Allison Foley

The Resilient Floor Covering Institute (RFCI) submits the attached comments to the State of Washington Department of Ecology (Ecology) on Ecology's Priority Consumer Products Draft Report to Legislature. RFCI appreciates the opportunity to comment on this important program.

March 2, 2020

Hazardous Waste and Toxics Reduction Program
Washington State Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7696

Re: Comments of the Resilient Floor Covering Institute (RFCI) on the Safer Products for Washington Priority Consumer Products Draft Report to Legislature (Jan. 2020; Publication 20-04-004)

To whom it may concern:

The Resilient Floor Covering Institute (RFCI) submits these comments to the State of Washington Department of Ecology (Ecology) on Ecology's Priority Consumer Products Draft Report to Legislature. RFCI appreciates the opportunity to comment on this important program.

RFCI represents the interests of the resilient floor covering industry. Virtually all RFCI flooring manufacturing members produce vinyl flooring, and RFCI associate members provide raw materials and sundry products for the manufacture and use of vinyl flooring. RFCI has long been an advocate of green product selection and sustainable building practices based on life-cycle assessment, sound science, and risk assessments. RFCI and its members therefore appreciate Ecology's goals in developing and implementing the Safer Products for Washington (SPW) program under the 2019 Safer Products for Washington Act (the Act).[1] RFCI urges Ecology to develop the SPW program in a manner that is based on sound science and that will render it a meaningful and useful consumer resource. Ecology should avoid including any priority products that are based on anecdotal, unsubstantiated or discredited information, as such an over-inclusive approach—even if well-intentioned—would lead to consumer confusion, frustrating the goals of the SPW program. With this in mind and for the reasons discussed below, RFCI urges Ecology to remove the "vinyl flooring" priority product, which has been included based on now outdated information relating to the past use of phthalates (specifically, ortho-phthalates) in these products.

The Safer Products for Washington Act of 2019 (the Act), which authorizes Ecology's SPW program, sets forth minimum criteria that Ecology must consider when identifying a product as a "priority product."[2] The required criteria include, among other things, the estimated volume of a priority chemical(s) added to, used in, or present in the consumer product; whether another state or nation has identified or taken regulatory action to regulate the priority chemical in the consumer product; and the availability and feasibility of safer alternatives.[3] We discuss the

[1] *See* 70.365.010 RCW *et seq*. (2019).

[2] *Id*. at 70.365.030(2).

[3] *Id*.

applicability of these criteria to the proposed identification of vinyl flooring in turn, below, after a brief discussion of misconceptions regarding risks posed by phthalates in vinyl flooring products.

I. Vinyl Flooring Is a Safe, Sustainable Choice

Vinyl flooring is the number one choice for hard surface flooring in the United States.[4] Vinyl flooring provides substantial heath, safety and performance benefits over other flooring options because it is durable and easily cleaned, minimizing bacteria growth and rendering the product ideal for use in a variety of settings including kitchens, school lunchrooms, and hospitals. In addition, vinyl flooring's durability (the products typically last for thirty to fifty years) cuts down on waste in landfills and leads to conservation of raw materials, making these products a sustainable choice.

As RFCI explained in comments (included here as Attachment A) to California's Department of Toxic Substances Control (DTSC) in response to DTSC's initial listing of vinyl flooring-phthalates as a priority product-chemical combination under California's Safer Consumer Products program (notably, as discussed in more detail below, California removed this product-chemical combination from the 2018-2020 Priority Products Work Plan), multiple independent studies have demonstrated that exposure to phthalates in vinyl flooring and other similar products is *de minimis* if not non-existent.[5] Multiple studies have considered the inhalation, dermal contact, and ingestion pathways and have repeatedly found no unacceptable risk from the studied phthalates.[6] Taken as a whole, these studies make clear that phthalates, as used in vinyl flooring products (including in-place legacy products), do not concentrate in indoor air, cannot be readily absorbed by the skin, and do not present an ingestion risk from hand-to-mouth activity.

More recent studies have continued to demonstrate the low risk profile of phthalates as used in vinyl flooring, even as public perception shifted to align with purported risks of these products. For example, in 2015, *Consumer Reports* published a study focused on potential exposure to phthalates in seventeen vinyl flooring products and considered inhalation exposure

[4] *See The 2018 Statistical Report*, FLOOR COVERING WEEKLY, July 22, 2019, at 8, available online at https://bt.e-ditionsbyfry.com/publication/?m=26543&i=603965&p=0.

[5] *See, e.g.*, United States Consumer Products Safety Commission, *Chronic Hazard Advisory Panel Report on DINP* (July 2014); *see also* National Industrial Chemicals Notification and Assessment Scheme (NICNAS) of the Australian Government Department of Health and Ageing, *Diisononyl Phthalate (DINP) Factsheet* (2012); National Toxicology Program Center for the Evaluation of Risks to Human Reproduction, *NTP-CERHR Monograph on the Potential Human Reproductive and Developmental Effects of Di-isononyl Phthalate (DINP)* (2003); European Chemicals Bureau, *European Union Risk Assessment Report DINP* (2003).

[6] *See, e.g.*, European Commission (EC), *Phthalates entry 52 – Commission conclusions on the review clause and next steps* at 4 (Jan. 15, 2014); European Chemicals Agency (ECHA), *Evaluation of New Scientific Evidence Concerning DINP and DIDP* at 227 (Aug. 2013) (hereinafter ECHA DINP and DIDP Fact Sheet).

and direct dermal contact (for example, a baby crawling on the vinyl floor).[7] The study concludes that "phthalate levels were very low,"[8] explaining that, even in instances where "there may be considerable amounts of phthalates in the composition of the [vinyl flooring] material itself, … our tests show that very little came out in the air or on the wipes themselves."[9] As discussed below, the resilient flooring market has shifted away from the use of ortho-phthalates towards alternatives; however, the findings of this study underscore that, even where phthalates are used in vinyl flooring, these products result in little to no exposure to phthalates.

Additional information regarding these studies finding that phthalates as used in vinyl flooring present no significant risk to human health is set forth in Attachment A to these comments.

II. Vinyl Flooring Is Not Appropriately Listed As a "Priority Product" Under the SPW Program

Developments in the flooring market over the past several years render the discussion of risks from phthalates in vinyl flooring moot, particularly in the context of a program like Washington's, which is intended to focus administrative resources on consumer products posing the greatest risk to human health and the environment and to promote the use of alternatives to those products. Ecology representatives have made clear, including during the February 19, 2020 public webinar regarding the Draft Report, that in implementing the SPW Program Ecology is not considering <u>any</u> hazard or risk information related to the products it is considering for designation as priority products. However, as a practical matter—regardless of whether phthalate-containing vinyl flooring actually poses any significant risk—flooring manufacturers have already shifted to the use of alternatives including terephthalates (which, as explained below, are structurally very different from the ortho-phthalates that drive the listing of "phthalates" as a priority chemical class under the SPW program).

A. <u>Vinyl Flooring Manufacturers Have Moved Away From the Use of "Phthalates" As Defined By the Act</u>

While RFCI maintains that concerns regarding health risks associated with exposure to phthalate-containing vinyl flooring are misguided, regulatory initiatives such as California DTSC's Safer Consumer Products program (which initially listed vinyl flooring-phthalates as a priority product-chemical combination, though that combination was ultimately dropped from the 2018-2020 Priority Product Work Plan) have focused on health risks purported to arise from phthalates, which has directly influenced public perception. The market has followed. As a result of the corresponding shift in market demand towards phthalate-free vinyl flooring, manufacturers

[7] Consumer Reports, *Vinyl Flooring Safety Questions Answered* (Aug. 6, 2015), available online at https://www.consumerreports.org/video/view/home-garden/news/4397736200001/vinyl-flooring-safety-questions-answered/.

[8] *Id*. at 0:52.

[9] *Id*. at 0:43.

of vinyl flooring have moved away from the use of phthalates—specifically, ortho-phthalates—and towards alternatives including terephthalates.

Terephthalates, while similar in name to ortho-phthalates, are very different from a chemistry perspective. The term "phthalates" is generally understood to refer to what are in fact ortho-phthalates. Unlike ortho-phthalates, however, terephthalates are not derived from phthalic acid (and therefore do not fall within the Act's definition of "phthalate" and/or "priority chemical"),[10] and are structurally significantly different from ortho-phthalates, with a significantly different toxicological profile corresponding to a low hazard profile.[11]

Even the environmental advocacy group Healthy Building Network, which has pursued aggressive campaigns targeting various building materials and products, acknowledges in the context of bis(2-ethylhexyl) terephthalate (commonly abbreviated as DEHT or DOTP): "The presence of the word 'phthalate,' which we have come to associate with toxic health impacts, in 'terephthalate' [has] led some to believe that DEHT and other terephthalates share the toxic health impacts as chemically related phthalates. However, toxicological research has not found this to be the case: no reproductive or developmental toxicity or endocrine disrupting effects have been observed in studies on DEHT."[12]

B. California Declined to Include the Vinyl Flooring-Phthalate Product-Chemical Combination in Its 2018-2020 Priority Product Work Plan

Ecology's SPW program seems, in many respects, to be modeled after California's Safer Consumer Products Program, which features a DTSC-issued "Priority Product Work Plan" (PPWP) that is updated at statutorily-prescribed intervals. As noted above, DTSC initially included the vinyl flooring-phthalate product-chemical combination on the PPWP. However, upon considering comments of RFCI and other entities that included information regarding the flooring market shift to use of terephthalates rather than ortho-phthalates, DTSC removed vinyl flooring from its 2018-2020 PPWP. DTSC—an agency widely renowned for its aggressive approach to consumer product risk—appears to agree that, particularly since the market factors have already driven a shift to non-phthalate (*i.e.*, non-ortho-phthalate) alternatives for use in vinyl flooring, this

[10] *See* 70.365.010(10) RCW (defining "phthalates" as "synthetic chemical esters of phthalic acid") and (12) (defining "priority chemical" as "a chemical or chemical class used as, used in, or put in a consumer product including … phthalates").

