



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

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**COMMENTS OF RESILIENT FLOOR COVERING INSTITUTE ON  
MR CREDIT 4: BUILDING PRODUCT DISCLOSURE AND  
OPTIMIZATION – MATERIAL INGREDIENTS IN THE SIXTH PUBLIC COMMENT  
DRAFT OF LEED v4**

The Resilient Floor Covering Institute (RFCI) submits these comments on MR Credit 4: Building Product Disclosure and Optimization – Material Ingredients in the Sixth Draft of LEED v4.<sup>1</sup> RFCI is a non-profit trade association that represents manufacturers of vinyl composition tile, vinyl tile, sheet vinyl, rubber, and linoleum flooring products and suppliers of raw materials, additives, and sundry flooring products (e.g. adhesives) for the North American market. The RFCI membership list is included as Attachment A. RFCI has been a member of U.S. Green Building Council (USGBC) since January of 2006 and one of our members, Armstrong World Industries, Inc., is a charter member of USGBC since its founding in 1993.

**I. EXECUTIVE SUMMARY**

On March 1, 2013, USGBC issued its Sixth Public Comment Draft of the next version of the LEED Green Building Rating System. USGBC has included an unjustified material avoidance credit in each draft since the second one. The form of this credit and range of products it would affect has changed considerably from draft to draft, but the common denominator is that polyvinyl chloride (PVC) building materials containing phthalate plasticizers, including vinyl flooring, have been targeted for deselection in each draft. Interested parties have raised a host of concerns about the unjustified single-attribute hazard-based approach to material avoidance employed by these credits.

Unfortunately, the Sixth Draft retains the deeply flawed MR Credit 4: Building Product Disclosure and Optimization – Material Ingredients from the Fifth Draft with largely inconsequential changes. The credit contains three compliance options, each worth one point. Any two of the options can be satisfied for a maximum of two points to be earned for the credit.

**A. Option 1: Material Ingredient Reporting**

RFCI supports the intent of Option 1, which rewards the use of products that have published ingredient lists, provided it includes reasonable disclosure levels and protection for proprietary information. To achieve the broadest possible participation by manufacturers, we urge USGBC to adopt the two-tiered OSHA hazard communication standard—a standard that manufacturers are familiar with. This standard would establish a 1% (10,000 ppm) ingredient disclosure threshold for most chemicals and a .1% (1,000 ppm) threshold for higher hazard chemicals such as carcinogens and mutagens. USGBC's most recent response to RFCI's proposal to utilize this two-tiered reporting system was merely to point out that the .1% threshold is more lenient than is required by GreenScreen and Cradle to Cradle. However, those systems are not consensus-based standards and were not developed by an authoritative body like OSHA.

**B. Option 2: Material Ingredient Optimization**

Option 2 is a red list-based material avoidance credit for plasticized PVC products based on the use of GreenScreen, Cradle to Cradle, and REACH as red lists. No matter how USGBC attempts to

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<sup>1</sup> Available at <https://new.usgbc.org/leed/v4>.

characterize this Option as not being a material avoidance credit, it fails because no plasticized PVC product, including vinyl flooring, would qualify for the credit under any of the referenced red lists.

In previous comments, RFCI has strongly advocated that USGBC adhere to the findings of its own PVC Task Group, which rejected the use of a PVC avoidance credit in LEED in 2007. In its most recent responses to comments, USGBC rejected reliance on this report because it was “technical” in nature, not “policy.” However, a thorough review of the USGBC record demonstrates that this response is inaccurate. In May of 2007, the LEED Steering Committee (LSC)—USGBC’s policymaking body for LEED development—adopted the findings and recommendations of PVC Task Group in a policy statement. Adhering to this policy, the LSC rejected the addition of a PVC avoidance credit to the LEED for Healthcare rating system in 2008. The policy has never been withdrawn.

In addition, the LSC adopted policy recommendations for USGBC to incorporate more life cycle assessment into LEED decision making and to make greater use of risk assessment because it is more robust than simple pass/fail screening tools. The material avoidance credit in Option 2 contravenes these two policy recommendations because if LCA is properly considered, PVC materials, and particularly vinyl flooring, perform as favorably as non-PVC products, and in many cases are superior. The material avoidance option is not based on risk assessment and instead incorporates programs (e.g. GreenScreen, Cradle to Cradle, and the REACH SVHC list) which in essence are simply disfavored pass/fail screening tools based solely on hazard.

Furthermore, USGBC’s assertion that health-based concerns about dioxin emissions justify the credit is consistent with the PVC Task Group’s findings only if the emissions from end-of-life PVC building materials are near the high end of the range of uncertainty. However, USGBC never followed the Task Group’s recommendations to conduct further study to more accurately estimate the level of dioxin emissions. If USGBC were to conduct the recommended data gathering, it likely would find that dioxin emissions from PVC building products, particularly vinyl flooring, are at the lower end of the range due to new regulatory requirements, changed industry operations, increased recycling, and the presence of dioxin formation-inhibiting limestone in vinyl flooring. Therefore, USGBC’s end-of-life dioxin justification for Option 2 is inadequate and unsupported. Moreover, the authoritative BEES LCA system developed by the National Institute of Science and Technology shows that vinyl composition tile has a lower health and environmental impact than 12 alternative flooring products, including linoleum, ceramic tile with recycled glass, and carpet.

The three red lists proposed by USGBC in Option 2 should not be included in any credit in LEED v4 because:

- GreenScreen is an untested non-consensus-based standard that relies on over a hundred different red lists from various sources to screen out material ingredients based solely on hazard. This overly complicated system is presently operating with its methodology in “draft” form, and its assessment program is only now being pilot tested by its two accredited assessors.
- Cradle to Cradle is a proprietary certification standard maintained by a USGBC insider that uses vague, non-objective, and arbitrary criteria to decide whether a product is “contrary to the intent of the Cradle to Cradle principles” or chemical ingredients are included on a “Banned List” that improperly includes PVC and phthalates. USGBC should follow its LSC recommendation in 2007 that non-transparent proprietary systems, such as Cradle to Cradle, not be adopted for use in LEED. At the very least, because of the close connection between the Cradle to Cradle developer and USGBC, the council should critically examine that relationship and the report the findings to the USGBC

membership before submitting any credit including Cradle to Cradle to a membership ballot.

- The REACH substances of very high concern (SVHC) list is a list of chemicals identified for further evaluation and possible use restrictions. Products containing such chemicals are not automatically banned or restricted under REACH without an opportunity to demonstrate that the product itself does not present a significant risk. Indeed, E.U. regulators recently concluded that a proposed restriction on the use of four SVHC phthalates (including BBP used in vinyl flooring) in indoor products was not warranted because there was no demonstrated risk of harmful human exposure from the product itself.

The use of red lists to deselect products containing listed chemicals is a fundamentally flawed approach to materials selection decisions. The mere presence of a red-listed chemical in a product does not mean that persons using the product will be exposed to the chemical at a health significant level. Product avoidance should only occur if a risk assessment analysis shows that users of that product would be harmfully exposed to the red-listed chemical. USGBC's simple hazard-based approach is akin to warning people to avoid a city because it contains lions without adding that the animals are safely sheltered at the zoo.

The Option 2 material avoidance credit point is irreparably flawed. It must be withdrawn from LEED v4. At a minimum, USGBC should complete and fully review Pilot Credit 77, which mirrors Option 2, before giving any further consideration to including this in a standing credit.

### **C. Option 3: Product Manufacturer Supply Chain Optimization**

RFCI believes that Option 3 is impractical and unworkable because it requires third-party verification that the suppliers of building material manufacturers have implemented six poorly defined environmental, health, and safety "processes." It is unclear what these six processes actually require and, most importantly, we are unaware of any certification systems that have adequate third-party assessment infrastructure to provide verification of compliance with this Option.

## **II. OPTION 1: MATERIAL INGREDIENT REPORTING SHOULD BE REVISED TO INCLUDE MORE REASONABLE REPORTING THRESHOLDS WHICH CONFORM WITH THE OSHA HAZARD COMMUNICATION STANDARDS**

The purpose of Option 1 of the Proposed Material Ingredients Credit is to increase openness and transparency regarding the composition of building products. RFCI supports this goal. As we stated in our previous comments, however, a few targeted revisions to this Option would encourage greater participation by product manufacturers without detracting from its transparency objective.

Option 1 awards a point if at least 20 permanently installed products from at least five different manufacturers disclose the inventory of all chemicals found in the products at or above concentrations of .1% (1,000 ppm)<sup>2</sup>. A manufacturer can meet this disclosure requirement by: (1) publishing its own inventory of chemical ingredients identified by Chemical Abstract Service Registration Number (CASRN) and/or, for chemicals that are deemed confidential business information, identifying the chemicals' role, amount, and GreenScreen List Translator Benchmark 1 and Possible Benchmark 1 hazards; (2) completing a Health Product Declaration for the product in compliance with the Health Product Declaration Open Standard; (3) obtaining a Cradle to Cradle v2 Silver Level certification; or (4)

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<sup>2</sup> This credit can be found at <http://new.usgbc.org/node/2616399>.

complying with an additional material ingredient reporting program that USGBC approves in the future for use with this credit.

