated" means no new records need to be developed or retained.

#### **Plastic Pipe Adhesive**

3R supports the proposed new definition and VOC limit for a Plastic Pipe Cement.

#### **Addition of compounds to MIR table**

3R supports the use of Reactivity. Reactivity is sound science and has been used by CARB for at least two decades. 3R supports the addition of the four compounds diethyl carbonate, 1-chloro-3,3,3-trifluoropropane, HFO-1233zd and alkane mixed-minimally 90% C13 and higher to the MIR table of Values to the MIR table.

#### **Innovative Product Exemption**

The staff should be commended for their creative thinking for the Innovative Product Exemption (IPE) for the use of compressed gas. However as written the IPE for compressed gas is unclear and confusing. The use of compressed gases in aerosols has unique characteristics. Such as higher initial pressure, direct drops in pressure throughout the use of the product and is also susceptible to losing pressure if oriented in the wrong position. All of these characteristics can lead to the can contents not being properly used.

In addition, the current wording in the proposed provision for compressed gases lacks clarity. CARB staff should add calculations for calculating the volume and ozone potential formation that are referenced in the provision.

#### **IPE Reactivity**

3R was highly disappointed that CARB staff failed to add a Reactivity component to the IPE. NAA provided a detailed provision for the use of Reactivity in the IPE. The NAA proposal had calculations, regulatory text and examples for use. The example was absent from the staff position. The staff stated that over 1 million formulas were reviewed and not one example was presented.

3R believes reactivity is a much-needed component. If Reactivity is added to the IPE much needed flexibility to reduce the use of Global Warming Potential (GWP) compounds can be achieved. Also, if Reactivity is added to the IPE, then CARB retains the ability to approve or disapprove an individual manufacturer use of this provision.

**In Conclusion**

Staff should be commended for all their work on these amendments and achieving the much needed VOC emission reductions. Staff was always willing to meet with us and discuss the Air Freshener and Haircare categories either in person or virtually. Staff had numerous creative solutions to the complicated world of Consumer Products. Unfortunately, 3R cannot support the IPE proposed by staff but is hopeful that the staff will provide clarity to the IPE. In addition, 3R requests the Board to instruct the staff to add a Reactivity provision to the IPE. Both providing clarity and adding Reactivity to the IPE can be done in a 15-day comment period.

Thus, with the exception of the IPE, 3R supports the proposed amendments by the staff.

Thank you for your consideration to these comments. Any questions or comments please feel free to contact me at [djraymond@me.com](mailto:djraymond@me.com) or at 440-339-4539.

Sincerely,

A handwritten signature in cursive script that reads "Douglas Raymond".

Douglas Raymond  
President

CC. Ravi Ramalingam @CARB  
Josh Berghouse @CARB  
Jose Gomez @CARB  
Keith Kennedy @CARB  
Joe Calavita @CARB



# Comment Log Display

## Below is the comment you selected to display. Comment 57 for Amendments to Consumer Products Regulations (consumerproducts2021) - 45 Day.

First Name: Amanda  
Last Name: Nguyen  
Email Address: [anguyen@fragrancecreators.org](mailto:anguyen@fragrancecreators.org)  
Affiliation: Fragrance Creators Association

Subject: Fragrance Creators Association Comments - consumerproducts2021  
Comment:

Fragrance Creators Association appreciates the opportunity to provide comments on the California Air Resources Board's proposed amendments to the Consumer Products Regulation. The attached comments focus on the Two Percent Exemption and new VOC limits for personal fragrance products. Though our comments highlight challenges for the fragrance value chain, we remain committed to working with CARB on next steps.

Attachment: [www.arb.ca.gov/lists/com-attach/57-consumerproducts2021-WjtQOFE3U3UAFwls.pdf](http://www.arb.ca.gov/lists/com-attach/57-consumerproducts2021-WjtQOFE3U3UAFwls.pdf)  
Original File Name: [anguyen.pdf](#)

Date and Time Comment Was Submitted: 2021-03-22 16:51:00

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March 22, 2021

**VIA ELECTRONIC SUBMISSION**

California Air Resources Board  
Clerks' Office  
1001 I Street  
Sacramento, California 95814

**Re: Comments of Fragrance Creators Association on CARB's Proposed Amendments to the Consumer Products Regulation**

Fragrance Creators Association (Fragrance Creators) appreciates the opportunity to provide comments on the California Air Resources Board's (CARB's) proposed amendments to the Consumer Products Regulation (Proposed Amendments).

Fragrance Creators Association is the principal fragrance trade association in the United States and Canada. The organization represents the majority of fragrance manufacturing in North America, and a significant majority of our membership includes small businesses. The association also represents interests along the fragrance value chain. Fragrance Creators' membership is diverse, including companies that create, manufacture, and use fragrances and scents for home care, personal care, home design, fine fragrance, and industrial and institutional products as well as those that supply fragrance ingredients, including natural extracts and other raw materials that are used in perfumery and fragrance mixtures.<sup>1</sup>

Fragrance Creators very much appreciates CARB staff's consideration of our prior feedback, efforts to address concerns, and engagement with the fragrance value chain. Fragrance Creators supports the agency's mission to promote and protect public health, welfare, and ecological resources through effective reduction of air pollutants while recognizing and considering effects on the economy. For consumer products, Section 41712 of the California Health and Safety Code requires CARB to adopt regulations to achieve the maximum feasible reduction in Volatile Organic Compound (VOC) emissions from consumer products. Fragrance Creators understands this authority and acknowledges VOC reduction as a requirement limited only by commercial and technical feasibility. Fragrance Creators offers comments to center the conversation on VOC reductions, identifying below where CARB's proposals for the Two Percent Fragrance Exemption

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<sup>1</sup> Learn more about Fragrance Creators at [fragrancecreators.org](https://www.fragrancecreators.org)—for people, perfume, and the planet.

and the Personal Fragrance Products category present difficulties.<sup>2</sup> Fragrance Creators respectfully requests that CARB take note of these difficulties, as outlined below, and continue to work with our members moving forward.

**I. Fragrance Creators Does Not Support “Sunsetting” the Two Percent Fragrance Exemption.**

In the Proposed Amendments, CARB proposes to sunset the Two Percent Fragrance Exemption by 2031, with a modified 0.25 percent fragrance exemption for select product categories, including general purpose cleaners and degreasers, air fresheners, disinfectants, and sanitizers. Fragrance Creators appreciates the extension of the timeline to 2031. However, Fragrance Creators has previously raised concerns regarding CARB’s proposal to sunset the Two Percent Fragrance Exemption, and writes again to reiterate the importance of the Exemption to the fragrance and consumer products industries, as well as to consumers.