[11] *See, e.g.*, W.D. Faber *et al.*, *Developmental toxicity and uterotrophic studies with di-2-ethylhexyl terephthalate*, Birth Defects Res. B. Dev. Reprod. Toxicol. (Oct. 2007); U.S. Consumer Product Safety Commission, Staff Statement on University of Cincinnati Report "Toxicity Review for Di-2-ethylhexyl Terephthalate (DEHT)" (Oct. 2018), available online at https://www.cpsc.gov/s3fs-public/Toxicity%20Review%20of%20DEHT.pdf?FObpuBBqgypVtw7gIEGMFXHN5H7vbeEz.

[12] S. Lott, Healthy Building Network, *Phthalate-Free Plasticizers in PVC* at 20, FN t (Sept. 2014).

consumer product does not warrant regulatory attention under a program intended to address meaningful consumer product risk.[13]

C. Alternatives Are Available—And Flooring Manufacturers Are Already Using Them

As noted above, the Act tasks Ecology with considering whether safer alternatives to a potential "priority product" are available and feasible. While, based on the significant body of data indicating otherwise, RFCI does not concede that vinyl flooring manufactured with phthalates as that term is defined by the Act presents any significant health or safety risk, it is nonetheless clear that alternative plasticizers widely considered to be safer—specifically, terephthalates—are available and feasible for use in vinyl flooring products.

The experiences of RFCI members strongly support this industry trend. Many RFCI members, including top producers of vinyl flooring in the domestic market, have entirely phased out ortho-phthalates in their vinyl flooring products. (This includes several members that have submitted comments directly to Ecology regarding individual member company phase-out of ortho-phthalates.)

One of the goals of the SPW program is the shift towards alternatives deemed safer than priority products; in the case of vinyl flooring manufactured with phthalates (*i.e.*, ortho-phthalates), the reality is that manufacturers have already shifted to an alternative product (*i.e.*, vinyl flooring manufactured with alternatives to ortho-phthalates, including terephthalates) without the need for regulatory intervention—a development that has been acknowledged even by the consumer advocacy group that led the public outcry regarding perceived health risks of vinyl flooring manufactured with ortho-phthalates.[14]

III. Conclusion

RFCI appreciates Ecology's goals in developing and implementing the SPW program, including the identification of priority products. RFCI and its members share many of the objectives that are at the heart of this regulatory initiative and the underlying Act, and the actions of RFCI members—including the voluntary, proactive shift towards the use of alternatives to

[13] DTSC's decision to remove the vinyl flooring-phthalates product-chemical combination from the 2018-2020 PPWP was consistent with the 2016 decision of its sister agency, the California Office of Environmental Health Hazard Assessment (OEHHA), to issue Safe Use Determinations under California's Proposition 65 for exposure to diisononyl phthalate (DINP) in vinyl flooring products (*see* OEHHA, Safe Use Determination Letter: Issuance of a SUD for exposure to diisononyl phthalate in vinyl flooring products, issued to Resilient Floor Covering Institute (June 24, 2016)).

[14] *See also* Safer Chemicals, Healthy Families, *Success!–Home improvement retailers follow through on commitments to remove phthalates from flooring* (June 27, 2019), available online at https://saferchemicals.org/2019/06/27/success-home-improvement-retailers-follow-through-on-commitments-to-remove-phthalates-from-flooring/ (discussing how top retailers of flooring have honored their commitments to eliminate phthalates from flooring, which has been further confirmed by testing).

ortho-phthalates—demonstrates a continued commitment to the production of safe, sustainable products. Moreover, RFCI members share the goal of improving transparency regarding product composition, safety, and sustainability, but fear this goal is undermined by the SPW identification of priority products that do not actually present any significant exposure risk and that have, as a practical matter, all but ceased to exist, particularly in terms of new products entering the Washington market.

RFCI therefore respectfully requests that Ecology reconsider its proposed inclusion of vinyl flooring as a priority product in the SPW program.

Thank you for the opportunity to provide these comments in connection with this important regulatory initiative. We look forward to addressing any questions you might have regarding these comments, and are happy to provide additional information that may be useful to Ecology in reviewing and revising its identification of priority products under the SPW program. If you have any questions regarding these comments, please contact Dean Thompson, RFCI President and CEO (Dean.Thompson@RFCI.com) or RFCI counsel Allison Foley, Venable LLP (ADFoley@Venable.com).

ATTACHMENT A

COMMENTS OF THE RESILIENT FLOOR COVERING INSTITUTE ON THE DEVELOPMENT OF THE 2018-2020 PRIORITY PRODUCT WORK PLAN

SUBMITTED TO THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

November 6, 2017

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I. Executive Summary

The Resilient Floor Covering Institute (RFCI) appreciates the opportunity to submit these comments to the California Department of Toxic Substances Control (DTSC) on the development of the 2018-2020 Priority Product Work Plan (PPWP). RFCI represents the interests of the resilient floor covering industry. Virtually all of RFCI's flooring manufacturing members produce vinyl flooring, and RFCI associate members provide raw materials and sundry products for the manufacture and use of vinyl flooring.

RFCI has long been a strong advocate of green product selection and sustainable building practices based on life-cycle assessment, sound science, and risk assessment. RFCI and its members therefore appreciate the goals of DTSC in administering the Safer Consumer Products (SCP) Program and developing and updating the PPWP. The PPWP should be developed and updated in a manner that is based on sound science and that will render it a meaningful, useful consumer resource. DTSC should avoid including any product-chemical combinations (or "Priority Products") based on anecdotal, unsubstantiated or discredited information; even if well-intentioned, such an over-inclusive approach would only lead to consumer confusion, frustrating the goals of the PPWP and the SCP Program. For this reason RFCI urges DTSC to remove the "vinyl flooring-phthalates" product-chemical combination in the next update to the PPWP.

Despite a significant body of credible science (as well as recent determinations by DTSC's sister agency, the Office of Environmental Health Hazard Assessment (OEHHA)) demonstrating that the possible presence of phthalates in vinyl flooring will not result in exposure with the potential to have a significant or widespread adverse impact, DTSC included "vinyl flooring" in the final 2015-2017 PPWP as a product example under the "Building Products: Painting Products, Adhesives, Sealants and Flooring" product category.[1] This listing is based on the identification of phthalates as a Candidate Chemical of concern in building products.[2] The phthalates identified as Candidate Chemicals all fall within the group ortho-phthalates;[3] these terms ("phthalates" and "ortho-phthalates") are therefore used interchangeably in these comments in the context of the PPWP.

For the reasons explained in RFCI's October 21, 2014 comments on the 2015-2017 PPWP and further due to recent developments involving the manufacture of vinyl flooring products, the product-chemical combination of vinyl flooring-phthalates is inconsistent with the regulatory requirements for designation of Priority Products and its continued inclusion in the PPWP does not further the goals of the SCP Program or provide any benefit to consumers. RFCI therefore respectfully requests that DTSC remove this product-chemical combination from the 2018-2020 PPWP.

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[1] *See* 2015-2017 PPWP Section 4.2.1 and Section 4.7, Table 8, available online at http://www.dtsc.ca.gov/SCP/upload/PriorityProductWorkPlan_2015.pdf (current as of Nov. 6, 2017).

[2] *See id*. at Section 4.2.1, Table 2.

[3] *See* DTSC Candidate Chemicals List, available online at http://www.dtsc.ca.gov/SCP/CandidateChemicals.cfm (current as of Nov. 6, 2017).

II. The Vinyl Flooring-Phthalates Product-Chemical Combination Does Not Meet DTSC Product-Chemical Identification Criteria Because It Presents No Unacceptable Risk and No "Significant or Widespread Adverse Impact."

RFCI hereby reiterates and incorporates by reference its October 21, 2014 comments on the draft 2015-2017 PPWP (attached hereto). In sum, RFCI strongly believes that the inclusion of vinyl flooring as a Priority Product is inconsistent with the regulatory criteria for Priority Product listing, will provide no consumer safety benefit, and has the potential to mislead or confuse consumers while obscuring important health, safety and sustainability attributes of vinyl flooring.

As explained in RFCI's 2014 comments, vinyl flooring is the number one choice for hard surface flooring. Resilient flooring is defined as non-textile floor that provides underfoot comfort and characteristically bounces back from repeated traffic or compression. Vinyl flooring provides substantial health, safety and performance benefits over other flooring options because it is durable and easily cleaned which minimizes bacteria growth and makes it ideal for use in kitchens, school lunchrooms, and hospitals. In addition, vinyl flooring's durability – typically lasting for thirty to fifty years – renders it a sustainable choice, cutting down on waste to landfills and conserving raw materials.

Most important in the context of the PPWP is the fact that vinyl flooring does not meet the regulatory criteria for the identification of Priority Products.[4] The SCP regulations state that "[a]ny product-chemical combination identified as a Priority Product must meet both of the following criteria: (1) There must be potential public and/or aquatic, avian, or terrestrial animal organism *exposure* to the Candidate Chemical(s) in the product; and (2) There must be the potential for one or more exposures to contribute to *significant or widespread adverse impacts*."[5] We discuss in greater detail below the fact that, as a practical matter, the vinyl flooring manufacturing industry has shifted away from the use of phthalates in flooring products, rendering the debate regarding effects of exposure to phthalates in vinyl flooring moot. Nonetheless, we will again address the potential impact of any exposure to phthalates in vinyl flooring.