The first compliance option would allow manufacturers of eligible products to publish their own chemicals ingredients lists. For purposes of this credit, we support identifying the ingredients in products provided the ingredients are not proprietary in nature and a reasonable de minimis reporting threshold is set. A goal of this credit should be to maximize product manufacturer participation in the disclosure scheme, which will increase the amount of information available to LEED users and other consumers. Accordingly, it is important that this credit be technically feasible and not unnecessarily expensive.

To ensure feasibility and avoid unnecessary expense, we explained in our comments on the Fifth Draft that Option 1 that the first compliance option:

- should make clear that the chemical inventory disclosure requirement applies to intentionally added ingredients and byproducts, impurities and any other product constituents that a manufacturer reasonably knows is present based on process chemistry (i.e. familiarity with raw material inputs and chemical reactions occurring during manufacturing process) and customary product development and quality control testing;
- should not use the one-size-fits-all .1% (1,000 ppm) disclosure threshold which is too low in many cases, unnecessary, and unduly burdensome; and
- should use a two-tiered chemical reporting system based on the ingredient's degree of hazard which the U.S. Occupational Safety and Health Administration (OSHA) uses in its Hazard Communication standards. 77 Fed. Reg. 17574 (Mar. 26, 2012) (to be codified at 29 C.F.R.).

Under our proposed approach, a 1% (10,000 ppm) disclosure threshold would apply to product ingredients that are within an OSHA hazard class for which the relevant OSHA disclosure threshold is 1% or does not fall within an OSHA hazard class, and a .1% (1,000 ppm) disclosure threshold would apply to those ingredients for higher hazard classes (i.e. carcinogens, reproductive toxins, certain respiratory and skin sensitizers, and category 1A/B mutagens).

USGBC's sole response to RFCI's suggestion to increase the reporting threshold in this Option for non-hazardous substances is: "The reporting threshold of 1000 ppm is already more lenient than what is required by the other referenced programs [i.e. GreenScreen and Cradle to Cradle]. USGBC feels this is an appropriate threshold for reporting information on ingredients." 5th PC Comments with Responses, at row 385.<sup>3</sup> However, neither GreenScreen or Cradle to Cradle is a consensus-based standard that was developed by a recognized authoritative body after input from all interested parties and meaningful response to that input, as we explain in detail in Section III.B. In contrast, OSHA is an expert agency in matters of worker health and safety and developed the two-tiered reporting system after years of consideration and input from hundreds of interested parties across the whole spectrum of interests (e.g. unions to product manufacturers). Most importantly, LEED's adoption of the OSHA two-tiered reporting system would facilitate greater participation from product manufacturers, particularly because they have worked under the OSHA hazard communication reporting system for many years. By encouraging ingredient inventories to be available for a greater number of products, the OSHA approach would

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<sup>3</sup> Available at <http://new.usgbc.org/resources/leed-v4-5th-public-comment-responses>.

provide more useful information to consumers than they would get from having more detailed ingredient reports but from fewer products.<sup>4</sup>

In the December 10, 2012 comments, RFCI commented on the other compliance options for Option 1. We explained why the Health Product Declaration second compliance option is fundamentally flawed because: (1) it was not developed through a consensus-based, transparent process, which is why it has been labeled as an “open standard;” (2) it requires the review of 32 different lists of chemicals and is based on the principle that a chemical contained in a building product may present a hazard “regardless of the disclosure level” even though there may be no risk associated with the product based on exposure considerations (e.g. inaccessibility, de minimis concentrations); and (3) the Residuals Disclosure levels are set at 100 ppm, which is not only impractical but also potentially cost-prohibitive due to the expense and availability of sufficiently sensitive testing equipment. We further explained why the third compliance option should be eliminated because Cradle to Cradle is an inappropriate proprietary standard that should not be used in the LEED system. We also urged that the fourth “open ended” compliance option, at the very least, be substantially modified to include specified criteria and procedures for adopting a new Option 1 program, including vetting such program through the pilot credit library and approving its permanent adoption through the LEED ballot process. Finally, we explained that the Option 1 credit should expressly acknowledge that the mere presence of particular chemicals in a product does not necessarily mean that the product itself poses any adverse human health or environmental risk without considering exposure and other risk assessment factors associated with the use of a product. We renew our request for these changes to be included.

Unfortunately and significantly, USGBC did not respond to any of these comments and did not explain why they were not adopted in the Sixth Draft. It is hard to imagine how LEED can be considered a consensus-based standard when there is no procedure for responding to substantive comments and providing a rational and supportable basis for making final decisions. We renew our request that the changes and deletions we have carefully and convincingly sought for Option 1 be included in the ballot draft of LEED v4.

### **III. OPTION 2: MATERIAL INGREDIENT OPTIMIZATION IS A DISFAVORED AND UNSUPPORTED PVC BUILDING MATERIAL AVOIDANCE CREDIT THAT VIOLATES USGBC POLICY AND SCIENTIFIC DETERMINATIONS AND THUS SHOULD BE WITHDRAWN**

Since before the formation of the PVC Task Group in 2002, there has been a push by certain elements of USGBC’s membership to incorporate a PVC avoidance credit into LEED. The PVC Task Group concluded in 2007 that such credits were unwarranted and its findings were adopted as policy by the LEED Steering Committee. Based on these findings and policy determinations, subsequent efforts to create permanent PVC avoidance credits were rightfully rejected. An example of this policy being applied was the handling of the proposed LEED for Healthcare MR Credit 4.1: PBT Elimination: Dioxins and Halogenated Compounds, which targeted products such as PVC flooring, pipes, and electrical wiring for deselection. The LEED Steering Committee prudently directed the TSAC to review this credit for consistency with the PVC Task Group’s report.<sup>5</sup> As a result, the credit was removed from the LEED for

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<sup>4</sup> RFCI appreciates that the manufacturer-supplied ingredient disclosure compliance option permits manufacturers to withhold the publication of proprietary CASRNs. However, as explained in detail below, it is not appropriate to rely on the GreenScreen’s hazard identification matrix developed by Green Production Action, which may falsely indicate that a product presents a risk.

<sup>5</sup> LSC Minutes (Dec. 17, 2007), available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=3924>.

Healthcare draft and instead diverted into the Pilot Credit library (where it was closed on March 1, 2012).<sup>6</sup>

The thoughtful LEED development process that recognized the PBT Elimination credit for what it was—an unjustified PVC avoidance credit—has broken down with respect to Option 2: Material Ingredient Optimization. This Option is nothing more than an anti-PVC material avoidance credit buried within overcomplicated credit language presented euphemistically as material “optimization.” One point is earned for this Option if at least 25%, by cost, of a project’s building materials meet any of the following criteria: (1) all material ingredients are inventoried to 0.01% (100 ppm) and determined to contain no GreenScreen Benchmark 1 hazards; (2) product has been certified by Cradle to Cradle; (3) product contains no substances that “meet the criteria” for inclusion on the European Union’s Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) substances of very high concern list; or (4) product complies with a building product optimization program subsequently approved by USGBC. Each of these criteria represents an alternative way to target PVC.

The many problems with this Option, and material avoidance credits in general, have been detailed by RFCI and other commenters in each of the past four drafts of LEED 2012/v4 since a material avoidance credit was first introduced in the second draft. In these comments on the Sixth Draft, RFCI focuses on two issues that are particularly relevant to this credit. First, USGBC continues to disregard and marginalize the results of its own five-year evaluation of a PVC avoidance credit, not to mention the reasonable policy decisions it made in response to that study. Second, the decision to rely on GreenScreen, Cradle to Cradle, and REACH for satisfying Option 2 is premature, infeasible, and unworkable.

**A. Option 2 Contravenes The Policy Decisions Made By The LEED Steering Committee In Response To The Findings And The Scientific Determinations Of The PVC Task Group**

RFCI and other commenters have been steadfastly relying on the findings and recommendations of the 2007 Assessment of the Technical Basis for a PVC-Related Materials Credit for LEED (PVC Report) to demonstrate that it is inappropriate and premature for USGBC to shoehorn a PVC material avoidance credit into LEED. In its response to RFCI’s comments on this credit in the Fifth Draft, USGBC dismissed the PVC Report, stating, “The TSAC’s findings are technical in nature and not determinative of USGBC policy.” 5th PC Comments with Responses, at row 499.<sup>7</sup> This response is extremely troubling and inaccurate for two reasons. First, in essence, it states that USGBC’s insistence on including a material avoidance credit in LEED v4 is based on “policy” rather than any “technical” justification for the credit. Second, this statement completely mistakes the fact that the PVC Report was one step in a larger policymaking process and that its findings were in fact adopted by the USGBC’s designated policy-setting body, the LEED Steering Committee (LSC).<sup>8</sup>

In November 2002, USGBC’s LSC requested that the Technical and Scientific Advisory Committee (TSAC) establish a PVC Task Group to assist in evaluating the grounds for a PVC-related credit in the LEED rating system. For more than four years, the PVC Task Group conducted a study of

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<sup>6</sup> See Tracking of LEED Pilot Credits: Initial Postings, Modifications and Closures by Date, <http://new.usgbc.org/sites/default/files/Tracking%20Info%202013%2001%2015.pdf>.

<sup>7</sup> Available at <http://new.usgbc.org/resources/leed-v4-5th-public-comment-responses>.