**A. Fragrance Is a Critical Component of Consumer Products, and the Two Percent Fragrance Exemption Is An Important Tool in the Formulation Toolkit.**

As Fragrance Creators has explained in prior comments, fragrance is a critical component of consumer products: it encourages proper product use; covers base malodors; and creates a mechanism for product manufacturers to differentiate between brands and products. For example, since this rulemaking began, the fragrance value chain has been instrumental in responding to COVID-19. The Cybersecurity and Infrastructure Security Agency (CISA) updated its Guidance, [Essential Critical Infrastructure Workforce \(ECIW\): Ensuring Community and National Resilience in COVID-19 Response](#), to explicitly include fragrance manufacturers.<sup>3</sup> Research has also shown that fragrance plays a critical role in our emotions and experiences—from nurturing warm memories and our sense of home; to promoting positive self-image and self-confidence; and aiding in our well-being and psychological health, including reducing stress, sparking joy, and promoting brain function. It is for these reasons that CARB adopted the Two Percent Fragrance Exemption thirty years ago, explaining that the exemption would allow manufacturers to use a “de minimis level” of fragrance in their consumer products “such that the products may be

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<sup>2</sup> Fragrance Creators’ comments focus on VOC reductions, but we note that fragrances are one of the most highly tested ingredients in the consumer product marketplace. For over fifty years, the fragrance industry has led on safety with its robust management program that generates and evaluates data, considers consumer use of ingredients, and restricts or bans materials when scientifically necessary. Fragrances and fragranced products are subject to many state and federal laws that govern how people experience fragrance—including in their environment, in personal care and household care products, worker safety, transportation, product labeling, and more. In the U.S., the fragrance industry is regulated by several government agencies, including the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA), the Consumer Product Safety Commission (CPSC), the Occupational Safety and Health Administration (OSHA), and dozens of state and federal laws.

<sup>3</sup> Learn more at <https://www.fragrancecreators.org/covid-19/resource/fca-cisa-covid-19-guidance-to-include-fragrance>.



marketed in an appealing manner to consumers.”<sup>4</sup> The consumer products industry has relied on this exemption for many years to formulate products that both work as intended and comply with the volatile organic compound (“VOC”) emission limits for their product category, while still imparting a scent that drives consumer acceptance and other benefits. The Two Percent Fragrance Exemption thus enables product manufacturers to deliver efficacious products to the market that meet consumers’ needs.

Without an exemption for fragrance, product manufacturers—across a wide range of product categories and products—would have to expend a significant amount of time, money, and effort to reformulate products that were developed with the reasonable expectation that the long-standing exemption for fragrance would remain in effect. Reformulating just a single consumer product is a costly and time-consuming process that involves multiple stages, including design and development of multiple fragrance options; production of sample fragrance oils; testing of each fragrance oil sample for hedonics, performance, and stability; regulatory review to ensure each fragrance oil sample meets the product manufacturer’s specifications; and production of the selected formulated fragrance for distribution to the product manufacturer.<sup>5</sup>

In addition, reformulation often is an iterative process, such that these steps must be repeated several times (for both the fragrance itself and the overall consumer product for which the fragrance is just one component). Reformulating many products—as likely would be required under CARB’s proposal to eliminate the fragrance exemption—would thus be an extraordinarily time-consuming and costly endeavor, diverting resources from other efforts such as research and development. Moreover, reformulation is not automatic; there is no guarantee that the reformulated fragrance will be as successful (e.g. olfactively, commercially) as the previous version. And even if CARB is correct that the Two Percent Fragrance Exemption is not widely used, manufacturers still would have to review each of their products to ensure that the formulations comply with the applicable VOC limits without the Two Percent Fragrance Exemption. In either case, sunseting the Two Percent Fragrance Exemption would impose a significant and costly burden on product manufacturers, while achieving only marginal reductions in VOC emissions.

In short, CARB’s proposal to sunset the Two Percent Fragrance Exemption entirely for the vast majority of product categories (and in significant part for the general purpose cleaner and degreaser, air freshener, disinfectant, and sanitizer categories) threatens to eliminate certain products from the California market because they would no longer be technologically and/or commercially feasible—i.e., they could not be formulated to both work as intended and comply with the low VOC limits for their product category while still imparting a scent that drives consumer acceptance and other benefits.

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<sup>4</sup> CARB, *Proposed Regulation to Reduce Volatile Organic Compound Emissions From Consumer Products*, Technical Support Document at 6-7 (Aug. 1990), available at [ww3.arb.ca.gov/consprod/regact/ph1cptsd.pdf](http://ww3.arb.ca.gov/consprod/regact/ph1cptsd.pdf).

<sup>5</sup> See Fragrance Creators’ May 14, 2020 Comments for additional information.

Because fragrance is an integral component across all consumer product types, sunseting the Two Percent Fragrance Exemption would affect virtually every product category. Should CARB move forward with this proposal, retaining the extended 2031 timeline is necessary to address the impact on the supply chain.

B. CARB's VOC-Reduction Goals Do Not Support Sunseting the Two Percent Fragrance Exemption.

Fragrance Creators remains concerned that CARB's proposal to sunset the Two Percent Fragrance Exemption is not supported by CARB's VOC-reduction goals and is disproportionately driven by other considerations that are outside the scope of CARB's statutory mandate to reduce VOC emissions in a manner that is commercially and technologically feasible and necessary. See Health & Safety Code § 41712(b). In particular, sunseting the Two Percent Fragrance Exemption results in a relatively small reduction in VOC emissions (only 0.3 tons per day based on CARB's calculation),<sup>6</sup> but—as described above—will impose significant costs and burdens on manufacturers across a wide range of product categories.

1. *Fragrance Creators Supports Sound Science.*

CARB asserts that sunseting the Two Percent Fragrance Exemption would achieve several benefits beyond VOC reductions, including addressing concerns raised by some commenters regarding the potential impact of fragrance on public health.<sup>7</sup> Specifically, CARB states that sunseting the exemption could protect public health by improving indoor air quality, noting that “[e]xposure to fragrance chemicals in many consumer products has been linked to multiple chemical sensitivity (MCS).”<sup>8</sup> These assertions regarding the potential health effects of fragrance are unfounded.