As explained in the 2014 RFCI comments, independent studies have demonstrated that exposure to phthalates in vinyl flooring and other similar products is *de minimis* if not non-existent.[6] These studies have considered the inhalation pathway (*i.e.*, as a result of volatilization of chemicals in the products), dermal contact pathway (*i.e.*, direct skin touching of the products), and ingestion pathway (*e.g.*, hand-to-mouth migration) and have repeatedly found no unacceptable

[4] *See* Cal. Code Regs. tit. 22, §§ 69503.2-.3, 69503.5 (2017).

[5] *See id*. at § 69503.2(a) (emphasis added).

[6] *See, e.g.*, Consumer Product Safety Commission, *Chronic Hazard Advisory Panel Report on DINP* (July 2014); *see also* National Industrial Chemicals Notification and Assessment Scheme (NICNAS) of the Australian Government Department of Health and Ageing, *Diisononyl Phthalate (DINP) Factsheet* (2012); National Toxicology Program Center for the Evaluation of Risks to Human Reproduction, *NTP-CERHR Monograph on the Potential Human Reproductive and Developmental Effects of Di-isononyl Phthalate (DINP)* (2003); European Chemicals Bureau, *European Union Risk Assessment Report DINP* (2003).

risk.[7] Considered as a whole, these studies make clear that phthalates, as used in vinyl flooring products, do not concentrate in indoor air, cannot be readily absorbed by the skin, and do not present an ingestion risk from hand-to-mouth activity.

Since RFCI's submission of comments on the draft 2015-2017 PPWP, Consumer Reports conducted a study focused on potential exposure to phthalates in seventeen vinyl flooring products and considered inhalation exposure and direct dermal contact (for example, a baby crawling on the floor).[8] The study concludes that "phthalate levels were very low,"[9] and notes that, even in instances where "there may be considerable amounts of phthalates in the composition of the [vinyl flooring] material itself, … our tests show that very little came out in the air or on the wipes themselves."[10] This further underscores that, even where phthalates are used in vinyl flooring, there is little if any actual exposure to phthalates from those products.

Following its own review of exposure to phthalates in commercial products including vinyl flooring, the European Commission (EC) found that, other than the very narrow exception of risk posed by children mouthing toys and childcare articles, the studied phthalates present "no unacceptable risk."[11] The EC went on to state that, in "the absence of any further risks from the use of [the studied phthalates] … the evaluation of potential substitutes [is] less pertinent."[12] This underscores the fact that the vinyl flooring-phthalate product-chemical combination is inconsistent with the goals of the SCP and ineligible as a Priority Product under the SCP regulations.

And since publication of the 2015-2017 PPWP, DTSC's own sister agency, the California OEHHA has considered potential health risks associated with the presence of phthalates (specifically, diisononyl phthalate (DINP), a Candidate Chemical) in vinyl flooring.[13] OEHHA considered an "upper-end estimate" of exposure to DINP in vinyl flooring containing 18.9% or less DINP by weight. Following this review, OEHHA determined that, in the context of California's Proposition 65 (Prop 65) aggressive consumer warning program, exposure to DINP

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[7] *See, e.g.*, European Commission (EC), *Phthalates entry 52 – Commission conclusions on the review clause and next steps* at 4 (Jan. 15, 2014), available online at https://phthalates.americanchemistry.com/Industry/Regulatory-Reviews/Phthalates-Entry-52.pdf (current as of Nov. 6, 2017); European Chemicals Agency (ECHA), *Evaluation of New Scientific Evidence Concerning DINP and DIDP* at 227 (Aug. 2013) (hereinafter ECHA DINP and DIDP Fact Sheet), available online at https://echa.europa.eu/documents/10162/31b4067e-de40-4044-93e8-9c9ff1960715 (current as of Nov. 6, 2017).

[8] Consumer Reports, "Vinyl Flooring Safety Questions Answered" (Aug. 6, 2015), available online at https://www.consumerreports.org/video/view/home-garden/news/4397736200001/vinyl-flooring-safety-questions-answered/ (current as of Nov. 6, 2017).

[9] *Id*. at 0:52.

[10] *Id*. at 0:43.

[11] EC, *Phthalates entry 52* at 4; ECHA DINP and DIDP Fact Sheet.

[12] EC, *Phthalates entry 52* at 4.

[13] OEHHA, Safe Use Determination Letter: Issuance of a SUD for exposure to diisononyl phthalate in vinyl flooring products, issued to Resilient Floor Covering Institute (June 24, 2016), available online at https://oehha.ca.gov/media/downloads/crnr/sud1issuancenoticeletter06212016.pdf (current as of Nov. 6, 2017).

from vinyl flooring products is below the conservative "no significant risk level" established by OEHHA.[14]

This growing body of independent studies evaluating risk from exposure to phthalates in vinyl flooring demonstrates that, even where vinyl flooring is manufactured with phthalates, the potential for exposure to phthalates from those products is extremely low. Moreover, as discussed in greater detail below, developments since RFCI's 2014 comments have led to an industry shift away from the use of phthalates.

III. In Response to Consumer Perception and Related Market Demand, the Vinyl Flooring Industry Has Aggressively Worked to Phase Out Phthalates in Vinyl Flooring Products.

RFCI maintains that concerns regarding health risks associated with exposure to phthalate-containing vinyl flooring are misguided. DTSC's PPWP and similar programs in other parts of the country have nonetheless focused on purported health risks associated with phthalates, which has directly influenced public perception. The market has followed. As a result of the corresponding shift in market demand towards phthalate-free vinyl flooring, manufacturers of vinyl flooring have moved away from the use of the phthalates on the Candidate Chemicals list and towards alternatives including terephthalates.[15] These developments are discussed in greater detail below.

In response to public pressure and in conjunction with the "Mind the Store" campaign, the three largest home improvement retail chains in the United States (Home Depot, Lowes, and Menards), as well as Lumber Liquidators, all adopted policies to phase out [ortho-]phthalate-containing PVC flooring by the end of 2015.[16] Because the policies of Home Depot, Lowes, and Menards do not apply to vinyl flooring composed of recycled PVC content, recycled vinyl flooring sold at these outlets may contain phthalates as a result of legacy PVC product. However, recycled vinyl flooring sales account for only a fraction of total domestic vinyl flooring sales. The vast majority of sales in California are made with virgin product and, therefore, fall under the phthalate ban instituted by these four retailers. Moreover, Lumber Liquidators stopped selling all vinyl flooring containing reprocessed plastics, including recycled vinyl flooring, beginning at the end of

[14] *Id*.; *see also* OEHHA, Supporting Materials for a Safe Use Determination for Exposure to Residents to Diisononyl Phthalate (DINP) in Vinyl Flooring (June 2016), available online at https://oehha.ca.gov/media/downloads/crnr/sud1supportingmaterials06212016.pdf (current as of Nov. 6, 2017).

[15] As explained later in these comments, despite the similar nomenclature, "terephthalates" are structurally different from "phthalates" (including "ortho-phthalates").

[16] *See, e.g.*, Consumer Reports, "Lumber Liquidators Will Stop Selling Vinyl Flooring Made with Reprocessed Plastic" (Nov. 20, 2015), available online at https://www.consumerreports.org/flooring/Lumber-Liquidators-to-clean-up-its-vinyl-floors/ (current as of Nov. 6, 2017).

2015.[17] Other retail outlets including Ace Hardware have committed to selling only ortho-phthalate-free flooring products.[18]

Based on evolving public perception and phthalate bans by the major domestic retailers of vinyl flooring products, the vinyl flooring industry has shifted to the use of alternatives, including in particular terephthalates. Terephthalates, while similar in name to ortho-phthalates, are very different from a chemistry perspective. The term "phthalates" is generally understood to mean ortho-phthalates; indeed, as noted above, all of the phthalates listed as Candidate Chemicals fall under the group of ortho-phthalates. Unlike ortho-phthalates, terephthalates are not derived from phthalic acid, and are structurally different from ortho-phthalates. DTSC's list of Candidate Chemicals does not include terephthalates.

Even the environmental group Healthy Building Network, which has pursued aggressive campaigns targeting various building materials and products, acknowledges: "The presence of the word 'phthalate,' which we have come to associate with toxic health impacts, in 'terephthalate' [has] led some to believe that DEHT and other terephthalates share the toxic health impacts as the chemically related phthalates. However, toxicological research has not found this to be the case: no reproductive or developmental toxicity or endocrine disrupting effects have been observed in studies on DEHT."[19]

Because the use of [ortho-]phthalates in vinyl flooring has been almost entirely phased out in production of new vinyl flooring, vinyl flooring makes little sense as a candidate Priority Product. The continued inclusion of vinyl flooring in the PPWP moving forward provides no consumer safety benefit and would only serve to mislead and confuse consumers looking to make informed decisions regarding the relative safety and environmental impacts of various flooring products.

IV. Conclusion

RFCI appreciates DTSC's goals in administering the SCP Program, including development and updating of the PPWP. RFCI and its members share many of the objectives that are at the heart of these regulatory initiatives; the vinyl flooring industry has continued to demonstrate its commitment to the production of safe, sustainable products. As discussed in RFCI's 2014 comments, RFCI has developed a number of sustainability programs for hard surface flooring products intended to provide transparency regarding product safety, composition, and life-cycle

[17] *See, e.g.*, Design News, "Lumber Liquidators agrees to stop selling vinyl flooring made with reprocessed PVC" (Nov. 23, 2015), available online at https://www.designnews.com/business/lumber-liquidators-agrees-stop-selling-vinyl-flooring-made-reprocessed-pvc/57850661423750/page/1/0 (current as of Nov. 6, 2017); Safer Chemicals, Healthy Families, "Lumber Liquidators Commits to Selling Vinyl Flooring Made Without Reprocessed Plastic" (Nov. 17, 2015), available online at http://saferchemicals.org/newsroom/lumber-liquidators-commits-to-selling-vinyl-flooring-made-without-reprocessed-plastic/ (current as of Nov. 6, 2017).