<sup>8</sup> See USGBC, Foundations of LEED § IV.3 (2009), available at <http://new.usgbc.org/sites/default/files/Foundations-of-LEED.pdf> (stating that the role of the role of the LSC is to “set policy for the development of LEED”).

four applications: siding, piping, resilient flooring, and window frames. The environmental and health attributes of products in these categories were compared to non-PVC alternatives. The review drew upon approximately 2,500 studies and other sources of data which led to a draft report being issued in December 2004. In response to public comments on the draft, the TSAC expanded its evaluation of the studied product categories to determine whether accidental landfill fires and backyard burning during the end-of-life phase of the studied products constituted a significant source of dioxin emissions. The final Report, Assessment of the Technical Basis for a PVC-Related Materials Credit for LEED (PVC Report), was published on February 26, 2007.<sup>9</sup> The report was thorough, consisting of 90 pages of analysis followed by 13 appendices with supplementary technical and scientific information. It contained a number of significant conclusions and recommendations regarding whether the USGBC should adopt a PVC material avoidance credit. It also identified a number of critical data gaps, particularly with respect to dioxin emissions from the end-of-life phase of PVC building materials. We are not aware of any additional research or studies that have been completed to address these data gaps. Thus, the PVC Report remains the best evidence available to USGBC for evaluating any proposal to include a PVC material avoidance credit into LEED.

Significantly, the PVC Task Group concluded that “no single material shows up as the best across all the human health and environmental impact categories, nor as the worst.” PVC Report at 9. Even more importantly, the Task Group warned against the “blunt instrument . . . of materials-based credits inadvertently steering decision makers to replace one high-negative impact material with another.” *Id.* at 12. The PVC Report found that any environmental and health differences observed between the PVC products and the non-PVC products in the four categories evaluated were insufficient to justify a materials-avoidance credit for any of the categories evaluated. Instead, the PVC Task Group recommended incentivizing the substitution of problematic materials with others that are “demonstrably better with regard to environmental and human health impacts over their life cycles.” *Id.* The Task Group considered materials avoidance credits problematic because they could lead to the use of worse-performing products, and the TSAC therefore encouraged the use of such credits only for “demonstrably better” products based on life cycle analyses for health and environmental impacts.

On the date the final PVC Report was issued—February 26, 2007—the USGBC Board of Directors issued a memorandum<sup>10</sup> stating that the LSC would review the report and prepare policy recommendations in accordance with the “TSAC Review Procedures for Specific Issues.”<sup>11</sup> Several weeks later on May 14, 2007, the LSC—USGBC’s designated policy-setting body—issued a memorandum titled “LEED Steering Committee Proposed Policy Recommendations Relating to the Report Issues in February 2007 entitled ‘Assessment of the Technical Basis for a PVC-Related Materials Avoidance Credit for LEED’” (PVC Policy).<sup>12</sup> As set forth in the TSAC Review Procedures, the recommendations were to be ratified by the USGBC Board of Directors and then posted to the USGBC website. *Id.* The recommendations were posted to the website shortly thereafter and remain posted to this day. There has been no public indication, such as a meeting minutes entry or a press release, that the LSC or Board of Directors have ever withdrawn or repudiated the recommendations. Accordingly, the PVC Policy remains today as official USGBC policy.

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<sup>9</sup> Available at <https://www.usgbc.org/ShowFile.aspx?DocumentID=2372>.

<sup>10</sup> USGBC Bd. of Directors, Memorandum, TSAC Report on PVC (Feb. 26, 2007), available at <https://www.usgbc.org/ShowFile.aspx?DocumentID=2378>.

<sup>11</sup> Available at <https://www.usgbc.org/ShowFile.aspx?DocumentID=2376>.

<sup>12</sup> Available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=3401>.

Based on the findings in the PVC Report, the LSC adopted two PVC-specific policy recommendations and five general policy recommendations. The first PVC-specific policy recommendation, which is not reconcilable with Option 2 of MR Credit 4, provides:

1. Response to the Charge: The LSC charged TSAC with: "...reviewing the evidence offered by stakeholders and independent sources, and advising the LEED Steering Committee on the availability and quality of evidence as a basis for a reasoned decision about the inclusion of a PVC-related credit in the LEED rating system." Based on the information in the report, the LSC concludes that the evidence available at present is not conclusive, but it is suggestive that a credit specifically targeting PVC is not warranted.

PVC Policy at 1 (emphasis added).

The second PVC policy recommendation likewise is important because it is now being honored more in the breach than in the observance. This recommendation ended the previous moratorium on innovation credits (i.e. credits proposed and approved for use in specific projects) for project applicants that would elect to avoid PVC building materials in favor of alternative materials. However, the LSC called for the development of "robust guidance" for the approval of any project-specific PVC material avoidance credits. The relevant factors identified by the LSC were that the credit applicant (1) assessed a range of materials in addition to PVC materials; (2) explained how it determined that the alternatives to PVC building materials were in fact preferable; (3) conducted a high-quality and reliable alternatives analysis; and (4) used a transparent process. *Id.* at 1–2.

Of the five general policy recommendations, three are relevant to Option 2. The first general recommendation provided that USGBC "[m]ove ahead quickly and efficiently with incorporating more environmental Life Cycle Assessment (LCA) based decision making into LEED." *Id.* at 2. The second general recommendation was to make greater use of risk assessment when making material decisions for LEED because it is "more robust . . . than simple pass-fail screening tools" and that USGBC should use the precautionary principle as a tool to "identify[] areas where particular care is warranted." *Id.* The third general recommendation was to conduct more research and engage in advocacy with respect to dioxin emissions from landfill fires and backyard burning.

The LSC's policy recommendations were sound and fully informed by the extensive PVC Report. However, Option 2 completely disregards both the technical findings of the PVC Report and each of the relevant policy determinations adopted by the LSC that were made in response to those findings.

### **1. Option 2 Is A Material Avoidance Credit Targeting PVC**

As discussed above, the PVC Task Group recommended that USGBC "[a]void the 'blunt instrument' problem of material-based credits." PVC Report at 12. In its PVC-specific policy recommendations, the LSC affirmed that the evidence collected for the PVC Report showed that "a credit specifically targeting PVC is not warranted." PVC Policy at 1. Thus it is clear as a matter of scientific justification and published USGBC policy that a material avoidance credit targeting PVC is not acceptable. In its response to comments on the Fifth Draft, USGBC denies that Option 2 is a disfavored material avoidance credit, stating, "This credit does not target specific products." 5th PC Comments with Responses, at row 385.

While Option 2 relies on three different red lists to deselect disfavored products, it is obvious that PVC building materials—particularly those with phthalate plasticizers—are a main target slated for avoidance. The current approach is an evolution of earlier versions of this credit. In the second draft of what was then designated LEED 2012, issued in August 2011, USGBC included, for the first time, an

“Avoidance of Chemicals of Concern” credit targeting building products containing more than negligible amounts of any of the over 800 substances on the California Proposition 65 list, including phthalate plasticizers used in many flexible PVC products such as vinyl flooring, wall coverings, and wiring. The third draft of LEED 2012 issued in March 2012 provided a credit for expressly not using any products containing PVC and nine phthalate plasticizers, in addition to the Proposition 65 chemicals. The fourth draft issued in May 2012 took a new tack, mandating that manufacturers of products eligible for the credit demonstrate compliance with two European regulatory programs for chemicals. Again, products containing many common PVC plasticizers would have been deselected by this version of the credit. In the Fifth and this Sixth Draft, USGBC has taken a new approach, but the result is the same. With each iteration of this credit USGBC has found a slightly different way to provide credits for not using plasticized PVC building materials.

To be eligible for the credit, a product need only satisfy one of three red lists: GreenScreen Benchmark 1 hazards, Cradle to Cradle certification, and the REACH Substances of Very High Concern (SVHC) list. Due to variations in the lists and methodologies, many building products will be able to satisfy at least one of the three lists (e.g. many building materials contain antimony trioxide which is a Benchmark 1 chemical but not a REACH SVHC) and thus earn the credit.

However, plasticized PVC building materials—which have clearly been the target of this credit in each of its iterations—could not satisfy Option 2 under any of the three red lists. PVC materials would not satisfy the GreenScreen criteria because one of the “breakdown products” of the combustion of PVC, dioxin, is a Benchmark 1 hazard (notwithstanding that many materials, including wood,<sup>13</sup> will produce dioxins when combusted). Phthalate plasticizers likewise would be classified as Benchmark 1 hazards. The Cradle to Cradle criteria is unavailable because both PVC and phthalates are on that program’s “Banned List,” meaning that any product containing those materials in concentrations above 1,000 ppm will not even be considered for certification. Lastly, the REACH compliance criteria targets plasticized PVC building materials because plasticizers such as BBP, DEHP, DIBP, and DBP are on the SVHC list. Under any of the alternative criteria, products such as vinyl flooring, PVC electrical wiring, and vinyl wall coverings are targeted for deselection.

It is clear that Option 2 is a material avoidance credit which would steer projects away from PVC building materials. USGBC’s claims to the contrary simply ignore how the systems designated for use under Option 2 work with respect to plasticized PVC products. Moreover, the PVC material avoidance effect of Option 2 is contrary to the findings of the PVC Task Group and the prudent policy determinations of the LSC, the LEED policy-setting body of USGBC. For these reasons, it should be withdrawn.