To the extent that CARB cites certain studies, Fragrance Creators believes the record should fully contemplate fragrance science. In fact, unaddressed malodors can create a variety of unpleasant conditions and emotional impacts in indoor environments as well as public spaces. A number of studies have shown that fragrances and scents—especially those found in products with additional odor-eliminating components—can be used to counter malodor, which promotes public health and enhances mood and quality of life.<sup>9</sup>

For more than 50 years, the Research Institute for Fragrance Materials (RIFM)<sup>10</sup> has worked to build universal acceptance and trust in the safe use of fragrance materials through applied

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<sup>6</sup> See Initial Statement of Reasons (“ISOR”), at III-74 (Feb. 2, 2021).

<sup>7</sup> *Id.* at III-75.

<sup>8</sup> *Id.* at VI-206-207.

<sup>9</sup> See, e.g., [https://www.tandfonline.com/doi/abs/10.1207/s15324834basp0402\\_5](https://www.tandfonline.com/doi/abs/10.1207/s15324834basp0402_5); <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3794443/>; and <https://academic.oup.com/chemse/article/39/3/185/502849>.

<sup>10</sup> Learn more about RIFM at <https://www.rifm.org>.

science and research. RIFM is a nonprofit scientific authority that gathers and analyzes scientific data related to the use of fragrance. The RIFM Database is the most comprehensive, worldwide source of toxicology data, literature and general information on fragrance and flavor raw materials, classifying more than 6,000 materials. RIFM reviews upwards of 50 journals a month, conducts literature searches, and regularly collects member company data to keep the RIFM Database as complete as possible. With upwards of 70,000 references that include more than 135,000 human health and environmental studies, the Database also houses RIFM's full Safety Assessments and several tools that are crucial to RIFM's Fragrance Ingredient Safety Assessment and Research programs. All of RIFM's research is reviewed by an independent Expert Panel<sup>11</sup> composed of dermatologists, pathologists, toxicologists, and respiratory scientists from around the world who have no commercial ties to the fragrance industry.

Accordingly, any assessment of fragrance-related health concerns must consider the full universe of available information, rather than a few select (and flawed) studies. In any event, though we appreciate CARB receives broad stakeholder input, such considerations do not relate to CARB's statutory mandate to reduce VOC emissions, and, therefore, should not factor into CARB's decision-making process.

## *2. Consumers Want and Use Fragranced Products.*

The overwhelming majority of consumers want and use fragranced products. As a result, sunseting the Two Percent Fragrance Exemption will not result in the elimination of fragrance from consumer products. Instead, sunseting the exemption will lead to unintended consequences as manufacturers try to find ways to meet consumer demand while complying with the CARB requirements. For example, if the Two Percent Fragrance Exemption is eliminated for most product categories as proposed, manufacturers may need to replace VOC ingredients in fragrance with LVP-VOC ingredients. Using a higher proportion of LVP-VOC ingredients will change the character of many fragrances. And importantly, because LVP-VOC ingredients do not evaporate as quickly as VOC ingredients, in order to achieve the same "fragrance throw," the total fragrance concentration in the product may need to be increased. This can be done by replacing VOC ingredients with even larger amounts of LVP-VOC ingredients. In addition, consumers may use more of the product to achieve the same fragrance effect. As a result, it is not at all clear that sunseting the Two Percent Fragrance Exemption will reduce overall VOC emissions. On the contrary, in some products, it may lead to a substantial increase in the total volume of fragrance used and released into the environment.

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<sup>11</sup> Learn more about the Expert Panel for Fragrance Safety at <http://fragrancesafetypanel.org/>.

3. *Addressing CARB's Interest in Transparency and Simplifying Compliance Could Be Achieved without Elimination of the Two Percent Fragrance Exemption.*

CARB also states that eliminating the Two Percent Fragrance Exemption would encourage transparency and simplify compliance determinations.<sup>12</sup> Fragrance Creators submits, respectfully, that addressing CARB's interest in transparency and simplifying compliance determinations could be achieved through other avenues and does not require eliminating the Two Percent Fragrance Exemption entirely. Fragrance Creators is proud to have been a primary stakeholder, and the lead representative on fragrance issues, for the *Cleaning Product Right to Know Act* (SB 258) and the *Cosmetic Fragrance and Flavor Ingredient Right to Know Act of 2020* (SB 312)<sup>13</sup>. As an active participant in creating a predictable, understandable ingredient communication framework in California, Fragrance Creators and its members are happy to work with CARB to address the agency's concerns. Fragrance Creators has already taken direct responsibility for increasing consumer understanding through the development of [The Fragrance Conservatory](#), the comprehensive digital resource for high-quality information about fragrance. But, transparency considerations do not warrant eliminating the Two Percent Fragrance Exemption entirely as CARB has proposed.

C. Fragrance Creators Supports Maintaining Some Exemption for Fragrance for Certain Product Categories and Recommends that CARB Adopt a Definition of "Monoterpenes."

Fragrance Creators urges CARB to retain an exemption for fragrance of at least 0.5 percent for all applicable product categories. If CARB intends to follow through on its proposal to sunset the Two Percent Fragrance Exemption, however, Fragrance Creators supports retaining a limited exemption for fragrance for as many products as possible. Thus, Fragrance Creators supports retaining at least a 0.25 percent fragrance exemption for general purpose cleaners and degreasers, air fresheners, disinfectants, and sanitizers, as proposed by CARB.

Fragrance Creators also supports CARB's proposal to allow monoterpenes up to a combined 0.25 percent by weight to be exempt as part of the 0.25 percent fragrance exemption for non-aerosol general purpose cleaners and degreasers. For clarity, Fragrance Creators recommends that CARB adopt the following definition of "monoterpenes" relating to sections 94510(c)(1) and 94510(c)(3):

"Monoterpenes," which means the following chemicals, as listed in the table below, used in General Purpose Cleaner (nonaerosol) and General Purpose Degreaser (nonaerosol) products.

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<sup>12</sup> See ISOR at III-74-75.

<sup>13</sup> Previously introduced as SB 574 and referred to as such in the ISOR at II-30.