[18] *See, e.g.*, CBS News, "Home Depot Phasing Out Toxic Vinyl Flooring" (April 23, 2015), available online at https://www.cbsnews.com/news/home-depot-to-step-selling-vinyl-flooring-with-phthalates/ (current as of Nov. 6, 2017).

[19] Sarah Lott, Healthy Building Network, "Phthalate-free Plasticizers in PVC" at 20, FN t (Sept. 2014), available online at https://healthybuilding.net/uploads/files/phthalate-free-plasticizers-in-pvc.pdf (current as of Nov. 6, 2017).

assessment.[20] These programs include FloorScore®, which provides certification that a product complies with certain stringent criteria for emissions of volatile organic compounds (VOCs) into indoor air, and an Environmental Product Declaration (EPD) Program which provides information on the raw materials, production, and life-cycle environmental impacts of vinyl flooring products. In addition, RFCI worked with NSF International, a not-for-profit, non-governmental organization and a world leader in standards development, product certification, education and risk management for public health and safety, to develop NSF 332, a standard for certifying the multiple sustainability attributes of resilient flooring.[21] The United States Environmental Protection Agency (EPA) has since incorporated NSF 332 into its "Recommendations of Specifications, Standards and Ecolabels for Federal Purchasing" guidelines, which are intended to help federal purchasers identify and procure environmentally sustainable products and services.[22]

The critically important goals of improving transparency regarding product composition, safety, and sustainability – and of educating consumers regarding these issues – are undermined by the inclusion of product-chemical combinations in the PPWP that do not actually present any significant exposure risk. So too are they undermined by the inclusion of product-chemical combinations that have, as a practical matter, all but ceased to exist, particularly in terms of new products entering the market.

While RFCI maintains that there is no unacceptable risk associated with phthalates in vinyl flooring, recent market developments following issuance of the 2015-2017 PPWP makes continued inclusion of the vinyl flooring-phthalate combination unnecessary. Following DTSC's inclusion of phthalates and vinyl flooring in the 2015-2017 PPWP and in part due to various regulatory and environmental group efforts, public perception and corresponding market demand has shifted to a preference for phthalate-free vinyl flooring. Setting aside all discussion of potential risk associated with phthalates in flooring products, the vinyl flooring industry has moved away from phthalate use and so these products do not meet the criteria for inclusion in the PPWP. Even prior to this transition, exposure to phthalates in vinyl flooring did not meet the regulatory criteria for designation as a Priority Product; now that the industry has moved away from using phthalates in new vinyl flooring products, the alternatives analysis that would accompany a possible eventual designation as a Priority Product would be a meaningless academic exercise and a waste of critical administrative resources. RFCI therefore respectfully requests that, in developing the 2018-2020

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[20] RFCI, Comments on the "Safer Consumer Products Draft Priority Product Work Plan" Issued by the California Department of Toxic Substances Control on September 12, 2014 at 1-4 (Oct. 21, 2014) (included as Attachment A hereto).

[21] *See* NSF, "NSF/ANSI 332: Sustainability Assured for Resilient Floor Coverings," available online at https://www.nsf.org/newsroom_pdf/SU_NSF_332_Flooring_Insert_LT_EN_LSU27100812.pdf (current as of Nov. 6, 2017).

[22] United States Environmental Protection Agency, "Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing" (Sept. 17, 2017) at Section II, Flooring, available online at https://www.epa.gov/greenerproducts/recommendations-specifications-standards-and-ecolabels-federal-purchasing#flooring (current as of Nov. 6, 2017); *see* RFCI Press Release, "EPA Recommends Specifying Resilient Flooring with Floor Score & NSF 332" (Jan. 18, 2017), available online at http://rfci.com/epa-recommends-specifying-resilient-flooring-with-floorscore-nsf-332/ (current as of Nov. 6, 2017).

PPWP, DTSC re-evaluate the vinyl flooring-phthalate product-chemical combination and remove the vinyl flooring product category from the PPWP.

We look forward to addressing any questions you might have regarding these comments. Please contact Dean Thompson, RFCI President and CEO, at Dean.Thompson@RFCI.com, or RFCI counsel Allison Foley, Venable LLP, at ADFoley@Venable.com.

ATTACHMENT A

COMMENTS OF RESILIENT FLOOR COVERING INSTITUTE ON THE "SAFER CONSUMER PRODUCTS DRAFT PRIORITY PRODUCT WORK PLAN" ISSUED BY THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON SEPTEMBER 12, 2014

October 21, 2014

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Table of Contents

I. EXECUTIVE SUMMARY

The Resilient Floor Covering Institute (RFCI), which represents the interests of the resilient floor covering industry, appreciates the opportunity to submit these comments on the "Safer Consumer Products DRAFT Priority Product Work Plan" issued by the California Department of Toxic Substances Control (DTSC) on September 12, 2014. Virtually all of RFCI's flooring manufacturing members produce vinyl flooring, and RFCI's associate members provide raw materials and sundry products for its manufacture and use.

RFCI is deeply concerned with the process DTSC has employed in issuing its Draft Priority Product Work Plan. DTSC has provided no information on any particular chemical in vinyl flooring, or any particular exposure scenario, that causes it concern. It has also failed to identify any scientific studies in support of its needed findings for a Priority Product listing of significant exposures to any chemical of concern, or the potential for widespread adverse impacts.

Accordingly, RFCI is concerned that it has been given no meaningful opportunity to understand the basis of DTSC's identification of vinyl flooring as a candidate Priority Product. This complete lack of information defeats the purpose of a Work Plan, which DTSC claims is "to provide a level of predictability to manufacturers and other responsible entities, and to California consumers . . . "

As to substance, RFCI believes DTSC's identification of vinyl flooring as a candidate Priority Product potentially subject to regulation under its Safer Consumer Products Program is ill-conceived. The presence of certain chemicals upon which DTSC may be focusing in consumer products – including in vinyl flooring – has been intensively reviewed and adopted by a number of government scientific agencies and regulatory bodies in the United States and Europe. All these have found the chemical-product combination (vinyl flooring) to be safe. Accordingly, DTSC's draft listing is not only wasteful of resources, it is confusing for consumers for DTSC to be re-examining the product's safety. It is also misleading, insofar as it implies that the product is unsafe, then fails to back up its assertions.

Moreover, DTSC's action undermines the integrity of sister agencies' decision-making. Several California programs, including California's Collaborative for Healthy Schools Program and its Green Building Program, have affirmatively selected vinyl flooring based on its safety, and low-environmental impact, attributes. Those California agencies have relied upon, and acted upon, the credible information that the industry discloses and submits to rigorous third party certification processes, all of which show the product is safe for consumers and installers.

II. RFCI AND ITS SUSTAINABILITY PROGRAMS

RFCI is a trade association of manufacturers of flooring products and suppliers of raw materials and sundry products for the North American market. The Draft Work Plan, which proposes broad categories of products from which DTSC will select particular products (Priority Products) over a three year period for regulation under DTSC's Safer Consumer Products Program, identifies vinyl flooring as a candidate product for prioritization. As RFCI members manufacture vinyl flooring products, RFCI has a keen interest in the Work Plan.

Vinyl flooring is the number one choice for hard surface flooring. Resilient flooring is defined as a non-textile floor that provides underfoot comfort, and characteristically bounces back from repeated traffic or compression. Vinyl flooring provides substantial health, safety and performance benefits over other flooring options because it is durable and easily cleaned, which minimizes bacteria growth, and makes it ideal for use in kitchens, school lunchrooms, and hospitals.

Vinyl flooring is also a sustainable choice. Because it lasts for 30 – 50 years, it cuts down on waste sent to landfills, and conserves raw materials that would otherwise be consumed in manufacturing new products. The vinyl flooring industry engages in extensive recycling activity. Many of its products contain 5 – 10% post-consumer recycled materials, and some contain much more. Based on the industry's Environmental Product Declarations, only between 0.3% and 4.5% of materials used in manufacturing vinyl flooring products, on average, are sent to landfills as waste.[1]

RFCI has long been a strong advocate of green product selection and sustainable building practices based on life-cycle assessment, sound science, and risk assessment. RFCI has developed four sustainability programs for hard surface flooring products, as follows:

- FloorScore®, a program developed in conjunction with Scientific Certification (an internationally recognized, independent, third-party testing, evaluation and certification program) -- FloorScore® IAQ Certification means that a flooring product has been independently certified as complying with the stringent indoor air volatile organic compound (VOC) emissions criteria of California's Section 01350 requirements.[2] FloorScore®-certified products are eligible to receive points under California's Collaborative for High Performing Schools (CHPS), California's Green Building Requirements, and several U.S. Green Building Council LEED programs, among others.[3]

- NSF 332, an international sustainability standard -- In conjunction with NSF International, a not-for-profit, non-governmental organization which is a world leader in standards development, product certification, education, and risk-management for public health and safety, and is accredited by the American National Standards Institute (ANSI), RFCI developed a standard for certifying the multiple sustainability attributes of resilient

[1] *See* RFCI, *Environmental Product Declarations for Heterogeneous Vinyl Flooring, Homogeneous Vinyl Flooring, Vinyl Tile, and Vinyl Composite Tile, available at* http://www.rfci.com/environmental-product-declaration/ (last visited Oct. 20, 2014) [hereinafter *Environmental Product Declarations*].