## **2. Option 2 Deselects PVC Without Conducting Any Alternatives Analysis That Considers The Relative Environmental And Human Health Impacts Of PVC And Alternative Materials Over Their Life Cycles**

The PVC Policy’s second PVC-specific policy determination was that robust criteria should be developed for evaluating proposed innovation credits (i.e. credits proposed by individual LEED applicants for use in a single project) seeking credit for avoiding PVC building materials. The LSC stated that these criteria should include a requirement that the innovation credit applicant make a clear demonstration that it has conducted a rigorous and transparent alternatives analysis and has satisfactorily determined that the selected alternative is preferable to PVC. This reasonable guidance was fully consistent with the PVC Task Group’s conclusion that the “blunt instrument” of a PVC avoidance credit could steer projects towards building materials that have greater environmental and human health impacts

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<sup>13</sup> See Health Canada, Wood Smoke, <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/environ/wood-bois-eng.php>.

over their life cycles. Thus, alternatives should only be rewarded if they are “demonstrably better” than the avoided PVC building materials. The LSC concluded as a matter of policy that these prudent steps be taken to ensure that an innovation credit for avoiding PVC applicable only to a single project was justified. USGBC now disregards this reasonable policy determination by proposing a PVC avoidance credit applicable to all projects without any of these reasonable safeguards.

USGBC has conducted no alternatives assessment regarding PVC building materials and alternative materials that will be preferred by this credit. It has not developed a new LCA methodology that better accounts for the purported human health impacts of PVC building materials, nor has it cited any new research to indicate that these impacts are greater than they were understood in 2007 when the PVC Report was issued and the LSC issued its PVC Policy. The only thing that has changed since 2007 apparently is the opinion of USGBC’s credit-writing staff without a sound scientific justification to support that changed opinion. Indeed, there is ample evidence that PVC building materials – including the vinyl flooring products manufactured by RFCI’s members—compare very favorably to, and indeed in many cases are superior to, alternative products on both environmental and human health metrics over the course of their life cycle.

### **3. Life Cycle Assessments, Which USGBC Have Endorsed And Adequately Considers Human Health Impacts, Demonstrate That Vinyl Flooring Has Less Impacts Than Competing Alternatives**

RFCI recognizes that some commenters have quibbled with the use of life cycle assessment for material use decisions in LEED, stating that these assessments do not adequately capture human health impacts. The PVC Report also questioned whether life cycle assessment methodologies in use at the time the report was drafted adequately accounted for human health concerns. For this reason, the PVC Task Group suggested that USGBC supplement life cycle analyses with risk assessment principles when evaluating potential materials decisions. The LSC took this advice and turned it into a policy recommendation that USGBC work towards developing better life cycle assessment methodologies that accurately included and weighted human health impacts. The LSC acted on this policy determination by establishing a life cycle assessment working group on February 7, 2007 and by advising its technical advisory groups to use this tool to improve their approach to environmental and human health issues.<sup>14</sup>

To our knowledge, USGBC has not developed a new life cycle assessment methodology that focuses on human health impacts. It has, however, adopted an authoritative LCA methodology and weighting system developed by the U.S. National Institute for Standards and Technology—the Building for Environmental and Economic Sustainability (BEES) methodology—for use in LEED. See e.g., USGBC, LEED 2009 for New Construction and Major Renovations xii. The BEES methodology uses varying weightings for 13 different impact categories (e.g. global warming potential, indoor air quality, human health). BEES allows users to manually adjust the weightings when running an LCA analysis or use one of three preset weightings (Equal Weights, EPA Science Advisory Board-based, or BEES Stakeholder Panel). USGBC specifically utilizes the Stakeholder Panel weighting, which places a significant emphasis on human health impacts.<sup>15</sup> Thus, the current version of BEES (BEES Online) using

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<sup>14</sup> LSC Minutes (Feb. 7, 2007), available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=2455>.

<sup>15</sup> The BEES Stakeholder Panel LCA weighs human toxicity impacts as 13% of the total while the EPA BEES LCA weighs these impacts as 11% of the total and the Equal Weight LCA weighs then 8%.

the USGBC-approved Stakeholder Panel weightings represents USGBC’s best efforts to address the perceived shortcomings of LCA identified by the PVC Task Group and some commenters.<sup>16</sup>

We have stated this in previous comments but it bears repeating: The BEES LCA shows that vinyl composite tile (VCT) has the least environmental and health impact of 13 generic flooring categories evaluated, including linoleum and ceramic tile with recycled glass. BEES’ LCA environmental performance results are expressed in units corresponding to the products’ contribution to annual per capita U.S. environmental impacts.<sup>17</sup> 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. The aggregate score for “Generic Vinyl Composition Tile” (i.e. VCT) is 0.0022. The next lowest score is “Generic Linoleum Flooring” at 0.0032 and the highest is “Generic Wool Carpet Broadloom” at 0.1243. The BEES Stakeholder Weighting results are presented in full in Attachment B. 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, which is linoleum). See Attachment C.

The LSC’s PVC Policy specified that project-specific innovation credits should not be awarded unless the applicant demonstrated, based on a robust and transparent alternatives analysis, that the selected alternatives were demonstrably better than avoided PVC building materials. With Option 2, USGBC does not hold itself to the standard the LSC set for innovation credit applicants. USGBC has developed no new data or LCA methodology demonstrating that non-PVC alternatives are preferable to PVC products. To the contrary, the authoritative LCA methodology and weighting system USGBC has adopted for use in LEED shows that PVC building materials compare very favorably to alternatives on environmental and human health metrics and in many cases are superior. Nevertheless, USGBC spurns these results—not to mention the findings of the PVC Task Group and the LSC’s PVC Policy—to continue to propose a baseless PVC avoidance credit for LEED v4.

#### **4. Option 2 Contravenes The Essential Risk Assessment Principles Recognized By USGBC’s LEED Steering Committee Because It Simply Uses Pass-Fail Screening Based On Hazard**

Federal and state regulatory decisions in the United States about product safety are almost universally based on sound risk assessment principles. At least on paper, this is USGBC’s policy as well. The PVC Task Group recommended that the LSC supplement its LCA-based materials decisions with “risk assessment to address critical environmental and human health issues explicitly and more systematically.” PVC Report at 11. The LSC adopted this recommendation. In the PVC Policy, its second general policy recommendation was to “[e]xpand the use of Risk Assessment in LEED.” PVC Policy at 2. It further stated, “The LSC recognizes that risk assessment is a powerful tool for analyzing human health concerns from building occupant, occupational, and community exposures, and provides more robust results than simple pass-fail screening tools.” *Id.* (emphasis added). Option 2 could not be a

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<sup>16</sup> While it is unknown whether USGBC participated directly in the development of these stakeholder weightings because the panel members are not identified, it is clear that the organization’s interests were present. The consulting firm of the chairman of USGBC’s Materials and Resources Technical Advisory Group provided technical support for the development of the Stakeholder Panel weighting. See NIST, BEES 4.0 Technical Manual and User Guide vi, available at <http://www.fire.nist.gov/bfrlpubs/build07/PDF/b07018.pdf>.

<sup>17</sup> NIST, Interpreting BEES Environmental Performance Scores: A Primer, available at <http://ws680.nist.gov/Bees/Help.aspx>.

further departure from this sound scientific policy because it is a simple pass-fail screening tool based on hazard that incorporates no risk assessment principles.

The simplified formula for determining risk is hazard plus exposure. That is, the use of a product does not pose a risk unless it contains a human health hazard and there is a likelihood that persons will be exposed to that hazard at levels sufficient to cause harm. Risk assessment principles allow the reasonable and scientific differentiation between those hazards that should be avoided or minimized and those that are not cause for concern. As the LSC recognized in its PVC Policy, the benefit of risk assessment is self-evident.

Manufacturers of PVC products, including resilient flooring, have advocated for years that our products should be judged on the basis of risk assessment (in concert with LCA) which has been the near-universal regulatory basis for evaluating the health and safety of products in the United States at both the federal and state levels. PVC products have been in use for decades and are some of the most widely studied products on the market. As we have discussed with USGBC in the past, numerous studies have found that exposure to phthalates in vinyl flooring through oral, dermal, and respiratory exposure routes is negligible to nonexistent. Under reasonable risk assessment principles, there is no human health justification for the deselection of vinyl flooring attributable to its use phase (or, as will be discussed in the next section, its end-of-life phase). No federal, state, or local government agency has banned or even restricted the use of vinyl flooring using risk assessment principles based on their PVC or phthalate content.

## **5. The PVC Material Avoidance Credit Misapplies The Precautionary Principle Recognized BY USGBC**

It is our understanding that USGBC's response to our request that it adhere to its own risk assessment policy is that the PVC material avoidance decision is guided by the precautionary principle. In fact the PVC Policy did recommend that USGBC endorse the precautionary principle and the organization expressly did so again in its 2013-2015 Strategic Plan.<sup>18</sup> We seriously question whether the precautionary principle should be used as the basis for making quasi-regulatory materials decisions in LEED, just as federal and state agencies have rejected the use of the precautionary principle for regulatory actions. Nevertheless, even if the precautionary principle were a valid basis for LEED decision making, the unsound material avoidance credit in Option 2 represents a gross misapplication of this concept.