Table 94509(s)	
Specified Monoterpenes relating to sections 94510(c)(1) and 94510(c)(3)	
Monoterpene	CAS Registry Number
d-limonene	CAS # 5989-27-5
l-limonene	CAS # 5989-54-8
dipentene (dl-limonene)	CAS # 138-86-3 / 7705-14-8
$\alpha$ -pinene	CAS # 80-56-8
$\alpha$ -Pinene (laevo isomer)	CAS # 7785-26-4
$\alpha$ -Pinene (dextro isomer)	CAS # 7785-70-8
$\beta$ -pinene	CAS # 127-91-3
$\beta$ -Pinene (laevo isomer)	CAS # 18172-67-3

Fragrance Creators has coordinated with other trade associations (including the Household & Commercial Products Association and the Personal Care Products Council) in developing this definition and believes that adopting a definition by reference to CAS numbers will provide clarity for regulated parties and mitigate any concerns regarding circumvention. Fragrance Creators respectfully request that CARB finalizes a definition for “monoterpenes” during the 15-day amendment period. Fragrance Creators would appreciate the opportunity to discuss further with CARB staff. Additionally, we ask CARB withdraw the Monoterpenes Guidance Document,<sup>14</sup> as the issues contemplated will be incorporated by this proposal.

## II. Fragrance Creators is Committed to Working with CARB Staff Regarding Challenges with the Personal Fragrance Products Proposal.

Under CARB’s Proposed Amendments, Personal Fragrance Products with 7 percent or less fragrance would be subject to a VOC standard of 70 percent by weight starting January 1, 2023 (the Tier 1 Standard). Starting January 1, 2031, Personal Fragrance Products with 10 percent or less fragrance would be subject to a VOC standard of 50 percent by weight (the Tier 2 Standard). CARB also proposes to conduct a technology assessment by 2027 to evaluate whether the Tier 2 Standard is feasible.

<sup>14</sup> Guidance Pertaining to the Two Percent Fragrance Exemption and Limonene, available at [https://ww2.arb.ca.gov/sites/default/files/2020-04/Remediated\\_frag\\_exempt\\_guide.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-04/Remediated_frag_exempt_guide.pdf)

Fragrance Creators values the ongoing dialogue and collaboration with CARB staff to develop new VOC targets for Personal Fragrance Products, and generally supports CARB's commitment to undertake a technology assessment to reevaluate the feasibility of the Tier 2 Standard. Fragrance Creators remains committed to working with CARB and the fragrance industry on this technology assessment. Fragrance Creators notes, however, that the proposed VOC limits may not be technologically, nor commercially, feasible across all of the subcategories of Personal Fragrance Products. As Fragrance Creators explained previously, for the vast majority of fine fragrance products (colognes, perfumes, parfums, eau de parfum, eau de toilette, etc.), compliance with the more stringent limits would be very difficult (at 70 percent) if not impossible (at 50 percent). Indeed, CARB's data shows that only an exceedingly small percentage of the market (5%) currently meets the Tier 2 Standard, and Fragrance Creators expects that this percentage is even lower (if not zero) for fine fragrance products.<sup>15</sup>

CARB states that it expects Personal Fragrance Products can be reformulated by replacing some of the ethanol content with water, or by utilizing solubilizers to facilitate compliance with the 50 percent standard.<sup>16</sup> Fragrance Creators believes that these alternatives are likely to present significant feasibility challenges, particularly for fine fragrance products. As CARB notes, fine fragrance products are the "most simply formulated products" and consist predominantly of fragrance, ethanol, and water.<sup>17</sup> Given the limited ingredients in these products, even a small change to the formulation changes the olfactory character of the product such that it loses its identity, which is particularly problematic for many longstanding and iconic fine fragrance products for which consumers expect a certain, consistent scent. In addition, industry already has evaluated several possible alternatives to ethanol (such as propylene glycol, isopropyl myristate, other alcohols, and phthalates) and determined that they are not feasible either because of technical concerns (odor, solubility, stability, etc.) or real and/or perceived health and environmental safety issues.

In sum, the composition of products in the fine fragrance category, coupled with the lack of commercially or olfactively viable alternative ingredients, makes CARB's proposal for the Personal Fragrance Products category especially challenging. Nevertheless, Fragrance Creators appreciates CARB's efforts to address industry concerns and is committed to working with CARB on the technology assessment to further evaluate feasibility of the Tier 2 Standard.

Fragrance Creators offers the following additional comments on the Proposed Amendments with respect to the technological assessment for the Personal Fragrance Products category:

- Section 94513(i)(1)(A) of the Proposed Amendments provides that responsible parties shall provide "data regarding . . . the VOC content of fragrance ingredients . . . ." Fragrance Creators suggests that this provision be revised to require data

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<sup>15</sup> See ISOR at III-63.

<sup>16</sup> See ISOR at III-64.

<sup>17</sup> See ISOR at III-60.

regarding the VOC content of the “fragrance concentrate” or “fragrance mixture,” as it is not possible to determine the VOC content of each individual ingredient of the fragrance mixture.

- Section 94513(i)(1)(B) of the Proposed Amendments provides that responsible parties shall provide a written update on research and development efforts, which shall include a detailed description of steps taken to achieve compliance, including “types of formulations to be tested,” “formulation data,” “prototype testing,” “toxicity testing and research,” “stability testing,” and “consumer acceptance research.” Fragrance Creators suggests that CARB add to this list “olfactory/odor expert acceptance testing.” A fragrance product must be deemed acceptable by an olfactory/odor expert before it can be marketed and sold, and therefore this criterion is critical to evaluating technological feasibility.

\* \* \*

Thank you for your time and consideration. Please do not hesitate to contact me if you have any questions or if there is additional information Fragrance Creators can provide to assist with the rulemaking process.

Respectfully submitted,



Amanda Nguyen, J.D.

Vice President, Government Affairs & Legal



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# Comment Log Display

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Comment 58 for Amendments to Consumer Products Regulations  
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First Name: Lisette  
Last Name: van Vliet  
Email Address: [lisette@bcpp.org](mailto:lisette@bcpp.org)  
Affiliation: Breast Cancer Prevention Partners

Subject: Board consideration Consumer Product Regulations  
Comment:  
Please find enclosed our comments on the Consumer Product  
Regulations proposals

Thank you for your consideration

Attachment: [www.arb.ca.gov/lists/com-attach/58-consumerproducts2021-Uj4HZFwpByBQM1Ai.pdf](http://www.arb.ca.gov/lists/com-attach/58-consumerproducts2021-Uj4HZFwpByBQM1Ai.pdf)

Original File Name: Letter 3.2021 CARB VOC Consumer Product Regs.pdf

Date and Time Comment Was Submitted: 2021-03-22 18:11:26

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March 22, 2021

Clerks' Office,  
California Air Resources Board  
1001 I Street Sacramento, California 95814

**Re: Final Proposals for Consumer Products Regulations – Public Hearing March 25, 2021**

To the California Air Resources Board:

I am writing on behalf of Breast Cancer Prevention Partners, a national organization, based in San Francisco, that is focused solely on preventing breast cancer by reducing exposure to chemicals and radiation linked to the disease. We work with advocates and decision-makers to encourage research and policy initiatives to better understand and reduce exposures to toxic environmental chemicals that contribute to increased rates of breast cancer and other diseases.

We submit the following public comments in response to the final proposals issued by the California Air Resources Board's Consumer Products Program to revise the limits for VOC emissions from consumer products used in California. These VOC reductions are to implement the California State Implementation Program for state and federal Clean Air Standards.

We wholeheartedly support the proposals' goal to achieve statewide VOC emissions reductions, and note the importance of achieving these reductions in the South Coast Air Basin, where a high percentage of residents are in disadvantaged communities. Given the emerging evidence about the association between people's exposure to air pollution and their susceptibility to COVID infection and poor outcomes once infected, these VOC emissions reductions take on even greater importance.

CARB is proposing VOC reductions for a variety of consumer products, including products that contain fragrance. Fragrance chemicals can be a significant contributor to emissions of Volatile Organic Chemicals (VOCs) which cause air pollution. In the state of California, 1.6 tons of VOCs are emitted every day from the fragrance in cosmetics and personal care products alone. A 2018 journal article noted that overall VOC emissions from household products, *including fragranced products*, are now equal to VOC emissions from cars/transportation.<sup>1</sup> CARB itself states that without further regulations the VOC emissions will continue to rise as California's population grows.

Thousands of synthetic chemicals are used to create the fragrances that make the beauty and personal care products and the cleaning products that we use every day smell good. *But these fragrances can*

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<sup>1</sup> McDonald BC et.al. (2018) Volatile chemical products emerging as largest petrochemical source of urban organic emissions. Science. 2018 Feb 16;359(6377):760-764. doi: 10.1126/science.aaq0524.

*come at a cost to human and environmental health.* Some of these chemicals have been linked to negative health impacts ranging from allergic reactions to reproductive harm and increased risk of breast cancer. The magnitude of the potential danger to human health is worsened by the fact that fragrance chemicals are found in more than 95 percent of personal care products<sup>2</sup> such as shampoos, conditioners, hair styling products, antiperspirants and shaving products, as well as fine fragrances, body sprays and lotions. In a national survey, over 34% of respondents in the U.S. reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products<sup>3</sup>. Fragrance is also a major contributor to indoor air pollution and water pollution. Use of fragranced consumer products has been linked to higher levels of toxic air pollutants in the home.<sup>4</sup> And some fragrance chemicals (like synthetic musks) are persistent pollutants and show up in surface water, lakes, rivers, drinking water, and wastewater.

We note that over half of the reductions that your proposed new VOC limits will accomplish by 2023 come from two categories - "Hair Finishing Spray" and "Dry Shampoo", and over half of the reductions your proposed new VOC limits will accomplish by 2031 come from the "Personal Fragrance Products".

Overall, we support the CARB proposal for lowering allowable VOC limits for these product categories, and the elimination of the two percent fragrance exemption. However, we regret the less stringent standards and later deadlines that are in the final proposals compared to the earlier proposals (starting in November 2019 and March 2020), notably for the elimination of the 2% fragrance exemption, the Personal Fragrance products, Hair Care Products, Manual Aerosol Air Freshener and Crawling Bug Insecticide. In our April comments, we advocated and here repeat the importance of having health-protective VOC limits and deadlines.

In particular, we again would like to re-iterate our opposition to the absence of any further limits for VOC emissions for personal fragrance products that have a fragrance concentration above 20%. Individual fragrance formulations can be made up of anywhere between a dozen to sometimes hundreds of chemical constituents, and while 'iconic' brands might not wish to reformulate, they bear a responsibility, as does the manufacturer of every other VOC-emitting consumer product, to doing their part to reduce VOC-related air pollution in our state. The California Clean Air law allows for the continuation of a product form, but it does not enshrine or protect iconicity from VOC reductions. Protecting the public health and preventing air pollution should be the key goals of this regulatory process, not allowing special interests to continue to maintain the special treatment their fragranced products have received for far too long.

Again, we re-iterate that 2031 is too long to make the people of California wait for cleaner air and safer products. The deadline for removing the 2% fragrance exemption should be 2025, which would provide sufficient time for manufacturers to reformulate their fragranced consumer products. Breast Cancer Prevention Partners' 2018 Report "[Right to Know: Exposing Toxic Fragrance Chemicals in Beauty, Personal Care and Cleaning Products](#)"<sup>5</sup> shows that there are added public health benefits to be gained from reducing fragrance in personal care and cleaning products. The dozens and sometimes even

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<sup>2</sup> [Prevalence of Cosmetic Allergens; Journal of Clinical and Aesthetic Dermatology](#)

<sup>3</sup> [Fragranced consumer products: exposures and effects from emissions; Air Quality, Atmosphere & Health International Journal](#)

<sup>4</sup> Wheeler AJ1, Wong SL, Khouri C, Zhu J. Predictors of indoor BTEX concentrations in Canadian residences. Health Rep. 2013 May;24(5):11-7.

<sup>5</sup> [Right to Know: Exposing toxic fragrance chemicals in beauty, personal care and cleaning products](#)

hundreds of chemicals that hide behind the one word ‘fragrance’ can include chemicals which scientific research has associated with cancer, birth defects, hormone disruption and other adverse health effects. Three out of four chemicals linked to adverse health effects detected in the products tested in the Right to Know report were fragrance chemicals. Reductions in unsafe VOC emissions across a range of fragranced consumer products will reduce people’s exposures to these hazardous chemicals and hence the environmental health risks that these chemicals pose. Every manufacturer should be doing their part to further reduce VOC emissions from their fragranced consumer products that are contributing to ground-level ozone pollution, given the clear benefits to the health of the people of California.

Given that new disclosure laws have (independently from CARB) come into effect for cleaning products under SB258 of 2017, and for personal care and beauty products SB312 of 2020, we anticipate that various producers have or will soon commence reformulating the fragrance compositions of their products. This reformulation is likely to involve the phase out of many fragrance ingredients whose harm and toxic status now must be publically acknowledged through the disclosure requirements.

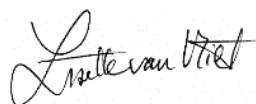
[The Cleaning Product Right to Know Act of 2017](#) requires online disclosure of chemicals featuring on 22 lists of known toxic effects for human health or the environment. These lists include chemicals that are California Toxic Air Contaminants and chemicals used in fragrance. The disclosure has been required online for Cleaning Products since January 2020 and on product labels since January 2021 (except Proposition 65 ingredients which are to be listed by January 2023).

[The Fragrance and Flavor Ingredient Right to Know Act of 2020](#) (SB312) requires disclosure of chemicals featuring on the same 22 lists, with the disclosure starting January 2022. The California Safe Cosmetics Database will be disclosing those toxic fragrance and flavor ingredients on its website. This law is referred to in your [Feb 2021 Staff Report](#): Initial Statement of Reasons on the Public Hearing on page II-30 in its previous form (SB574, 2019). Eliminating this exemption at an earlier date than you currently propose could really potentiate the innovation that will be spurred by this act, as product manufacturers commence reporting their fragrance ingredients and reformulating their products. An earlier date will ensure that they concurrently obtain VOC content information and obtain fragrance ingredient composition from the fragrance vendors, to ensure that their (fragranced) products are formulated to meet VOC standards and no longer contain harmful fragrance ingredients.

Your CARB proposals therefore could apply more stringent VOC standards to synergize with the incentives these new laws create so companies innovate new, safer product formulations that omit both harmful fragrance ingredients and lower VOC emissions.

We urge you to make the VOC reductions as stringent as possible and as swift as possible to protect California residents’ health, both from breast cancer and from other health problems.

Sincerely,



Lisette van Vliet, Senior Policy Coordinator  
**Breast Cancer Prevention Partners**



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Comment 59 for Amendments to Consumer Products Regulations  
(consumerproducts2021) - 45 Day.**

First Name: Thomas  
Last Name: Meyers  
Email Address: Non-web submitted comment  
Affiliation:

Subject: PCPC Comments  
Comment:  
Please see attached.

Attachment: [www.arb.ca.gov/lists/com-attach/59-consumerproducts2021-UCAAZVAhWWkGXwZI.pdf](http://www.arb.ca.gov/lists/com-attach/59-consumerproducts2021-UCAAZVAhWWkGXwZI.pdf)

Original File Name: PCPC Comments on CARB ISOR Proposed Regulation Mar 22 2021.pdf

Date and Time Comment Was Submitted: 2021-03-22 21:22:35

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March 22, 2021

**Via Electronic Mail**

Joe Calavita  
Manager, Consumer Products Implementation Division  
California Air Resources Board  
Sacramento, CA 95812-0806  
[joe.calavita@arb.ca.gov](mailto:joe.calavita@arb.ca.gov)

**RE: Comments on California Air Resources Board's "Staff Report: Initial Statement of Reasons", dated February 2, 2021**

Dear Mr. Calavita:

In response to the California Air Resources Board (CARB) publication of its Initial Statement of Reasons (ISOR) on February 2, 2021, the Personal Care Products Council (PCPC)<sup>1</sup> is pleased to submit the following comments on the proposed amendments to the Consumer Products Regulation.

PCPC represents more than 600 member companies, ranging from large manufacturers and marketers to independent producers, which are involved in the manufacture and distribution of cosmetics, toiletries, fragrances, over-the-counter (OTC) drug products and ingredients in California and throughout the United States. PCPC members therefore have a strong interest in the scope and applicability of this regulation.

We thank CARB staff for the time and attention it has given to PCPC and its member companies during the regulatory development process. The dialogue has helped us assess the overall impact of the regulatory proposals on our products and to work toward optimum solutions that meet the goals of CARB, the State of California, and the companies which provide personal care products.

**INTRODUCTION**

Since the inception of California's Consumer Product Regulations in 1989, PCPC and its members have continuously provided thoughtful feedback on CARB's rulemaking proposals to limit VOC emissions. We

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<sup>1</sup>Based in Washington, D.C., the Council is the leading national trade association representing the global cosmetic and personal care products industry. Founded in 1894, the Council's more than 600 member companies manufacture, distribute, and supply the vast majority of finished personal care products marketed in the United States. As the makers of a diverse range of products that millions of consumers rely on every day, from sunscreens, toothpaste, and shampoo to moisturizer, lipstick, and fragrance, member companies are global leaders committed to product safety, quality, and innovation.

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March 22, 2021  
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have been engaged in the current rulemaking as well, including participation in the five public workshops held by CARB on April 12, 2019, November 7, 2019, April 14, 2020, July 28, 2020, and November 10, 2020. We have also had several meetings with CARB staff generally, and many PCPC member companies have engaged directly with CARB on matters of company specific importance.

PCPC recently submitted formal comments<sup>2</sup> on August 28, 2020 and November 24, 2020 as part of this dialogue; these comments are still relevant and applicable to the current discussion and are thus incorporated by reference. Our current comments are primarily focused on personal care topics discussed in the ISOR dated February 2, 2021.

Our comments are submitted as an effort to achieve a practical and effective regulatory framework that promotes sustainable innovation while making meaningful improvements to the protection of human health and the environment. Any significant change in regulations represents equally significant challenges to the formulating companies, as each new product must be evaluated for product integrity, stability, safety, financial viability, and ultimately consumer acceptability. PCPC member companies also must ensure that any new regulation does not lead to the substitution of potentially more toxic or environmentally damaging ingredients.

PCPC thus respectfully submits the following comments on sections of the ISOR which impact the personal care categories.

### **1. General Comments**

PCPC appreciates the fact that CARB's proposed VOC standards for Hair Finishing Spray, No Rinse Shampoo (to be known as Dry Shampoo), Hair Shine, Temporary Hair Color, and Personal Fragrance Products (PFPs) remain unchanged from the July 28, 2020 proposal. Companies are already working to modify current product formulations necessary to meet these proposed VOC levels – especially for the January 1, 2023 implementation date – in anticipation of CARB Board approval.

### **2. Product Category Definitions**

PCPC supports changing the name of “No-Rinse Shampoo” to “Dry Shampoo.”

As to the proposed definition, it is important to remember that the purpose of Dry Shampoo is to remove oil from the hair, which results in making the hair fuller in body and volume. As such, CARB should amend the definition slightly to include the word “volumizing,” thereby explicitly allowing the use of this claim for dry shampoos, especially given this is a claim that is traditionally made on ‘wet’ shampoos as well.

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<sup>2</sup> See Letters from Thomas F. Myers to Joe Calavita, titled “Comments on California ARB’s Proposed Amendments to the Consumer Products Regulation”, August 28, 2020; and “Comments on California ARB’s Proposed Amendments to the Consumer Products Regulation”, November 24, 2020.



### **3. Proposed Technology Assessment**

In its November 10, 2020 webinar, CARB presented an overview of the “Proposed Technology Assessment of the 2031 Standard.” We greatly appreciate the inclusion of a Technical Assessment in the proposal as an important and necessary step to determining the feasibility of the 2031 proposed VOC limit.

Importantly, many companies are presently uncertain as to how to reduce VOC levels for much of the PFP category from 70% to 50% VOC:

- a. While CARB states in the ISOR that 20% of product formulations from its 2015 survey met the proposed 50% VOC limit on “Personal Fragrance Products with less than 10% fragrance,” we are unaware of any successfully marketed formulations which also meet the criteria of consumer acceptability and brand quality.
- b. PCPC reiterates and urges CARB to explicitly state in its “resolutions” that, if the 50% VOC level for Personal Fragrance Products proves to be technically infeasible by the January 1, 2031 deadline, CARB will increase the proposed VOC limit to a higher level commensurate with the results of the technology assessment.
- c. The technical assessment will require manufacturers to conduct a survey of potentially impacted products for the year 2025. In order to conduct a complete survey of products sold as late as December 31, 2025, companies will need additional time. As previously requested, PCPC members are seeking an additional 3 months to conduct the survey, with a new deadline of June 30, 2026, to deliver the required information.

Once this proposed regulation is promulgated, PCPC and its members commit to engaging with CARB to develop and execute the survey and technology assessments required.

### **4. Fine Fragrance Products**

The proposed VOC limits may not be technologically nor commercially feasible across all subcategories of non-aerosol Personal Fragrance Products. Indeed, significant reformulation of existing products will be needed for some subcategories to reach even the 70% VOC standard; and much work will be required to create some entirely new fine fragrances which meet a 70% standard.

For the vast majority of existing fine fragrance products with < 7% fragrance, (perfumes, parfums, eau de parfum, eau de toilette, cologne), compliance with 70 % will be difficult without compromising the overall scent of the product. Indeed, as CARB points out, fine fragrances are “the most simply formulated products” comprised of fragrance (a mixture of hundreds of ingredients), ethanol, water and possibly a very small amount of ingredients like colorants or antioxidants. As a result, the smallest change in the fragrance mixture requires significant amounts of work just to maintain the same scent, as expected by consumers. Any change to the equilibrium ethanol/ water, which is very specific to any given fragrance

mixture, strongly modifies the olfactory character of the product, which is its highly recognizable identity. Consumers will likely find any change to the scent of the product to be unacceptable. Generations of consumers expect over the time the exact same scent and sensation from their iconic fine fragrance brands, many of them on the market since several decades.

When it comes to a 50% standard, CARB's data show that regardless of fragrance content, only a very small percentage of today's market (less than 5%) currently meets the limit, and PCPC expects this percentage to be zero or close to nil for fine fragrances. If reformulation of most existing fine fragrances, which have been on the market for many years, is deemed difficult at 70%, it is even more true for 50%.

Many avenues have been tried in the past to replace either partially or entirely ethanol without success; nevertheless, PCPC members are committed to working collaboratively with fragrance suppliers to assess the feasibility of new approaches and simultaneously with CARB on the technology assessment.

There are two technical considerations in the text of the amendments that are worth making for both aerosols and non-aerosols PFP's:

- With respect to the technological assessment for the Personal Fragrance Products category:
  - Section 94513(i)(1)(A) of the Proposed Amendments provides that responsible parties shall provide "data regarding . . . the VOC content of fragrance ingredients . . . ."
    - We suggest revising this provision slightly to require data regarding the VOC content of the "fragrance concentrate" or the "fragrance mixture," (as it is not possible to determine the VOC content of each individual ingredient of the fragrance mixture).
  - Section 94513(i)(1)(B) of the Proposed Amendments provides that responsible parties shall provide a written update on research and development efforts, which shall include a detailed description of steps taken to achieve compliance, including "types of formulations to be tested," "formulation data," "prototype testing," "toxicity testing and research," "stability testing," and "consumer acceptance research."
    - We suggest removing "consumer acceptance research" and replacing it with "olfactory/odor expert acceptance testing." A fragrance product must undergo an olfactory/odor expert acceptance test before deemed to be acceptable for presentation to consumers. (This is part of the technical steps that a product must go through). Otherwise, every small tweak to a fragrance will require consumer acceptance research, which is very costly and time consuming.

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## **5. Sunset of 2% Fragrance Exemption by 2031**

In previous comments, PCPC requested that CARB withdraw the proposal to “sunset” the 2% fragrance exemption for Article 2 products, in part because the VOC savings are minute and could require significant reformulation of products which currently use the exemption. It has also been pointed out that the elimination of the fragrance exemption amounts to a *de facto* reduction of the maximum VOC level in most Article 2 product categories.

In the ISOR, CARB staff reaffirmed its intent to eliminate the 2% Fragrance Exemption, stating that “this proposal would promote transparency and equity, clarity, and help address growing public health concerns associated with exposure to fragrance ingredients”.

PCPC and its members continue to object to the implication that fragrances cause public health concerns, as the safety of all cosmetic products must be substantiated before marketing, *per* U.S. FDA regulations. PCPC and its members continue to work with fragrance manufacturers and safety professionals to assure that the products, including their fragrances, are safe for consumers to use as intended. It is also important to note that by 2022 PCPC members have to comply with California Senate Bill 312, the Cosmetic Fragrance and Flavor Ingredient Right to Know Act of 2020, which requires the disclosure of fragrances, flavors and allergens in cosmetic products, thereby ensuring consumers are fully informed.

Previously CARB expressed a willingness to consider retaining a portion of the 2% exemption for certain low VOC categories such as hair mousse, in which a significant percentage (over 60% as per Figure B-3 in Appendix B of the ISOR) of fragranced products currently make use of the fragrance exemption. We request that CARB once again consider the retention of the exemption for personal care products with low VOC maxima, and include such provision in the final regulation.

If the elimination of the fragrance exemption is approved, CARB must provide guidance on how manufacturers are to comply (assuming that Section 94510(c)(2) is adopted as drafted). If product manufacturers are to obtain the VOC level, by percentage, of each fragrance used in order to calculate the total VOC of a particular product, there will need to be a modification in the commercial agreements between the product manufacturer and fragrance manufacturer to ensure continued compliance.

PCPC appreciates that CARB has proposed a 2031 implementation date, giving industry time to reformulate products as necessary and to conclude discussions with suppliers.

## **6. Hypothetical Formulations and Resulting Recurring Cost Estimates**

In Appendix D of the ISOR, CARB provides general formulations which meet current and proposed VOC maxima. PCPC cannot comment on the cost estimates provided, since such data are business confidential. Member companies have been asked to provide comments directly to CARB, so that any business information can be maintained as confidential.

PCPC can, however, comment on the ways that the new VOC regulations can be met. In general, companies will need to devote considerable time to reformulation, consumer testing, stability testing, and microbiology to ensure that the necessary changes result in a consumer acceptable product.

#### **A. Hair Finishing Spray**

- i. Whether the current 55% VOC formulations are made with an “exempt propellant” (e.g., HFC-152a) or Dimethyl Ether (DME), the 50% “compliant” formulations provided show that the 5% reduction in VOC is achieved predominantly by reducing solvents (ethanol and/or DME) and increasing water by a commensurate amount.
  - Decreasing the solvent and increasing water will result in longer drying times for the product and reduce consumer acceptability. At some point, the solubility of material which provides the hold will also become an issue, since solvents are needed to adequately disperse this ingredient.
- ii. Nevertheless, PCPC member companies are committed to achieving the 50% target. We appreciate that CARB recognizes the technical difficulty of formulating a consumer acceptable hair spray below a 50% VOC limit and, therefore, has decided to not pursue lower VOC standards for this category.

#### **B. Personal Fragrance Product (Aerosol)**

- i. Industry is currently reformulating its products to meet the 70% VOC limit by 1/1/2023, in anticipation of this being in the final rule.
- ii. To reformulate from 70% VOC to 50% VOC in 2031, CARB offers an example of a proposed formulation that eliminates the hydrocarbon propellant (30% to 0%), decreases the solvent ethanol from 40% to 30%, significantly increases the “Exempt Propellant” (i.e., HFC -152a) from 13% to 30%, adds 20% DME, and increases the water level from 13% to 16%.
  - Consumer acceptability will be the primary issue for this type of product, since drying times and cost will likely be significantly impacted by these hypothetical changes.
- iii. The technical assessment will provide CARB with much needed information about the potential for the 50% VOC formulations to be adopted by 1/1/2031.

### C. Dry Shampoo

- i. This category will require significant reformulation efforts to move to the proposed 55% VOC standard for 2023.
- ii. Currently a majority of aerosol dry shampoos have VOC levels of approximately 90%, primarily due to the use of hydrocarbon propellants.
  - For a 55% VOC level, CARB's assessment (Appendix D, Tables D-10 and D-11) reduces the hydrocarbon propellant from 60% to 25%, while increasing the "Exempt Propellant", normally HFC-152a, from 0% to 29%.
  - There may be necessary trade-offs: ozone forming potential may be reduced while global warming potential may increase if companies switch to HFC-152A.
- iii. While PCPC members are committed to meeting the 2023 timetable, CARB and PCPC expect that there will be at least a short-term increase in global warming potential for these formulations.

### 7. Nonrecurring Cost Estimates

Appendix E in the ISOR provides CARB's estimates of the costs associated with complying with the new VOC mandates. As these costs are company-specific, confidential, and subject to significant differences among manufacturers, PCPC has asked member companies to individually comment on the estimates provided. Companies have been asked to designate, as appropriate, any confidential business information.

### 8. Use of Maximum Incremental Reactivity (MIR) to Regulate Ozone Forming Potential of Personal Care Products

PCPC continues to support the continued evaluation of using MIR as a method to measure the ozone formation potential of a product. Use of MIR, instead of using a mass-based VOC approach, could significantly increase the ability of companies to innovate more environmentally acceptable products while helping the state of California meet its air quality requirements.

PCPC thus supports initiatives to modify the current Innovative Product Exemption (IPE) regulation to allow the use of MIR as a compliance option in place of the current VOC requirements. By focusing on the ability of a formulation to create ground level ozone, instead of strictly on VOC levels, industry can potentially lower both the ozone forming potential as well as greenhouse gas emissions for several types of formulations.

### **9. Innovative Product Exemption (IPE) Proposal for Aerosol Products Using Compressed Gas**

PCPC strongly supports CARB's proposal to increase regulatory flexibility for aerosol products that use compressed gas (air, nitrogen, etc.) via the use of the IPE.

The current proposal allows companies to replace the propellant HFC-152a, a greenhouse gas, with propellants such as air or nitrogen, without increasing the propensity of the product to form ground level ozone (Ozone Forming Potential, or OFP). At least 50% by volume of propellant ingredients must be one of the named compressed gases to qualify for the exemption: PCPC asks that CARB provide further clarification of how the 50% limitation is to be measured.

The potential use of MIR to assess the ability of the product to form ozone is a key feature of this proposal. As PCPC has commented previously, using an MIR approach for selected categories could provide significant, innovative reductions in ozone forming potential as well as greenhouse gas generation.

As outlined in our previous comments, there are a few issues with the currently proposed amendment which need to be modified to allow companies to make full use of the exemption process and to deliver even greater reductions in the use of HFC-152a. While the technical issues presented still need to be addressed, PCPC is still concerned that the bureaucratic nature of the current IPE process will not lead to widespread use of this proposal. CARB needs to address (a) the significant administrative burden required of companies wishing to use the new IPE process and (b) the length of time it takes currently for CARB to review and approve an IPE proposal.

As CARB stated in the Executive Summary of the ISOR, the "proposed Innovative Product Exemption provisions to encourage compressed gas propellant instead of HFC-152a in these three categories could ultimately result in GHG reductions that far exceed this potential GHG increase" (due to increased use of HFC for aerosol products). However, if obtaining an IPE is so cumbersome that companies are reluctant to even apply for it, CARB will not see the reduction in benefits that is foreseen.

PCPC and its members are committed to working with CARB to determine the optimum requirements and process for obtaining an IPE which will give consumers an aerosol product which has significantly lower greenhouse gas potential yet still meets the OFP requirements of the 2023 and 2031 regulations.

### **10. Proposed Toxics Prohibition**

In the ISOR, CARB has proposed that the use of Parachlorobenzotrifluoride, Methylene Chloride, Perchloroethylene, and Trichloroethylene be prohibited in Hair Care and Personal Fragrance Products. As PCPC is not aware of any use of these materials in the named products, there is no objection to this prohibition.

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**Conclusion**

PCPC welcomes the opportunity to continue working with CARB staff to resolve any of the issues noted. CARB and its staff have devoted considerable time and effort to PCPC and its members, and we look forward to successfully concluding these discussions to promulgate a workable regulatory framework for industry.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Thomas F. Myers". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Thomas F. Myers  
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