[2] "Section 01350" is the name of a construction specification that has been incorporated into a number of California purchasing program requirements, including California's specifications for purchasing office furniture, and for green building construction. The specification sets forth a method for testing and limiting VOC emissions from indoor air sources. Devised by the California Department of Public Health's Environmental Health Laboratory Indoor Air Quality Program, it is the only health-based building material specification. Produced as a result of a multi-stakeholder process, it is widely accepted by numerous manufacturers of building materials. In addition to California purchasing programs, the State of Minnesota adopted Section 01350 in its purchasing criteria, and the Section has been adopted by a number of additional product certification programs, including FloorScore.® CDPH/EHLB/Standard Method V1.1. (February 2010).

[3] *See* RFCI, *FloorScore.®, available at* http://www.rfci.com/knowledge-center/floorscore/ (last visited Oct. 20, 2014).

flooring. NSF convened a multi-stakeholder process, bringing together flooring manufacturers, architects, academics, environmental program managers, state and federal agencies responsible for procurement practices, and the U.S. Environmental Protection Agency. The consensus process used to develop the standard was built upon scientific principles, including the 1SO 14000 series standards on Life Cycle Assessment. The standard was open for public comment and voting for two years prior to being approved. Third-party certification of compliance with the NSF standard confirms that product design incorporates life-cycle thinking, minimal impacts, long-term value, and end-of-life concerns.

- An Environmental Product Declaration Program (EPD)[4] -- RFCI has also expended considerable resources preparing EPDs for five product categories. They were completed in accordance with ISO 14025 guidelines, were audited by PE International, Inc., and were reviewed, verified and registered by UL Environment, a leading EPD Program Operator and global solutions company. RFCI's EPDs are recognized for contributing credits in LEED v4's Material and Resources Credit 2. They provide information on the raw materials, production, and life-cycle environmental impacts of vinyl flooring products.

- A Product Transparency Declaration Program (PTD)[5] -- The purpose of the PTD is to provide information on ingredients in products that could potentially cause an adverse human health exposure because of release from or contact with the building product under conditions of normal use for both the building occupant, and the installer of building products. Manufacturers who complete PTDs disclose intentionally-added ingredients, the ingredients' presence on six widely recognized lists (including California's Prop 65 list),[6] and indicate whether the ingredient level triggers an exposure warning notification based on content in the building material or product. In addition, the manufacturer will identify whether four heavy metals are added as functional ingredients, and whether volatile ingredients comply with VOC emissions testing, including CA Specification 01350, and other California program requirements. RFCI facilitates members' use of PTDs, by providing guidance on how to complete the forms.

RFCI does not believe vinyl flooring should be on the candidate product list, much less actually designated as a Priority Product. While we appreciate DTSC stating it will designate only five to ten candidates as Priority Products over the next three years,[7] we are very concerned that improper inclusion of product types on the draft list of Priority Products, much less on the final list, will improperly stigmatize very beneficial and environmentally superior consumer products, such as vinyl flooring. RFCI has been adversely affected by the inclusion of vinyl flooring in

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[4] *Environmental Product Declarations*.

[5] *See* RFCI, *PTD Product Transparency Declaration*, *available at* http://www.rfci.com/ptd-product-transparency-declaration/ (last visited Oct. 20, 2014).

[6] The six lists include: 1) the International Agency on the Research of Cancer Terminology carcinogens and possible carcinogens; 2) the known or reasonably anticipated carcinogen lists from the National Toxicology Program Report on Carcinogens; 3) California's Prop 65 listings for substances known to cause cancer or reproductive toxicity; 4) the persistent, bioaccumulative or toxic substances on EPA's Toxic Release Inventory; 5) OSHA Carcinogen List; and 6) REACH Substances of Very High Concern.

[7] California Department of Toxic Substances Control, Draft Priority Product Work Plan at 3 (Sept. 12, 2014) [hereinafter *Draft Work Plan*].

DTSC's Draft Priority Product Work Plan, and will be adversely affected if it is included in DTSC's final work plan, and/or its Priority Product list. RFCI's procedural and substantive concerns with the Draft Work Plan are as follows:

III. DRAFT WORK PLAN FAILS TO PROVIDE ADEQUATE NOTICE OF BASIS FOR PROPOSING VINYL FLOORING AS A CANDIDATE PRIORITY PRODUCT

The Draft Work Plan identifies vinyl flooring as a product subcategory within the Building Products Category warranting evaluation. However, the Draft Work Plan language is extraordinarily vague, noting only that the whole of the Building Products category "contain[s] a wide range of chemical ingredients, including Candidate Chemicals";[8] that the chemical ingredients contained in the products "can concentrate in indoor air . . .";[9] and that "[e]xposure can occur[: a] as we breathe chemicals emitted from the products into the air," [b] "when we absorb chemicals through the skin through direct contact[;]" or [c], in the case of "young children [who] often touch floors . . . and then put their hands in their mouths, from "direct ingestion of dust[,]" occurring when "normal wear and tear can degrade building materials . . . and create dust."[10]

The Draft Work Plan is deeply flawed, first, insofar as it fails to provide any specific information as to the particular chemicals in the product subcategories upon which DTSC may be focusing. While the Draft does broadly reference six potential Candidate Chemicals types within the Building Products category,[11] the Draft also makes clear that DTSC may later identify additional chemicals for prioritizing a product-chemical combination.[12] As there are presently well more than 2000 chemicals listed on DTSC's Candidate Chemicals, the Draft Work Plan unreasonably requires that parties guess which products, and/or which chemicals therein, DTSC may scrutinize.

As is further described below, the Draft Work Plan is also deeply flawed insofar as it fails to identify either the particular exposure scenarios that are causing DTSC concern, or the scientific studies upon which DTSC is relying in support of its belief that exposures can occur. In addition to at most only superficially addressing exposure, the Draft Work Plan fails to speak to any of the other features a candidate product must exhibit in order to qualify for inclusion as a Priority Product, such as life-cycle impacts, or end-of-life impacts.

DTSC's regulations state that a work plan, presumably the Final Work Plan, "must" include "a general explanation of the decision to select the identified product categories for evaluation during the life of the work plan."[13] While the regulations are silent as to the level of information

[8] *Draft Work Plan* at 11.
[9] *Id.* at 9.
[10] *Id.* at 10 (emphasis added).
[11] The Draft Work Plan identifies "several of the many Candidate Chemicals that can be found within the Building Products category," that apparently cause it concern: Brominated or chlorinated organic compounds [and] organophosphates used as flame retardants; isocyanates used as reactants [or] precursor[s] to reactants; metals, such as chromium VI used in dyes and pigment; perfluorinated compounds used in water-, oil-, or stain-repellents; phthalates used as plasticizers; and VOCs, such as formaldehyde, n-hexane, n-methyl-pyrrolidone, and toluene used as solvents." *Draft Work Plan* at 12.
[12] *Draft Work Plan* at 7.
[13] CAL. CODE REGS. tit. 22, § 69503.4(a).

required in a Draft Work Plan, the Statement of Reasons indicates that the purpose of a Plan is "to provide a level of predictability to responsible entities and other stakeholders regarding the types of products that could be considered for evaluation of product-chemical combinations to be added to the Priority Products list during the next 3-year period."[14] RFCI respectfully submits that the Draft Work Plan provides so little detail, it affords no predictability. Indeed, to the contrary, the issuance of the Draft Work Plan has dramatically increased uncertainty for responsible entities, as well as for the public. Without a more definitive explanation from DTSC about the basis for a draft product listing and supporting documentation, we are left to merely speculate about the specific basis for the Department's concerns. As the complete absence of information prevents RFCI from meaningfully commenting, DTSC's draft listing -- and potential future action -- may constitute a regulatory taking, and/or may violate RFCI members' rights to due process.

IV. VINYL FLOORING DOES NOT MEET PRIORITY PRODUCT LISTING CRITERIA BECAUSE IT PRESENTS NO UNACCEPTABLE RISK AND NO "SIGNIFICANT OR WIDESPREAD ADVERSE IMPACT"

The goal of the Safer Consumer Products program is to enhance public health, safety, and protection of the environment by promoting the development of "safer" consumer products that are "benign by design." At its core, the Program hinges on manufacturers conducting a rigorous alternatives analysis to determine whether a Candidate Chemical in the product is integral to product design, or may be substituted for a "safer" alternative.[15] DTSC then identifies a Regulatory Response that may range from no action to restricting the use of a particular chemical, or even banning it from a particular product.[16]

RFCI strongly believes that vinyl flooring should not be considered a Priority Product candidate, or designated as a Priority Product. While again, RFCI cannot ascertain with any particularity the nature of DTSC's concern regarding the product, we note that the product is well-studied, and has been found to pose no unacceptable human health risk. The vinyl flooring industry has voluntarily taken measures to: (1) ensure the sustainability of its products through its NSF 332 Sustainability Standard and FloorScore® program to comply with California VOC requirements; (2) promote transparency regarding the environmental performance of its products through the RFCI EPD and TPD programs; and (3) provide life cycle assessment information, as further described below.[17] Finally, the industry has researched the range of exposure scenarios, which, again, show that chemicals in the product present a *de minimis* exposure that does not result in significant or adverse effect. Accordingly, RFCI respectfully submits that improper inclusion of vinyl flooring as a candidate priority product is a very unwise use of private and public resources, and even worse, confuses the consumer.

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[14] DTSC, Final Statement of Reasons, Safer Consumer Products (R-2011-02) at 189, *available at* http://www.dtsc.ca.gov/LawsRegsPolicies/Regs/upload/Final-Statement-of-Reasons-corrected-Table-of-Contents.pdf (last visited Oct. 20, 2014).

[15] California Code sections 69503.2(b) and 69503.2(b)(3) indicate that DTSC may, but is not required, to consider whether there is a readily available safer alternative that is functionally acceptable, technically feasible, and economically feasible. CAL. CODE REGS. tit. 22, §§ 69503.2(b) (2014).

[16] CAL. CODE REGS. tit 22, Article 6.

[17] *Environmental Product Declarations*.

A. Priority Product Listing Requires Both Potential For Public and Environmental Exposure, and "Significant or Widespread Adverse Impacts," Neither of Which Has Been Shown for Vinyl Flooring

RFCI respectfully asserts that vinyl flooring simply does not meet the regulatory pre-requisites for designating it as a Priority Product. While terrifically opaque,[18] DTSC's regulations do make clear that as a threshold matter, for a product-chemical combination to be listed as a Priority Product, there must be both (1) the potential for public or environmental exposure, and (2) the potential for the exposures to contribute to or cause significant or widespread adverse impacts. Section 69503.2(a) sets forth these two "key" principles for prioritization of product-chemical combinations.[19] Since as is further explained below, Candidate Chemicals in vinyl flooring present at most only a ***de minimis*** risk of exposure, they do not contribute to or cause significant or widespread adverse impacts. The product-chemical combination should be dropped from further evaluation as it will not meet either, and will certainly not meet both of these "Key Prioritization Principles."

The regulations are confusing as to the weight to be given other factors in determining which product-chemical combinations warrant designation as Priority Products. Section 69503.2(b) states that potential adverse waste and end-of-life effects shall be considered.[20] However, section 69503.2(b)(1)(B) states that adverse waste and end-of-life effects are factors that the Department may consider.[21]

Regardless, the Draft Priority Product Work Plan fails entirely to speak to the waste, or end-of-life, impacts of vinyl flooring. Indeed, the Draft Work Plan fails to address the bulk of the factors that the regulations require be considered if information is reasonably available, with life-cycle impacts (including end-of-life management) being just one of the factors ignored.[22]

RFCI therefore provides the following for DTSC's consideration. With regard to end-of-life considerations, the industry has long recognized the importance of waste minimization, and has a stellar record when it comes to re-using old materials in manufacturing new ones. Indeed, as has been found by the National Institute of Standards and Technology, in assessing environmentally-preferred, cost-effective building products, at least 99 % of the raw materials

[18] California Code section 69503.2(a) sets forth "Key Prioritization Principles," both of which must be met: potential exposure; and potential significant or widespread impacts. CAL. CODE REGS. tit. 22, § 69503.2(a). Section 69503.2(b) then describes the "Prioritization Process." CAL. CODE REGS. tit. 22, § 69503.2(b). It states that DTSC's decision to list shall be based on an evaluation of the product-chemical combination to determine its associated [1] potential adverse impacts, [2] potential exposures, and [3] potential adverse waste and end-of-life effects, by considering factors described in §§ 69503.2(b)(1) and (2). *Id*. Section 69503.2(b)(1), which addresses both "Adverse impacts and exposures"), in turn requires that DTSC consider one or more of roughly 11 factors from the list contained in 69503.3(a) ("Adverse Impacts") and one or more of roughly 4 factors (with 11 sub-factors) from the list contained in § 69503.3(b) ("Exposures"). CAL. CODE REGS. tit. 22, § 69503.3. Section 69503(b)(2) contains the regulations' 'non-duplication' provision, discussed, *infra* in Section III. *Id*. at 69503(b)(2).

[19] CAL. CODE REGS. tit. 22, § 69503.2(a).

[20] CAL. CODE REGS. tit. 22, § 69503.2(b).

[21] *Id*. at § 69503.2(b)(1)(B).

[22] *See* CAL. CODE REGS. tit., 22, § 69503(b)(4).

initially used in vinyl flooring manufacturing are ultimately used in the finished products.[23] Further, the amount of recycled content in the finished products, when scrap material is considered, ranges from 12 % to 50 %.[24] NIST's BEES Life Cycle Assessment also found that vinyl flooring has lower environmental and health impacts than 12 flooring alternatives, including linoleum, ceramic tile with recycled glass, and other non-vinyl flooring products.[25] We attach hereto an Appendix describing the BEES comparison (contained in RFCI comments on the U.S. Green Building Council's LEED v4 MR Credit 4), as well as two charts comparing vinyl flooring's life-cycle impacts to other products under two weighting schemes).

Nevertheless, as explained above, as the Draft Work Plan has focused only in the most superficial way on a concern with potential exposure, we provide the following information to demonstrate that any exposure to chemicals from use or installation of vinyl flooring is *de minimis*, and does not cause or contribute to any significant or widespread adverse impacts.

B. Plasticizers in Vinyl Flooring are Integral to the Product's Integrity and Safety

Of the Draft's list of types of potential Candidate Chemicals found in the Building Products category, only two types are present in vinyl flooring products -- phthalates used as plasticizers, and VOCs used as solvents.[26] The principal phthalate plasticizer intentionally added to vinyl flooring today is DINP, although other phthalate plasticizers (e.g., DEHP, DDP) may be present in recycled source material used to make vinyl flooring.[27] Should DTSC identify other Candidate Chemicals within vinyl flooring that cause it concern, RFCI reserves the right to comment at that time.

Plasticizers, such as DINP, are widely used to make inherently rigid materials, such as PVC, soft and flexible. Indeed, 95% of DINP is used in PVC applications.[28] DINP does not chemically bind to the PVC, but is incorporated into it during processing, to allow it to flex. Because DINP processes efficiently (it improves PVC melt viscosity), it takes less time and lower

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[23] *See* NIST, Building for Environmental and Economic Sustainability (BEES) 4.0 Technical Manual and User Guide vi, p. 167, *available at* http://www.fire.nist.gov/bfrlpubs/build07/PDF/b07018.pdf (last visited Oct. 20, 2014).

[24] *Id*.

[25] *See* NIST, BEES 4.0 Technical Manual and User Guide vi, *available at* http://www.fire.nist.gov/bfrlpubs/build07/PDF/b07018.pdf (last visited Oct. 20, 2014).

[26] *Draft Work Plan* at 12. Vinyl flooring generally consists of four product types: heterogeneous vinyl flooring, homogeneous vinyl flooring, vinyl tile, and vinyl composition tile. In these comments, we concentrate on heterogeneous vinyl flooring because it contains the highest DINP levels of any product type. The product type typically consists of a "wear layer," or finish; a pattern layer; a reinforcement layer; and a backing layer. The wear layer has a vinyl plastic binder, and may include pigments, fillers, extenders, stabilizers and other ingredients. The wear layer binder consists of one or more resins, plasticizers and stabilizers. 41.4% of the resin mass is comprised of polyvinyl chloride, or PVC (a VOC). In heterogeneous vinyl flooring, DINP comprises 21.2% of the plasticizer mass. Other materials present in the various layers of vinyl flooring include limestone, felt, and a binder for the felt backing layer such as latex. RFCI, *Environmental Product Declaration, Heterogeneous Vinyl Flooring, available at* http://www.rfci.com/environmental-product-declaration/ (last visited Oct. 20, 2014).

[27] The industry has already undertaken plasticizer substitution by no longer using DEHP as an intentionally added virgin plasticizer.

[28] ECHA , *Evaluation of new scientific evidence concerning DINP and DIDP: In relation to entry 52 of Annex XVII to REACH Regulation (EC) No 1907/2006*, at 24 (Aug. 2013), *available at* http://echa.europa.eu/documents/10162/31b4067e-de40-4044-93e8-9c9ff1960715 (last visited Oct. 20, 2014) [hereinafter *ECHA August 2013 Report*].

temperatures to incorporate it into the PVC, and to produce the finished product. Accordingly, manufacturing using the product-chemical combination is energy efficient.

DINP also enables PVC to remain fully functional over the 30 – 50 years of the intended life of the product. PVC's ability (when combined with DINP) to flex over time without cracking or burning is a safety feature that makes the product particularly suitable for hospitals and residential use. Vinyl flooring is easy to clean and maintain because it provides a one-dimensional surface that doesn't absorb odors, spills, dust or soil. It also does not easily retain moisture, which can promote the growth of microorganisms, such as dust mites and mold that can contribute to poor indoor air quality. Vinyl flooring, through its use of PVC, boasts superior flame retardant and smoke-suppressant attributes, outstanding durability and flexibility (when appropriate plasticizers have been incorporated therein), superior thermal stability, and outstanding productivity, all at relatively low cost.

Because the PVC/DINP combination performs exceptionally well, both technically and economically, and provides significant margins of safety in terms of fire prevention and deterioration, DTSC should be leery of the potential unintended consequences that could occur if it requires alternative chemical combinations.

C. Phthalates in Vinyl Flooring Have Been Extensively Studied, and Have Been Found by the European Commission and Other Authoritative Bodies to Present No Unacceptable Risk

DINP's presence in consumer products has been intensively reviewed by a number of government scientific agencies and regulatory bodies in the United States and Europe,[29] all of whose conclusions have been essentially the same -- that generally, phthalates do not pose risk to human health at typical exposure levels. Indeed in January 2014, after exhaustive (more than 500 pages of reports and exhibits) study, the European Commission (EC) concluded that with the single exception of risk posed by mouthing of toys and childcare articles,[30] there is "no unacceptable risk" from the use of DINP in commercial products,[31] including in vinyl flooring.[32] The Australian

[29] *See* Consumer Product Safety Commission, *Chronic Hazard Advisory Panel Report on DINP* (July 2014), *available at* http://www.cpsc.gov/PageFiles/169876/CHAP-REPORT-FINAL.pdf (last visited Oct. 20, 2014); *see also ECHA August 2013 Report*; National Industrial Chemicals Notification and Assessment Scheme (NICNAS) of the Australian Government Department of Health and Ageing, *Diisononyl Phthalate (DINP) Factsheet*, (2012), *available at* http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/diisononyl-phthalate-dinp-factsheet (last visited Oct. 20, 2014) [hereinafter *DINP Factsheet*]; National Toxicology Program's Center for the Evaluation of Risks to Human Reproduction (2003), *available at* http://ntp.niehs.nih.gov/ntp/ohat/phthalates/dinp/dinp_monograph_final.pdf; *see also* European Chemicals Bureau, *European Union Risk Assessment Report DINP* (2003); EU Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

[30] "Childcare articles" means those that can be placed in the mouth, and "covers the accessible part of articles such as push chairs, car seats and bike seats which are intended to facilitate sleep and relaxation during transport." *ECHA August 2013 Report* at 9.

[31] *Phthalates entry 52 – Commission conclusions on the review clause and next steps*, European Commission (EC), at 4, Jan. 15, 2014, *available at* http://ec.europa.eu/enterprise/sectors/chemicals/files/reach/entry-52_en.pdf (last visited Oct. 20, 2014) [hereinafter *Phthalates Entry 52*]. .

[32] *See e.g.*, European Chemicals Agency (ECHA): *Evaluation of new scientific evidence concerning DINP and DIDP* at 227 (Aug. 2013).

government has gone even farther, concluding that "Current risk estimates do not indicate a health concern from exposure of children to DINP in toys and child care articles even at the highest (reasonable worst-case) exposure scenario considered."[33]

Of particular relevance in this context, the EC also concluded that "in light of the absence of any further risks from the use of DINP . . . , the evaluation of potential substitutes [is] less pertinent."[34] This latter conclusion seriously undermines any value of vinyl flooring being evaluated for action under the Safer Consumer Products Act.

D. Candidate Chemicals in Vinyl Flooring do not Concentrate in Indoor Air

As indicated above, the Draft Priority Product Work Plan vaguely notes that candidate products contain chemicals that can concentrate in indoor air, and can be dangerous when inhaled. Whether or not that is the case for any of the other product sub-categories, RFCI notes this not a danger for vinyl flooring containing DINP. Because DINP is a "high" phthalate (meaning it has a higher number of carbon atoms) with a relatively low vapor pressure, there is little possibility of it being inhaled.[35]

If DTSC's concern about vinyl flooring is with VOCs, RFCI notes that in conjunction with Scientific Certification Systems (an internationally recognized, independent, third-party testing, evaluation and certification program), RFCI has already has developed the FloorScore® low VOC certification program for hard surface flooring. Certification means the product complies with California's Section 01350 VOC standards. FloorScore® certification is an important component of meeting the indoor air emissions criteria under the California Collaborative for High Performance Schools (CPHS). Certification is also relevant in demonstrating compliance with California's Green Building Standards.[36]

E. The Chemicals in Vinyl Flooring Cannot Readily be Absorbed by Skin

The Draft Priority Product Work Plan also makes vague references to concerns arising from dermal contact. Again, RFCI notes that this concern is not present with vinyl flooring. "ECHA concluded that dermal exposure (from articles which are in direct contact with the skin such as garments, plastic bags, shower curtains etc.) to DINP . . . are not expected to result in a risk for adults or the developing fetus in pregnant women."[37] *See also, Evaluation of New Scientific Evidence Concerning DINP and DIDP*, In relation to entry 52 of Annex XVII to REACH Regulation (EC) No 1907/2006, European Chemicals Agency, August 2013, p. 8, which concluded that "Dermal exposure from for instance PVC garments is not anticipated to result in a risk for the adult population."

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[33] *DINP Factsheet*
[34] *Id*.
[35] *See* T.D. Stark, H. Choi, and P.W. Diebel, *The Influence of molecular weight on plasticizer retention*, Vol. 23, Number 2 GFR Magazine(2005); *see also* T.D. Stark, H. Choi and P.W. Diebel, *Plasticizer Retention in PVC Geomembranes*, GSP 142 Waste Containment and Remediation; ; *see also ECHA August 2013 Report* at pp. 353 – 354, Annex 3.
[36] *See Sustainable (Green) Building Section 01350: Special Environmental Requirements, available at* http://www.calrecycle.ca.gov/greenbuilding/specs/section01350/ (last visited Oct. 20, 2014).
[37] *Phthalates Entry 52* at 3.

F. Candidate Chemicals in Vinyl Flooring do not Pose Risk from Hand-to-Mouth Activity

Finally, the Draft Priority Product Work Plan vaguely notes risk to children when products degrade, turn into dust, and are ingested by children as a result of hand-to-mouth activity. Again, this conjecture is not valid for the chemicals found in vinyl flooring. The EU found no risk to children from ingesting dust with DINP.[38]

V. THE PROPOSED LISTING CONFLICTS WITH CALIFORNIA'S RECYCLING OBJECTIVE, AND OTHER CALIFORNIA PROGRAMS DESIGNED TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT

DTSC's regulations specifically provide that DTSC cannot "supersede" the requirements of another California State or federal regulatory program.[39] Further, both the Green Chemistry law and the regulations provide that DTSC "shall not duplicate or adopt conflicting regulations for product categories already regulated or subject to pending regulation consistent with the purposes of this article."[40]

A. Listing Conflicts with California's Recycling Program

In light of these authority limitations, we are concerned that a DTSC designation of Building Products containing phthalates as Priority Products could frustrate California's statewide recycling goal of 75% by 2020.[41] The Program's alternatives analysis requirement applies not only to chemicals of concern present in virgin inputs used to manufacture a Priority Product, but also to these chemicals present in recycled materials used to manufacture new products.[42] As indicated above, many new vinyl flooring products contain recycled PVC source material, including old vinyl flooring material. This industry recycling practice has the substantial environmental benefit of reducing the amount of vinyl flooring sent to landfills. But it also means that phthalates present in old flooring may be found in new flooring products manufactured with recycled content, albeit in small amounts, and could be subject to Program requirements.

We are therefore concerned that any such Priority Product listing could have the perverse effect of deterring manufacturers from continuing ongoing recycling efforts, and inadvertently promote the use of products with larger environmental footprints. We therefore ask DTSC to explain how it intends to avoid a conflict, and not supersede the objectives and requirements of its Cal Recycle program in this situation.

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[38] *Phthalates Entry 52 at* 3.
[39] CAL. CODE REGS. tit. 22, § 69501(c).
[40] CAL. HEALTH & SAFETY § 25257.1(b), (c); *see also* CAL. CODE REGS. tit. 22, § 69501(b).
[41] California set this goal with passage of AB 341.
[42] California Code Sections 69501.1(26)(A), 69503.5, and 69505.3, which make clear that Chemicals of Concern present only as contaminants in Priority Products trigger the same regulatory obligations as they would if present in virgin inputs into the manufacturing processes. CAL. CODE REGS. tit. 22, § 69501.1(26)(A); CAL. CODE REGS. tit. 22, § 69503.5; CAL. CODE REGS. tit. 22, § 69505.3.

B. Listing Conflicts with California's Healthy Schools and Healthy Buildings Initiatives

We are concerned as well that regulation of vinyl flooring under the Safe Consumer Products Act will seriously undermine certain non-regulatory programs in which several California state agencies, in addition to the public, have invested.

As described above, California state agencies have come to rely upon the hazard and risk information disclosed under the auspices of RFCI's voluntary programs. The most striking example is California's "Section 01350" VOC program that explicitly references RFCI's FloorScore® program, which in turn is relied upon by California's CHPS program. Similarly, California's Green Building Program promotes use of low-VOC vinyl flooring.

Should DTSC press forward with regulation under SCPA, it will essentially be finding inadequate these important non-regulatory programs, and will be making a mockery of the serious stakeholder efforts expended in devising these programs.

RFCI is deeply concerned that careless listings of certain products will chill important efforts such as these.

VI. CONCLUSION

RFCI appreciates the opportunity to comment on the Draft Work Plan. However, RFCI maintains that DTSC has provided little if any information on how vinyl flooring could meet any of the criteria, let alone the key criteria, for listing as a Priority Product warranting regulation. We reiterate that authoritative bodies that have examined the product have concluded that it is safe; and that California have affirmatively selected the product because of its safety, life-cycle, and end-of-life attributes.

We look forward to discussing our concerns with you. If you have any questions about these comments, please do not hesitate to contact Dean Thompson, or our counsel, both of whose contact information is listed on the cover.

ATTACHMENT A

COMMENTS OF RESILIENT FLOOR COVERING INSTITUTE ON THE LEED V4 MR CREDIT 4: BUILDING PRODUCT DISCLOSURE AND OPTIMIZATION – MATERIAL INGREDIENTS (FIFTH PUBLIC COMMENT PERIOD)

December 10, 2012

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Authoritative LCA methodologies and evaluations post-dating the TSAC Report demonstrate that PVC building materials have similar LCA impacts, if not lesser impacts, than their alternatives. For example, vinyl composite tile (VCT) has been evaluated against its competitors using the Building for Environmental and Economic Sustainability (BEES) methodology.[35] BEES is a "cradle-to-grave" LCA systems approach for measuring environmental performance that was developed by the U.S. National Institute for Standards and Technology. The BEES LCA takes into account 12 environmental performance factors, including human health, over a product's life cycle and weighs those factors according to three different weighting systems: (1) equal weights, (2) EPA-developed weighting system, and (3) a weighting system developed by a BEES stakeholder panel (which has been adopted by USGBC for some uses, *see* USGBC, LEED 2009 for New Construction and Major Renovations xii).

The BEES system includes data for select individual flooring products and 13 "generic" product categories, including VCT. BEES' LCA environmental performance results are expressed in units corresponding to the products' contribution to annual per capita U.S. environmental impacts.[36] A *lower* number means that a product has less of an environmental and health impact relative to the other products.

Using the USGBC-endorsed BEES Stakeholder weighting system, which weighs human toxicity impacts as 13% of the total, *VCT has been shown to have a lower environmental and health impact than all 12 alternative generic product categories over the course of its life cycle*. As shown in Attachment D, the aggregate scores for each of the generic flooring products in ascending order from least impact to most impact are:

- "Generic Vinyl Composition Tile" (i.e. VCT) – 0.0022
- "Generic Linoleum Flooring" – 0.0032
- "Generic Ceramic Tile w/ Recycled Glass" – 0.0048
- "Generic Terrazzo" – 0.0072
- "Generic Composite Marble Tile" – 0.0075
- "Generic Nylon Carpet Tile/Low-VOC Adhsv" – 0.0146
- "Generic Nylon Carpet Tile" – 0.0150
- "Generic Nylon Carpet Broadloom" – 0.0208
- "Generic Nylon Brdlm/Low VOC Adhsv" – 0.0247
- "Generic Wool Carpet Tile/Low-VOC Adhsv" – 0.1174
- "Generic Wool Carpet Tile" – 0.1177
- "Generic Wool Carpet Brdlm/Low-VOC Adhsv" – 0.1227
- "Generic Wool Carpet Broadloom" – 0.1243

The result is the same under the EPA-developed weighting (which assigns an 11% weighting to human toxicity impacts)—VCT has the lowest environmental and health impact (0.0013 for VCT compared to 0.0020 for the next lowest alternative). *See* Attachment E. It is important to note that the measures of human health impacts of VCT and the alternatives under both weightings were less than 0.00005% of the corresponding annual per-capita health impact, meaning that statistically the health impacts of flooring are not sufficiently substantial to be included in the total LCA scores.

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[35] NIST, BEES Online, *available at* http://www.nist.gov/el/economics/BEESSoftware.cfm.

[36] NIST, Interpreting BEES Environmental Performance Scores: A Primer, *available at* http://ws680.nist.gov/Bees/Help.aspx.

ATTACHMENT D

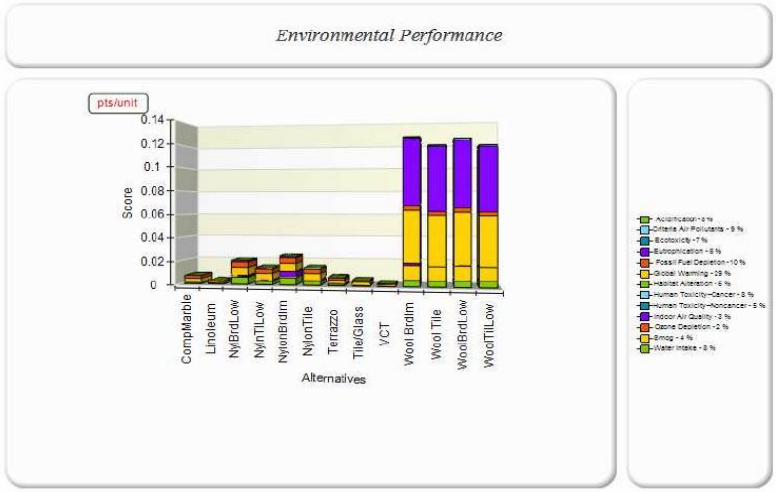
BEES STAKEHOLDER WEIGHTING ENDORSED BY USGBC

BEES online — Life Cycle Analysis for Building Products

Home Analysis Help

- Summary Graphs
- Life-Cycle Stage Graphs
- Environmental Flow Graphs
- Embodied Energy Graphs

Environmental Performance



Note: Lower values are better

Category	CompMarble	Linoleum	NylBrdLow	NylnTlLow	NylonBrdlm	NylonTile	Terrazzo	Tile/Glass	VCT	Wool Brdlm	Wool Tile	WoolBrdLow	WoolTilLow
Acidification - 3 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Criteria Air Pollutants - 9 %	0.0001	0.0001	0.0003	0.0003	0.0003	0.0003	0.0002	0.0001	0.0001	0.0010	0.0010	0.0010	0.0010
Ecotoxicity - 7 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002	0.0002	0.0002
Eutrophication - 6 %	0.0001	0.0003	0.0010	0.0006	0.0010	0.0006	0.0002	0.0001	0.0000	0.0556	0.0536	0.0556	0.0536
Fossil Fuel Depletion - 10 %	0.0025	0.0007	0.0048	0.0038	0.0048	0.0038	0.0019	0.0012	0.0008	0.0036	0.0032	0.0036	0.0032
Global Warming - 29 %	0.0031	0.0011	0.0067	0.0057	0.0067	0.0057	0.0030	0.0029	0.0012	0.0441	0.0423	0.0441	0.0423
Habitat Alteration - 6 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Human Toxicity--Cancer - 8 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Human Toxicity--Noncancer - 5 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Indoor Air Quality - 3 %	0.0000	0.0000	0.0008	0.0001	0.0047	0.0005	0.0000	0.0000	0.0000	0.0019	0.0003	0.0003	0.0000
Ozone Depletion - 2 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Smog - 4 %	0.0006	0.0003	0.0008	0.0007	0.0008	0.0007	0.0005	0.0003	0.0001	0.0123	0.0118	0.0123	0.0118
Water Intake - 8 %	0.0011	0.0007	0.0064	0.0034	0.0064	0.0034	0.0014	0.0002	0.0000	0.0056	0.0053	0.0056	0.0053
Sum	0.0075	0.0032	0.0208	0.0146	0.0247	0.0150	0.0072	0.0048	0.0022	0.1243	0.1177	0.1227	0.1174

The National Institute of Standards and Technology (NIST) is an agency of the U.S. Commerce Department.

Date created: August 24, 2010 | Last updated: May 9, 2011 Contact: Webmaster

ATTACHMENT E

BEES STAKEHOLDER WEIGHTING ENDORSED BY USGBC

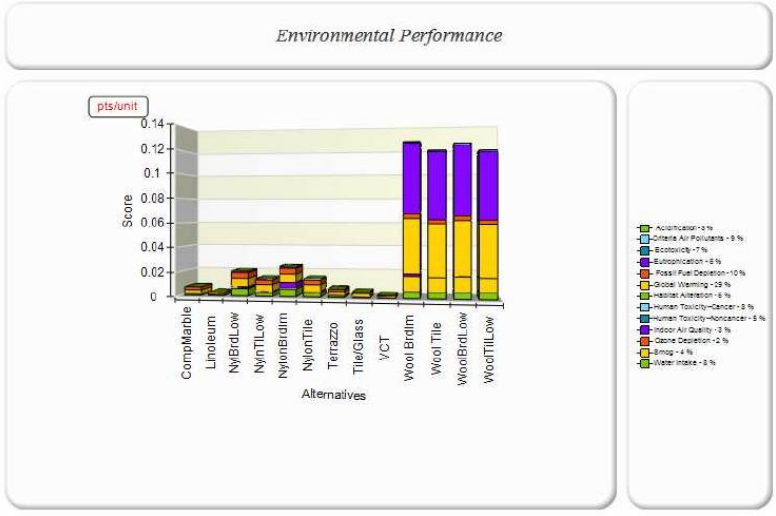
BEES online

Life Cycle Analysis for Building Products

Home Analysis Help

- Summary Graphs
- Life-Cycle Stage Graphs
- Environmental Flow Graphs
- Embodied Energy Graphs

Environmental Performance



Note: Lower values are better

Category	CompMarble	Linoleum	NylBrdLow	NylnTlLow	NylonBrdlm	NylonTile	Terrazzo	Tile/Glass	VCT	Wool Brdlm	Wool Tile	WoolBrdLow	WoolTilLow
Acidification - 3 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Criteria Air Pollutants - 9 %	0.0001	0.0001	0.0003	0.0003	0.0003	0.0003	0.0002	0.0001	0.0001	0.0010	0.0010	0.0010	0.0010
Ecotoxicity - 7 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002	0.0002	0.0002
Eutrophication - 6 %	0.0001	0.0003	0.0010	0.0006	0.0010	0.0006	0.0002	0.0001	0.0000	0.0556	0.0536	0.0556	0.0536
Fossil Fuel Depletion - 10 %	0.0025	0.0007	0.0048	0.0038	0.0048	0.0038	0.0019	0.0012	0.0008	0.0036	0.0032	0.0036	0.0032
Global Warming - 29 %	0.0031	0.0011	0.0067	0.0057	0.0067	0.0057	0.0030	0.0029	0.0012	0.0441	0.0423	0.0441	0.0423
Habitat Alteration - 6 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Human Toxicity--Cancer - 8 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Human Toxicity--Noncancer - 5 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Indoor Air Quality - 3 %	0.0000	0.0000	0.0008	0.0001	0.0047	0.0005	0.0000	0.0000	0.0000	0.0019	0.0003	0.0003	0.0000
Ozone Depletion - 2 %	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Smog - 4 %	0.0006	0.0003	0.0008	0.0007	0.0008	0.0007	0.0005	0.0003	0.0001	0.0123	0.0118	0.0123	0.0118
Water Intake - 8 %	0.0011	0.0007	0.0064	0.0034	0.0064	0.0034	0.0014	0.0002	0.0000	0.0056	0.0053	0.0056	0.0053
Sum	0.0075	0.0032	0.0208	0.0146	0.0247	0.0150	0.0072	0.0048	0.0022	0.1243	0.1177	0.1227	0.1174