It is important to recognize exactly what the precautionary principle is and why the LSC elected to adopt it. The closest thing to a consensus definition of the precautionary principle comes from the 1998 Johnson Foundation Wingspread Conference on the Precautionary Principle. The conferees agreed on the following definition: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." Statement of Wingspread Conference on the Precautionary Principle (Jan. 26, 1998).<sup>19</sup> As the LSC recognized, the precautionary principle should not be used to create a "simple yes/no test but as a process for identifying areas where particular care is warranted." PVC Policy at 2. Indeed, the LSC determined that the precautionary principle should be used in conjunction with risk assessment, presumably to determine cases in which risk assessment principles should be brought to bear to more carefully evaluate materials. This position is consistent with the Wingspread conference explanation of how the precautionary principle should work in practice. They stated: "The process of

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<sup>18</sup> Available at <http://new.usgbc.org/sites/default/files/usgbc-strategic-plan-2013-2015.pdf>.

<sup>19</sup> Available at <http://www.sehn.org/wing.html>.

applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.”<sup>20</sup>

A faithful application of the precautionary principle, as the LSC recognized in 2007, does not justify the creation of this single-attribute hazard-based material avoidance credit. If LEED credit writers believe that the precautionary principle dictates that action be taken with respect to PVC and phthalates, there are proper steps to be taken. As the Wingspread conferees outlined, application of the precautionary principle should trigger an open and informed process that includes the affected parties (i.e. the vinyl industry) and examines the full range of alternatives. The PVC Policy dictates that this process include a robust application of risk assessment principles to evaluate whether the purported hazards of PVC building materials actually present a human health or environmental risk. It also entails conducting a comprehensive alternatives assessment. Since the PVC Report was released, RFCI and other organizations with an interest in PVC have repeatedly offered to work with USGBC to fill the data gaps in the PVC Report and to more fully evaluate the relative human health and environmental attributes of PVC building materials and their alternatives. USGBC has not been responsive to our efforts.<sup>21</sup> Thus, USGBC has not even followed its own policy regarding the proper application of the Precautionary Principle and in proposing the risk assessment PVC material avoidance credit in Option 2. Thus, it should be withdrawn.

#### **6. The End-of-Life Dioxin Justification for Option 2 Is Scientifically Inadequate And Is Not Based On Data Needed To Fulfill Significant Data Gaps Identified By The PVC Task Group**

In its response to comments on the Fifth Draft of LEED v4, USGBC provided only one purported health-based rationale for PVC avoidance in Option 2: “USGBC’s TSAC study on PVC found that dioxin emissions put PVC ‘consistently among the worst materials for health impacts.’” 5th PC Comments with Responses, at row 499. This quotation is taken out of context and is misleading. The full quote is:

When we add end-of-life with accidental landfill fires and backyard burning, the additional risk of dioxin emissions puts PVC consistently among the worst materials studied for human health impacts, unless the end-of-life emissions from landfill fires and backyard burning are near the lower end of the wide range of uncertainty about these emissions.

PVC Report at 10 (emphasis added).

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<sup>20</sup> The E.U. uses a similar definition of the precautionary principle. Under this definition, precautionary measures may be taken following “the fullest possible scientific evaluation,” “a risk evaluation,” and “the participation of all interested parties.” European Comm’n, Precautionary Principle, available at [http://europa.eu/legislation\\_summaries/consumers/consumer\\_safety/l32042\\_en.htm](http://europa.eu/legislation_summaries/consumers/consumer_safety/l32042_en.htm).

<sup>21</sup> RFCI reached out to USGBC following the issuance of the final PVC Report and the response was encouraging—at least initially. On May 30, 2007, representatives from RFCI met with USGBC officials Michelle Moore, Tom Hicks, Dan Slone, Scot Horst, and Malcolm Lewis (with the latter two participating by phone) in Washington D.C. to discuss the PVC Report’s conclusions. At the meeting, we stated that RFCI had retained two consultants (JoAnn Shatkin of Cadmus Group and Anne Greig of Four Elements LLC) to review the human health, risk assessment, and LCA findings in the report. USGBC agreed to provide information to facilitate the review and expressed interest in receiving the final report. The final report reviewing the PVC Report’s findings was provided to USGBC on October 7, 2008, along with a sincere offer to continue to work with USGBC to more fully address the human health and environmental attributes of PVC building materials. USGBC never accepted RFCI’s offer which remains outstanding.

As the full quotation demonstrates, the PVC Task Force’s concern about dioxin emissions from PVC products over their life cycle occurs only if estimates of end-of-life dioxin emissions from landfill fires and backyard burning are toward the upper end of the estimated range of uncertainty. The PVC Task Group stated that this wide range of uncertainty represented a significant data gap that should be addressed. The LSC reacted to this finding with three policy recommendations: (1) conduct additional research into the “frequency, nature, and impact of such fires”; (2) initiate an advocacy effort to prevent such fires; and (3) use LEED to create incentives for industry to divert PVC building materials from going to landfills and prevent end-of-life fires. PVC Policy at 2–3. To our knowledge, none of these policy recommendations have been acted upon.

A fair evaluation of the available scientific evidence, supplemented by new regulations, changed industry operations, and increased PVC recycling rates since 2007 demonstrate that the risk of dioxin emissions from the PVC building material life cycle is near or below the bottom end of the range found by the PVC Task Group. Thus, this concern does not justify the PVC material avoidance credit in Option 2.

It is important to recognize at the outset that the dioxin ranges found by the Task Group are questionable at best. First, as detailed in a report submitted to USGBC by the Vinyl Institute on May 1, 2007, the landfill fire incidents and dioxin emissions rates estimates used by the PVC Task Group appear to have been overstated by a factor of 100.<sup>22</sup> This report is attached for reference as Attachment D. Correcting these data errors would dramatically reduce the harm attributed to PVC’s end-of-life phase relative to its alternatives.

Second, as explained in previous RFCI comments, the composition of vinyl flooring actually inhibits the formation of dioxins from the combustion of the PVC component of the flooring.<sup>23</sup> Limestone constitutes about 84% of VCT and 50% of commercial sheet vinyl by weight and is primarily composed of various crystal forms of calcium carbonate (CaCO<sub>3</sub>). Calcium carbonate inhibits the release of hydrogen chloride (HCl) from burning PVC and, in fact, has been used to reduce dioxin formation in incineration. As an alkaline material, calcium carbonate reacts with (scavenges) the acidic HCl that is otherwise released when PVC is burned. The end product of this reaction is calcium chloride, a nonhazardous salt. Thus, the dioxin formation potential of burning vinyl flooring is less than the potential for non-limestone PVC products and needs to be adequately considered in the dioxin risk evaluation of vinyl flooring. It does not appear that the PVC Task Group took the composition of PVC building materials into account when it considered the amount of dioxins formed during the combustion of PVC. These omissions resulted in the PVC Task Group’s overestimation of the range of dioxin emissions attributable to PVC building materials, and vinyl flooring in particular. If these two methodological errors were corrected, it would become clear that the dioxin emissions attributable to PVC building materials are at or below bottom end of the range outlined in the PVC Report, meaning that the human health impacts of PVC building materials are not “among the worst materials studied for human health impacts.”

Third, the trend in total domestic dioxin emissions over the past 25 years has been a dramatic and progressive reduction. The most comprehensive and up-to-date data on domestic dioxin releases is found in a 2006 EPA report entitled, “An Inventory of Sources and Environmental Release of Dioxin-Like

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<sup>22</sup> Letter from Dr. Richard S. Magee, Center for Environmental Systems, to Frank Borrelli, Vinyl Institute (Apr. 9, 2007).

<sup>23</sup> Comments of RFCI on the LEED 2012 MR Credit: Avoidance of Chemicals of Concern 9–11 (March 27, 2012).

Compounds in the United States for the Years 1987, 1995, and 2000.” EPA/600/P-03/002F at 6-12 (Nov. 2006). The report tallied total domestic dioxin releases for 1987, 1995, and 2000. Notwithstanding that PVC production approximately tripled over that time period, the levels of total domestic dioxin releases fell from 13,965 grams in 1987 to 1,422 grams in 2000. *Id.* at xlvi.

Fourth, this declining dioxin emission trend will continue because of regulatory and industry changes, including increased recycling of PVC products in the past six-seven years since the 2007 PVC Task Force Report and the 2006 EPA report. Regarding dioxin emissions from the PVC manufacturing phase, on April 17, 2012, the Environmental Protection Agency (EPA) issued National Emissions Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production (NESHAP), 76 Fed. Reg. 22,848 (to be codified at 40 C.F.R. pt. 63). This updated NESHAP sets maximum achievable control technology-based standards for new and existing PVC resin production facilities, which establish more stringent dioxin emissions standards than currently exist for these facilities. Thus, dioxin emissions from PVC resin facilities will be reduced.

Similarly, EPA issued revised air emissions standards for several classes of incinerators over the past years which include greater restrictions on dioxin emissions. *See* 78 Fed. Reg. 9112 (Feb. 7, 2013) (commercial and industrial solid waste incinerators); 72 Fed. Reg. 13,016 (March 20, 2007) (large municipal waste combustors). These revised emissions standards will have a positive impact on the dioxin emissions attributable to PVC building materials in municipal solid waste and construction and demolition debris waste streams.

In addition, state and federal regulators have become increasingly active in reducing the incidence of backyard burning. A number of state and local jurisdictions ban this practice. For example, in the past year at least two states enacted permanent state-wide bans on the open burning of trash (Michigan and Hawaii). *See* Mich. Comp. Laws § 324.11522; Hawaii Code R. § 11-60.1-51. Statistics bear out a decrease in backyard burning as well. According to the National Fire Protection Association data drawn from fire department responses, the number of “outside rubbish fires” decreased 13% from 2007 to 2011.<sup>24</sup>

Regarding landfill fires, a comprehensive study shows that they “are relatively rare occurrences in comparison with other activities that contribute dioxins to the environment.” CPVC Final EIR, 2.0 Comments and Responses at 201. Despite their infrequent occurrence, a number of state and local regulators are devoting increased attention to preventing them. For example, the Ohio Environmental Protection Agency has increased its monitoring and enforcement of landfills.<sup>25</sup> The agency has developed robust best management practices for fire prevention, investigation, and response at solid waste and construction and debris landfills to reduce the risk of landfill fires.<sup>26</sup> California also recently issued landfill fire guidance to address this issue.<sup>27</sup> In another recent high-profile example, EPA issued a \$1.1

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<sup>24</sup> *Compare* Marty Ahrens, Trends and Patterns of U.S. Fire Losses, at tbl. 2 (Aug. 2008), [available at http://www.nfpa.org/assets/files/PDF/FireLossabstract.pdf](http://www.nfpa.org/assets/files/PDF/FireLossabstract.pdf), with Marty Ahrens, Trends and Patterns of U.S. Fire Losses in 2011, at tbl. 2 (Jan. 2013), [available at http://www.nfpa.org/assets/files/PDF/OS.Trends.pdf](http://www.nfpa.org/assets/files/PDF/OS.Trends.pdf).

<sup>25</sup> *See* Spencer Hunt, Underground Fires at Landfills Worry State EPA, Columbus Times Dispatch (May 11, 2010), [available at http://www.dispatch.com/content/stories/local/2010/05/10/a-burning-problem-at-landfills.html](http://www.dispatch.com/content/stories/local/2010/05/10/a-burning-problem-at-landfills.html).

<sup>26</sup> Ohio Env'tl. Protection Agency, Subsurface Heating Events at Solid Waste and Construction and Demolition Debris Landfills: Best Management Practices (Oct. 14, 2011), [available at http://www.epa.ohio.gov/portals/34/document/guidance/subsurface%20heating%20events.1009.pdf](http://www.epa.ohio.gov/portals/34/document/guidance/subsurface%20heating%20events.1009.pdf).

<sup>27</sup> *See* CalRecycle, Landfill Guidance Document (Jan. 25, 2013), [available at http://www.calrecycle.ca.gov/SWFacilities/Fires/LFFiresGuide/default.htm](http://www.calrecycle.ca.gov/SWFacilities/Fires/LFFiresGuide/default.htm).

million penalty to a landfill operator in Hawaii for creating an increased fire risk by failing to properly control gas buildup and temperatures within the landfill as required by federal regulations.<sup>28</sup>

Fifth, the vinyl flooring industry has been taking significant steps to reduce the amount of old vinyl flooring and other PVC material that is disposed of in landfills. Vinyl flooring manufacturers have been using increasing amounts of post-consumer recycled PVC content in their products. A number of vinyl flooring products on the market now contain in excess of 50% post-consumer recycled PVC content. This practice diverts from landfills the recycled PVC source materials used in the recycled vinyl flooring products (e.g. PVC film, old vinyl flooring). Furthermore, vinyl flooring with limestone filler typically is recyclable at the end of its useful life. In the past few years, a number of RFCI members have commenced programs to take back and recycle used vinyl flooring. These programs have resulted in millions of pounds of used vinyl flooring being diverted from landfills. By using increasing amounts of recycled PVC content and providing ways for consumers to recycle their used vinyl flooring, the resilient flooring industry actions have reduced the amount of PVC in landfills available to form dioxins in the event of fires.

Thus, USGBC's dioxin emission rationale for the PVC material avoidance credit in Option 2 is fundamentally flawed and deficient because: (1) it has not filled the significant data gap about the amount of the end-of-life dioxin emissions identified by the PVC Task Force; (2) the data used by the PVC Task Group overestimated the incidence of landfill fires and did not account for the fact that the limestone content of vinyl flooring inhibits the formation of dioxins when vinyl flooring is burned; (3) changes in regulatory and industry actions since 2007 will result in a reduction of dioxin emissions from PVC building products during both their production and end-of-life phases; and (4) industry recycling programs that are underway and increasing will divert millions of pounds of old PVC products from landfills. With correct data and assumptions, the dioxin emissions attributable to PVC building materials will be near—or more likely far below—the bottom end of the range found by the PVC Task Group. Accordingly, there is no basis for USGBC justifying the PVC material avoidance credit, particularly for vinyl flooring, based on dioxin emission concerns.

**B. The Three Specified Red Lists Should Not Be Incorporated Into Option 2 Because They Do Not Have A Sufficient Track Record Of Use, Lack Adequate Third Party Verification Infrastructure, And Are based On Hazard Instead of Risk**

The LSC was clear in the PVC Policy that there is no room in LEED for “simple[] pass-fail screening systems” that do not consider risk. PVC Policy at 2. Yet, Option 2 includes three: GreenScreen, Cradle to Cradle, and the REACH SVHC list. In the name of the empty buzzphrase “material optimization,” USGBC piggybacks on these three systems to avoid going through the necessary steps outlined in the PVC Report to determine if a proposed PVC avoidance credit is scientifically justified and narrowly tailored. This simple red list-based approach to materials decisions is wrong on its face. In each case, a product will be disqualified from earning this credit simply because it contains a disfavored chemical (irrespective of exposure). However, USGBC compounds this problem by selecting three red lists that are, for varying reasons, highly inappropriate systems for use in a green building standard that claims to be scientifically grounded and consensus-based.

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<sup>28</sup> See EPA, press release, EPA reaches agreement over Waimanalo Gulch Landfill fire threat / \$1.1 million penalty for Clean Air Act violations (Feb. 28, 2013), [available at http://yosemite.epa.gov/opa/admpress.nsf/0/78DD2C0DBD481E7685257B20006F9325](http://yosemite.epa.gov/opa/admpress.nsf/0/78DD2C0DBD481E7685257B20006F9325).

## 1. Red List 1: GreenScreen

Clean Production Action's fledgling GreenScreen program should not be included in LEED. It is an incomplete and non-consensus-based program that lacks any real track record. GreenScreen is overly complicated and relies solely on the hazard categorization of a product's chemical ingredients, without any consideration of risk or LCA. To determine a chemical ingredient's hazard rating on a scale of Benchmark 1— Avoid to Benchmark 4 — Prefer, GreenScreen incorporates a dizzying array of red lists from governmental and non-governmental sources from all over the world. This system is neither appropriate nor sufficiently mature to be incorporated into LEED for any purpose, and most definitely not as a red list for a material avoidance credit.

The GreenScreen compliance alternative has been amended since the Fifth Draft, but not for the better. For a product to contribute toward this compliance alternative, all of its chemical ingredients must be inventoried to a de micromis concentration of .01% (100 ppm) and none of these ingredients can be classified as "Benchmark 1 Chemicals." Products will be credited at 100% of their cost if all of their ingredients have been assessed using GreenScreen's List Translator. If all ingredients have undergone a full GreenScreen Assessment, then the product will be valued at 150% of its cost. In either event, the Benchmark 1 hazard test is employed in Option 2 as a simple pass/fail red list. If a product contains any chemicals designated Benchmark 1, it is ineligible for credit under this compliance alternative.

There are many reasons why the GreenScreen Benchmarks should not be used in Option 2 or any other LEED v4 credit. First, as we detailed in our December 10, 2012 comments, the three co-directors of GreenScreen's developer, Clean Production Action, have an obvious and long-standing anti-PVC bias.<sup>29</sup> This is hardly an unbiased organization that uses a balance of interests, consensus-based decision making process in arriving at its Benchmark methodology.

Second, the program is still under development and is untested. Out of the thousands of chemicals covered by the lists used in GreenScreen, it is our understanding that only a few hundred "draft" assessments have been performed in accordance with the GreenScreen for Safer Chemicals v 1.2 Guidance for Hazard Assessment and Benchmarking Chemicals—which itself is only a discussion draft.<sup>30</sup> These assessments are required for every chemical ingredient in a product above a .01% (100 ppm) concentration for it to achieve the higher 150% cost value under this alternative. To our knowledge, no assessments have been validated and finalized because the validation system is still being pilot tested. Moreover, at this time, there are only two authorized "Qualified GreenScreen Profilers" who are available to conduct or validate the hundreds, if not thousands, of chemical assessments that they may be called upon to conduct if this credit is finalized.<sup>31</sup> Without sufficient time to mature and adequate pilot testing, it is questionable whether GreenScreen can be a functioning component of a LEED credit.

Third, and most importantly, the GreenScreen methodology's sole function is to classify the potential hazard of chemicals.<sup>32</sup> Hazard is a grossly imprecise metric to use as the basis for real world

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<sup>29</sup> See e.g., Clean Production Action, Staff, <http://www.cleanproduction.org/About.Staff.php>; Lauren Heine, Plastics and the Environment: Environmental Issues and Current Controversies, available at [http://www.zerowaste.org/publications/06m\\_plastics\\_101.pdf](http://www.zerowaste.org/publications/06m_plastics_101.pdf); Letter to H. Lee Scott, Jr., CEO of Walmart, Aug. 21, 2007, available at [http://www.organicconsumers.org/articles/article\\_6765.cfm](http://www.organicconsumers.org/articles/article_6765.cfm).

<sup>30</sup> Available at [http://www.cleanproduction.org/library/greenScreenv1-2/DRAFT\\_GreenScreen\\_v1-2\\_Guidance\\_2011\\_1018\\_v2.pdf](http://www.cleanproduction.org/library/greenScreenv1-2/DRAFT_GreenScreen_v1-2_Guidance_2011_1018_v2.pdf).

<sup>31</sup> See Clean Production Action, GreenScreen Supporting Resources, <http://cleanproduction.org/Greenscreen.Services.php>.

<sup>32</sup> Clean Production Action, Uses and Applications, <http://cleanproduction.org/Greenscreen.Applications.php>.

material avoidance decisions. The assessment completely avoids any type of human health or environmental risk assessment of a chemical and its uses in building products; thereby disregarding exposure scenarios in the evaluation of the risk posed by a product. A review of the GreenScreen methodology reveals that its crude hazard-based methodology is simply not appropriate for use in LEED.

According to GreenScreen's guidance materials (which are still in draft form), the first step in evaluating a product under either the List Translator or Assessment procedures is to inventory all intentionally added chemical components down to a .01% (100 ppm) concentration.<sup>33</sup> If "feasible and relevant," GreenScreen also requires the analysis of the "transformation components" of each ingredient. Transformation components include changes to the ingredient that will result from processes including biodegradation, hydrolysis, photolysis, oxidation, and combustion.

The next step is to determine the Benchmark score for each chemical ingredient (including its transformation components). At this step it becomes clear that, at its core, GreenScreen is a simple red list of red lists. The foundation of the Benchmark analysis is the "GreenScreen for Safer Chemicals Version 1.2 Specified Lists" and "GreenScreen List Translator" (collectively, List Translator).<sup>34</sup> There are over 100 distinct lists from several dozen sources included on the List Translator. By our count, the raw sum of chemicals (i.e. including chemicals that appear on multiple lists) on the various Benchmark 1 lists is 18,652. It is difficult to conceive of a building material that could completely avoid Benchmark 1 chemicals. For example, wood produces carbon dioxide and rubber releases isoprene when burned. Portland cement (and therefore most concretes) cannot be made without cement kiln dust and stainless steel requires chromium. All of these substances are Benchmark 1.

Under the List Translator approach, every chemical ingredient in a product above 100 ppm and any relevant transformation components would have to be cross-referenced against these lists for 18 hazard end points (e.g. carcinogenicity, reproductive toxicity, flammability). If a chemical appears on any of the Benchmark 1 lists, that chemical is deemed a Benchmark 1 hazard. The product containing that chemical as an ingredient (or transformation component of an ingredient) therefore becomes ineligible to receive credit under the GreenScreen List Translator compliance alternative.

For a product to contribute towards earning the credit at 150% of its value, each of its ingredients (above .1%, 1,000 ppm) would have to undergo a full GreenScreen Assessment. For this assessment, a chemical is evaluated against the List Translator lists and available study data across all 18 of the identified hazard endpoints. A detailed report must be prepared outlining the findings of the analysis, which considers only hazard and data gaps; risk assessment plays no role in this evaluation. The report must be prepared by or approved by a "Qualified GreenScreen Profiler." At present, there are only two Profilers. A GreenScreen Assessment must be designated as a draft until it has been validated by one of the Profilers. The details of the process are not finalized, however, because the validation program is currently being pilot tested.<sup>35</sup>

Although we are not aware of any GreenScreen Assessment of PVC, it is obvious that PVC would be categorized as a Benchmark 1 material. Clean Production Action has posted a "Plastics Scorecard" on the front page of its website that grades various plastics on a scale of A to F.<sup>36</sup> PVC is the

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<sup>33</sup> See Clean Production Action, *The GreenScreen for Safer Chemicals v 1.2 Guidance for Hazard Assessment and Benchmarking Chemicals* (DRAFT, Oct. 18, 2011), available at [http://www.cleanproduction.org/library/greenscreenv1-2/DRAFT GreenScreen v1-2 Guidance 2011 1018 v2.pdf](http://www.cleanproduction.org/library/greenscreenv1-2/DRAFT%20GreenScreen%20v1-2%20Guidance%202011%201018%20v2.pdf).

<sup>34</sup> Available at <http://www.cleanproduction.org/library/greenscreen-translator-benchmark1-possible%20benchmark1.pdf>.

<sup>35</sup> See Clean Production Action, *GreenScreen Supporting Resources*, <http://cleanproduction.org/Greenscreen.Services.php>.

<sup>36</sup> Clean Production Action, *Beta Scorecards for Plastic Materials*, <http://www.cleanproduction.org/Scorecard.Grades.php>.

only plastic that is given an F grade. PVC is portrayed as being in a hazard class by itself, with the next worst plastic on the scale, polylactic acid, posting a passing C+ grade. The failing grade is primarily attributable to the observation that the combustion of PVC can form dioxins and furans.<sup>37</sup> Thus, we assume that PVC would be classified as a Benchmark 1 chemical if an assessment were performed due to the designation of dioxins as a relevant transformation component of PVC. Certain phthalates would be considered Benchmark 1 chemicals as well because they are listed as SVHCs under REACH and reproductive toxins under Proposition 65. Thus, any building product containing these chemicals, including vinyl flooring products, would be ineligible for Option 2 of the Proposed Material Ingredients credit.

GreenScreen should be removed from the draft of LEED v4. The system is not sufficiently established or reliable. At best, it should be subjected to lengthy pilot testing to determine if it is a viable standard. Even if it were proven to be a functional standard, however, it should not be employed as a red list. The Benchmark 1 list is crudely overinclusive as it is likely to include hundreds or thousands of chemicals that present no harm when used in building materials. Thus, the use of GreenScreen as a red list will result in the deselection of scores of perfectly safe building materials, including vinyl flooring. Unless and until Clean Production Action incorporates suitable risk assessment and LCA principles into GreenScreen, it cannot serve as a justifiable basis for materials preference and avoidance decisions in LEED.

## **2. Red List 2: Cradle to Cradle**

Cradle to Cradle is wholly inappropriate for use under the LEED green building rating system for many reasons. This non-consensus-based system refuses to evaluate any product that contains an ingredient above a .1% (1,000 ppm) concentration found on a “Banned List” of disfavored chemicals. This fact alone should disqualify Cradle to Cradle from consideration in LEED because it uses crude hazard screening to disqualify products rather than risk assessment. Moreover, we have serious concerns about the propriety of incorporating this proprietary certification system into LEED.

To contribute towards earning credit under this compliance alternative of Option 2, a product must be certified Cradle to Cradle v3 Silver or v2 Gold (valued at 100% of cost) or Cradle to Cradle v3 Gold or Platinum or v2 Platinum (valued at 150% of cost). As with GreenScreen, Cradle to Cradle certification is being employed in Option 2 as a red list. Materials such as PVC building materials cannot earn Cradle to Cradle certification and therefore are categorically excluded from earning credit under this compliance alternative without consideration of their human health and environmental attributes.

The development and management of Cradle to Cradle should give USGBC pause about incorporating the system into LEED. The Cradle to Cradle standard was developed independently by a U.S. consulting firm, McDonough Braungart Design Chemistry, LLC (MBDC), in conjunction with a German firm, EPEA Internationale Umweltforschung GmbH.<sup>38</sup> The founding principal of MBDC, William McDonough, is a charter member of USGBC<sup>39</sup> who has maintained close ties with the organization, such as being a keynote speaker at this year’s Greenbuild conference.<sup>40</sup> The standard is currently overseen by the Cradle to Cradle Products Innovation Institute. For many years prior to the formation of the non-profit Institute, however, Cradle to Cradle certification was a proprietary service

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<sup>37</sup> Clean Production Action, PVC, <http://www.cleanproduction.org/library/PVC.pdf>.

<sup>38</sup> Cradle to Cradle, Product Certification, [http://c2ccertified.org/product\\_certification](http://c2ccertified.org/product_certification).

<sup>39</sup> William A. McDonough, Portfolio, [http://www.mcdonough.com/pdf/William\\_McDonough\\_Portfolio.pdf](http://www.mcdonough.com/pdf/William_McDonough_Portfolio.pdf).

<sup>40</sup> Greenbuild, Closing Plenary, <http://www.greenbuildexpo.org/speakers/closing-plenary.aspx>.

offered by MBDC and EPEA in the course of their business activities.<sup>41</sup> They created the Institute in 2009 and licensed the Cradle to Cradle mark to it.<sup>42</sup> The Institute is constituted as an independent non-profit entity, but manufacturers must undergo a very expensive certification process overseen by an “Accredited Assessor” to use the Cradle to Cradle label. The Institute estimates that product assessment fees will range from \$5,500 - \$75,000.<sup>43</sup> Once issued, these certifications are valid only for one year, and an Accredited Assessor must reevaluate the product and recommend that it be recertified.<sup>44</sup> There are only two Accredited Assessors in the U.S. available to handle all of this lucrative work—ToxServices LLC (who also happens to be one of two GreenScreen Profilers) and, unsurprisingly, MBDC.<sup>45</sup>

This does not appear to be the first USGBC effort to find a place in LEED for Cradle to Cradle. USGBC staff met with MBDC in 2007 and there was consideration given to whether innovation credits should be given for the use of Cradle to Cradle certified products. On February 7, 2007, a motion passed in the LSC to consider further exploration of a relationship between USGBC and MBDC.<sup>46</sup> However, the motion included a note of caution: “LSC has concerns about the use in LEED of non-transparent proprietary certification systems.” Notwithstanding that the Cradle to Cradle Products Innovation Institute oversees the standard on paper, it appears to remain a de facto proprietary standard of MBDC. This firm created Cradle to Cradle and the Institute that oversees it (which holds only a license to the standard). Because MBDC—whose principal is a USGBC insider—is one of only two U.S.-based assessors, it stands to benefit greatly from the wider use of Cradle to Cradle that undoubtedly will flow from its incorporation into LEED. Particularly because of the apparent close connection between USGBC and MBDC, USGBC should avoid taking an action that has any appearance of impropriety. Accordingly, USGBC should heed the concerns of the LSC in 2007 and not incorporate this non-transparent proprietary standard into LEED. At the very least, USGBC should critically examine the relationship between itself and MBDC and report its finding to the USGBC membership before holding a vote on including Cradle to Cradle in LEED v4.

Moreover, based on its closed and non-consensus development process, Cradle to Cradle does not merit inclusion in LEED in any fashion, and certainly not as the basis for a material avoidance credit. No consensus-based process—or any accepted standards-development process—was employed in the development of the Cradle to Cradle standard. This total lack of an unbiased, objective, and transparent development and certification process is demonstrated in the first instance by the requirements listed for products to be eligible to apply for Cradle to Cradle certification. The standard lists highly subjective and unexplained categories of products that it will refuse to certify.<sup>47</sup> It will not certify, for example, any products that in the Institute’s estimation have “apparent safety concerns related to chemical or physical characteristics,” or “ethical issues.” The most inexplicable product exclusion applies to any products “that may be contrary to the intent of the Cradle to Cradle principles.” Similarly, irrespective of the product, companies themselves may be deemed ineligible to seek certification for a number of ill-defined reasons,

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<sup>41</sup> See *id.*

<sup>42</sup> Cradle to Cradle, What is Cradle to Cradle?, [http://c2ccertified.org/about/what\\_is\\_cradle\\_to\\_cradle](http://c2ccertified.org/about/what_is_cradle_to_cradle). Future revisions to the standard will purportedly be conducted “with input” from diverse interests, but how this will work in practice is yet to be seen. Moreover, there is no indication that future revisions will apply any consensus-based principles.

<sup>43</sup> Cradle to Cradle, Frequently Asked Questions, [http://c2ccertified.org/innovation\\_hub/faq](http://c2ccertified.org/innovation_hub/faq).

<sup>44</sup> See *id.*

<sup>45</sup> The only Accredited Assessor outside the U.S. is EPEA.

<sup>46</sup> LSC Minutes (Feb. 7, 2007), available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=2455>.

<sup>47</sup> Cradle to Cradle, Product Eligibility, [http://c2ccertified.org/product\\_certification/product\\_eligibility](http://c2ccertified.org/product_certification/product_eligibility).

including if the Institute determines that they are “involved in rain forest damage” or have a “connection” to weapon production.

The Cradle to Cradle certification criterion that is the greatest cause for concern is Material Health.<sup>48</sup> Cradle to Cradle’s chemical hazard methodology is “strongly based” on the precautionary principle.<sup>49</sup> The standard’s unusual view of this principle results in a peculiar interpretation of risk assessment (i.e. hazard x exposure = risk). The Cradle to Cradle methodology purports to account for risk by identifying a chemical’s hazard endpoint and then assuming that exposure will occur. The stated justification for this assumption is, “Experience has shown that attempts to only minimize exposure in chemical management systems have ultimately failed, as chemicals with intrinsic hazards are exposed to various populations throughout the globe.”<sup>50</sup> In other words, the fact that someone somewhere in the world may be exposed to that chemical through some unrelated source is sufficient grounds to assume that the product being evaluated presents a risk of human exposure. Through this illogical reasoning, Cradle to Cradle claims to consider a product’s risk despite applying no risk assessment principles.

The Material Health criterion outlines a detailed assessment methodology for each chemical constituent of a product.<sup>51</sup> Chemicals are assigned a grade of A, B, C, or X. For the Silver rating under Version 3.0 (the minimum certification level for credit under Option 2), the product can contain no materials with an X rating for cancer, birth defects, genetic damage, or reproductive harm hazard endpoints. For the Platinum rating, which allows a product to be valued at 150% of cost under Option 2, all constituents present in the final product and all process chemicals (even those not present in the finished product) must be free of X-rated chemicals for all endpoints.

While Cradle to Cradle’s material assessment methodology purports to follow a scientific methodology, it completely disregards these principles when it comes to substances on the Banned List.<sup>52</sup> Chemicals on this list do not get the benefit of having the assessment methodology applied to them; they are simply banned outright for all uses. If a product contains any chemical on this list in a concentration above .1%, the product is ineligible to be certified under any level of the Cradle to Cradle standard—irrespective of any risk posed by the product that uses that chemical. Although fewer than three dozen chemicals are included on the list, it includes PVC, which is the key constituent of vinyl flooring, and BBP and DEHP, which are used as plasticizers in some vinyl flooring products. There is no justification given for the materials included on this red list; they merely reflect the whims of MBDC. Thus, irrespective of product risk, no building product containing more than a de minimis amount (1,000 ppm) of PVC (or any other banned or X-rated chemicals) can be eligible to earn credit under Option 2 through Cradle to Cradle certification.

Cradle to Cradle is a proprietary material deselection program based on the subjective and unexplained opinions of two consulting firms, MBDC and EPEA, which was not developed using any consensus-based decision making process. More importantly, Cradle to Cradle functions as a red list to exclude building products such as vinyl flooring from participating in this credit, but it provides no

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<sup>48</sup> Cradle to Cradle, Product Certification – Material Health, [http://c2ccertified.org/product\\_certification/criteria/material\\_health/v3\\_0](http://c2ccertified.org/product_certification/criteria/material_health/v3_0).

<sup>49</sup> Cradle to Cradle, Material Health Assessment Methodology (Version 3.0) at 17, available at [http://c2ccertified.org/images/uploads/C2CCertified\\_Material\\_Health\\_Methodology\\_121112.pdf](http://c2ccertified.org/images/uploads/C2CCertified_Material_Health_Methodology_121112.pdf).

<sup>50</sup> Id.

<sup>51</sup> Cradle to Cradle, Material Health Methodology, [http://c2ccertified.org/images/uploads/C2CCertified\\_Material\\_Health\\_Methodology\\_121112.pdf](http://c2ccertified.org/images/uploads/C2CCertified_Material_Health_Methodology_121112.pdf).

<sup>52</sup> Cradle to Cradle, Banned Lists, [http://c2ccertified.org/images/uploads/C2CCertified\\_Banned\\_Lists\\_V3\\_121113.pdf](http://c2ccertified.org/images/uploads/C2CCertified_Banned_Lists_V3_121113.pdf).

justification for materials on the Cradle to Cradle Banned List, such as PVC. They are simply banned by fiat. USGBC should heed the warning of the LSC in 2007 and not adopt this proprietary certification system for use as a red list in LEED. At the very least, because of close ties between MBDC and USGBC and the significant windfall that will accrue to the firm, USGBC should examine the relationship between USGBC and MBDC and report those findings before any ballot consideration of Cradle to Cradle occurs.

### 3. Red List 3: REACH

Option 2 of the Proposed Material Ingredients Credit contains an “International Alternative Compliance Path” that would allow products to be eligible for the credit if they “do not contain substances that meet REACH criteria for substances of very high concern.”<sup>53</sup> This alternative is intended for use by international projects but we understand that it will be available for projects in the U.S. as well. The misuse of the REACH Substances of Very High Concern (SVHC) list to support a material avoidance credit is unsupportable.

REACH is a sweeping chemical regulatory scheme enacted by the European Commission in 2006. Chemicals that are determined to warrant evaluation for possible use restrictions are placed on the SVHC list (Candidate List). If actual import or manufacturer restrictions are imposed, the chemical is placed on a subset of the SVHC list, the Authorisation List. It is important to note that the inclusion of a substance on the SVHC list (including substances on the Authorisation list) does not mean that the substance cannot be used as an ingredient in products. