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Submitted online via CalSAFER

Re: Safer Consumer Products Product-Chemical Profile on Perfluoroalkyl and Polyfluoroalkyl Substances (PFASs) in Carpets and Rugs

On behalf of the undersigned organizations, thank you for the opportunity to comment on the Department of Toxic Substance Control's (Department) Product-Chemical Profile on PFASs in Carpets and Rugs. We have no financial interest in any of the products or chemicals which may be the subject of these comments.

We urge the Department to promulgate a regulation listing this product-chemical combination as a priority product. The product-chemical profile provides strong support for listing of this product-chemical combination as a priority product, as both potential adverse effects and potential exposure are well documented.[1] The potential adverse waste and end-of-life effects documented in the profile also support listing.[2] These potential exposures and adverse effects are substantiated by strong and high quality information in the profile.[3] Furthermore, no other regulatory programs adequately protect against the potential adverse impacts, potential exposure pathways, and adverse waste and end-of-life effects under consideration.[4]

Based on the information provided in the profile, it is critical that California address the harmful impacts of PFAS chemicals in Carpets and Rugs and seek safer alternatives.

Our comments are summarized here and more details are provided below.

1. **The standards for listing as a Priority Product are met because PFAS have the potential to cause adverse health and environmental impacts, particularly for sensitive subpopulations such as children and pregnant women.** A strong body of science links the PFAS class of chemicals to adverse health and environmental effects as the profile amply documents.[5] The 2014 Helsingør[6] and 2015[7] Madrid Statements, founded on extensive reviews of the scientific literature, provided consensus from more than 200 scientists on the potential for harm associated with the entire class of PFAS. This includes long-chain PFAS (like perfluorooctanoic acid, or PFOA, and perfluorooctanesulfonic acid, or PFOS) as well as their short-chain per- and poly-fluorinated replacements. The profile appropriately describes the adverse impacts associated with members of the PFAS class of chemicals found in carpet and rug products, those PFAS chemicals found in dust and air and linked to the presence of carpets and rugs, and the harms associated with their break-down products.[8] The fact that the presence of PFAS in carpets and rugs has the potential to contribute to adverse impacts for sensitive subpopulations also supports listing, given the mandate for the Department to give "special consideration" to such potential impacts.[9]

2. **The standards for listing as a Priority Product are met because there is a large potential for widespread public exposure to the chemicals.** The profile extensively documents evidence that PFAS are commonly used in carpets and rugs, and the use of these chemicals is linked to exposures in workplace and household dust and indoor air resulting in the potential for widespread public exposure.[10] In particular, the profile highlights the increased exposures to children and workers.

Children's play activities and hand-to-mouth behavior result in increased exposure to PFAS chemicals in household dust while workers in retail where carpets/rugs are sold, carpeted office environments, and carpet recycling facilities have the potential for increased exposures.

3. **These potential adverse impacts and exposures are exacerbated by adverse waste and end-of-life effects.** The continued release of PFAS into the environment via disposal of carpets and rugs to landfills and other waste streams and discharges to storm drains and sewers can continue to expose more people and environments to PFAS, as the profile demonstrates.[11] It can also lead to additional costs for treatment and cleanup. These additional impacts also support listing of PFAS in carpets and rugs as a Priority Product.

4. **No other regulatory programs provide adequate protection against these potential hazards and exposures.** As the profile discusses, no existing state or federal regulatory programs restrict, or eliminate, the presence of the class of PFAS chemicals in carpets and rugs in the United States or adequately prevent the resulting exposures described in the profile.[12] The listing of PFAS in carpets and rugs as a Priority Product would "meaningfully enhance protection of public health and/or the environment"[13] by identifying and shifting the market towards the adoption of safer alternatives.

5. **The goal of the Safer Consumer Products Program is "to create safer substitutes for hazardous ingredients in consumer products sold in California" which includes avoiding regrettable substitution.** As the profiles discusses, including the entire class of PFAS is essential to avoid replacement with other members of the PFAS class that have the potential for exposure and adverse impacts. Additionally, further consideration of alternatives should continue to expand upon the list of non-chemical alternatives discussed in the profile.

DETAILED COMMENTS

1. **The standards for listing as a Priority Product are met because PFAS have the potential to cause adverse health and environmental impacts, particularly for sensitive subpopulations such as children and pregnant women.**

As the Department's profile notes, PFAS have the potential to cause adverse health and environmental impacts due to:

(a) Physicochemical properties that result in environmental persistence, high mobility leading to long-range transport and extensive distribution in multiple environmental media, bioaccumulation, or lactational and transplacental transfer.
(b) Potential to degrade into other members of the PFAS class.
(c) Human toxicity including, but not limited to, carcinogenicity, developmental toxicity, reproductive toxicity, cardiovascular toxicity, endocrine toxicity, hematotoxicity, hepatotoxicity and digestive system toxicity, and immunotoxicity.
(d) Additive or multiplicative impacts associated with mixtures of individual PFAS chemicals.

Although, each chemical in the PFAS class may not have documented evidence for all of these characteristics, all of the sub-classes are known to exhibit at least one of these characteristics. Furthermore, claims of reduced toxicity for shorter-chain PFAS used to replace PFOA and PFOS have not been substantiated and, as the profile documents, toxicity testing has raised numerous concerns about these compounds as well. The Department appropriately followed the regulations when considering, "the adverse impacts associated with structurally or mechanistically similar chemicals" in identifying

concern for the entire class of PFAS. [14] The profile identifies structural similarities between chemicals to categorize chemicals with similar physicochemical properties that are indicative of hazard traits, such as persistence and mobility in the environment, and the potential for the creation of break-down and degradation products of high toxicity.

California's consideration of all PFAS compounds is consistent with recommendations made by scientific experts[15] and recent legislation in Washington State to address contamination from two other uses of PFAS compounds (food packaging and firefighting foam).[16]

Physicochemical properties of PFAS leading to transplacental and lactational transfer put pregnant women, children, and the developing fetus at increased risk. In addition, evidence of developmental and reproductive toxicity from PFAS increase the vulnerability of these sensitive subpopulations to harmful effects of these chemicals, to which the Department must give special regulatory consideration.[17]

2. The standards for listing as a Priority Product are met because there is a large potential for widespread public exposure to the chemicals.

The Department appropriately cites a breadth of studies showing potential human exposures from direct exposure to PFAS in carpets and rugs and to indirect effects resulting from the manufacture, maintenance, and disposal of carpets and rugs with PFAS. The profile describes studies showing that examples from each of the sub-classes of PFAS are linked to exposures via one or more of these pathways, thereby demonstrating the potential for widespread exposure to the entire class of chemicals.

In addition to direct contact with carpets and rugs, PFAS migrate and collect in the air and dust of homes and workplaces. The profile documents studies showing both PFAAs and PFAA precursor chemicals in carpet samples. In addition, multiple studies link levels of PFAAs and PFAA precursors in dust and air to the presence of carpets and rugs. The manufacture of PFAS has been linked to extensive contamination of the local environment surrounding the manufacturing facility as well as contribution to global contamination. Because wastewater treatment plants are largely incapable of removing PFAS, effluent testing shows the presence of multiple PFAAs, and the profile identifies both manufacturing and the cleaning of carpets, rugs, and contaminated house dust as potential sources. As noted in the profile, these discharges are major point sources for PFAS contamination of aquatic environments.

Children have been shown to have higher levels of PFAS in their bodies which is likely due, in part, to increased exposures and higher contact with contaminated dust because they crawl, play on the floor, and put their hands in their mouths.[18,19] This increases the vulnerability of children to this product-chemical combination, and the potential for adverse impacts on sensitive subpopulations like children is something to which the Department must give special consideration.[20]

Among the adult population, monitoring in workplaces has found higher amounts of PFAS in carpets used in institutional settings and higher PFAAs in the air in carpet stores. These findings suggest the potential for increased exposures among workers with a high degree of contact with carpets and rugs. In addition, workers at carpet recycling facilities are also likely to be at increased risk.

3. **These potential adverse impacts and exposures are exacerbated by adverse waste and end-of-life effects.**

The profile highlights numerous pathways by which the disposal of PFAS in carpets and rugs contributes to human and environmental exposures including leaching from landfills, accumulation in recycled products, and emissions from incineration. In particular, the profile describes studies identifying high levels of multiple PFAS (70 different compounds were identified in one study) in landfill leachate and studies linking landfills as sources for nearby environmental contamination. Additionally, the profile describes how the fluorinated polymers and fluorotelomers used to treat textiles degrade in landfills to release PFAA precursors which can continue to be a long-term (years to centuries) source of environmental contamination.

4. **No other regulatory programs provide adequate protection against these potential hazards and exposures.**

As the profile documents, no state programs address the presence of PFAS in carpets and rugs.[21] Federal EPA has initiated voluntary agreements to phase out PFOA in certain companies' emissions and products, and has begun reviewing substitutes for PFOA, PFOS, and other longer-chain PFAS.[22] However, the voluntary agreements do not apply to all manufacturers and the review of substitutes has not led to further action on PFAS or their substitutes. Finally, the applicable international treaties cover only PFOS at this time; PFOA is currently being considered for inclusion, but other PFAS are not covered.[23]

5. **The goal of the Safer Consumer Products Program is "to create safer substitutes for hazardous ingredients in consumer products sold in California" which includes avoiding regrettable substitution.**

The substitution of short-chain PFAS for PFOA/PFOS clearly demonstrate the potential for regrettable substitution from related compounds within the PFAS class of chemicals. As the profile correctly identifies inclusion of the entire class of compounds is needed to prevent regrettable substitution and meet the goals of the Safer Consumer Products program. In subsequent phases of the process, we urge the Department to include additional consideration of non-chemical alternatives, which have not been fully explored in the profile (see attachment).

Conclusion

The Safer Consumer Products Program, while focused on California, has the potential to have national and even international impacts on how chemicals are used in consumer products and the resulting impact on human health and the environment, particularly the impacts on vulnerable subpopulations for which the regulations require special consideration. This is particularly true for persistent chemicals like PFAS, which remain in the environment and are transported through air and water across wide areas of the globe. By motivating industry to develop and switch to safer alternatives, the Program will be fulfilling its mandate in California and helping to reduce national and international exposure to these toxic chemicals. We commend the Department's well-substantiated profile of PFAS in carpets and rugs and urge swift and decisive action to list PFAS in carpets and rugs as a Priority Product.

Thank you for your consideration of these comments. We look forward to working with the Department to improve environmental and public health protections from chemicals in consumer products.

Sincerely,

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[1] 22 CCR §§ 69503.2(a), 69503.3; *see also* § 69504.1(b)(3)(B).
[2] *See* 22 CCR § 69503.2(b)(1)(B).
[3] *See* 22 CCR § 69503.2(b)(1)(C).
[4] *See* 22 CCR § 69503.2(b)(2).
[5] DTSC, Product-Chemical Profile for Perfluoroalkyl and Polyfluoroalkyl Substances (PFASs) in Carpets and Rugs 26-33 (addressing potential adverse effects across a range of regulatory factors: physicochemical properties; environmental fate; potential to degrade, form reaction products or metabolize into another chemical with hazard traits; toxicological and environmental hazard traits/endpoints; cumulative effects; sensitive subpopulations, and other factors) (hereafter, "DTSC, Profile").
[6] Scheringer M, Trier X, Cousins IT, de Voogt P, Fletcher T, Wang Z, Webster TF. Helsingør statement on poly- and perfluorinated alkyl substances (PFASs). *Chemosphere*. 2014;114:337-9.
[7] Blum A, Balan SA, Scheringer M, Trier X, Goldenman G, Cousins IT, Diamond M, Fletcher T, Higgins C, Lindeman AE, Peaslee G, de Voogt P, Wang Z, Weber R. The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs). *Environ Health Perspect*. 2015;123(5):A107-A111.
[8] *See* 22 CCR § 69503.3(a)(3) (authorizing consideration of adverse effects of "structurally or mechanistically similar chemicals for which there is a known toxicity profile").
[9] 22 CCR § 69503.3(a)(2).
[10] DTSC, Profile at 34-53 (documenting potential exposure across a range of regulatory factors: market presence of the product; household and workplace presence of the product; the occurrence, and potential occurrence, of exposures to the Candidate Chemical in the product; potential exposures to the Candidate Chemical in the product; and other factors).
[11] DTSC, Profile at 54-55.
[12] DTSC, Profile at 68-70.
[13] 22 CCR § 69503.2(b)(2).
[14] 22 CCR § 69503.3(a)(3).
[15] Krowech G, Hoover S, Plummer L, Sandy M, Zeise L, Solomon G. Identifying Chemical Groups for Biomonitoring. *Environ Health Perspect.* 2016; 124(12):A219-A226.
[16] Washington (State). House Bill 2658. 2018 Regular Session. Accessed at: http://lawfilesext.leg.wa.gov/biennium/2017-18/Pdf/Bills/House%20Passed%20Legislature/2658-S.PL.pdf; Washington (State). Senate Bill 6413. 2018 Regular Session. Accessed at: http://lawfilesext.leg.wa.gov/biennium/2017-18/Pdf/Bills/Senate%20Passed%20Legislature/6413-S.PL.pdf.
[17] 22 CCR § 69503.3 (a)(2)(A); see also 22 CCR § 69501.1(a)(64): " 'Sensitive subpopulations' means subgroups that comprise a meaningful portion of the general population that are identifiable as being at greater risk of adverse health effects when exposed to one or more chemicals that exhibit a hazard trait and/or toxicological endpoint, including, but not limited to, infants, children, pregnant women, and elderly individuals. 'Sensitive subpopulations' also include individuals at greater risk of adverse health effects when exposed to chemicals because they are either individuals with a history of serious illness or greater exposures to chemicals, or workers with greater exposures to chemicals due to the nature of their occupation."
[18] DTSC, Profile at 47
[19] Wu XM, Bennett DH, Calafat AM, et al 2015. Serum concentrations of perfluorinated compounds (PFC) among selected populations of children and adults in California. Environ Res 136:264-73.
[20] 22 CCR § 69503.3 (a)(2)(A); see also 22 CCR § 69501.1(a)(64).
[21] DTSC, Profile at 68.
[22] DTSC, Profile at 68-69.
[23] DTSC, Profile at 69-70.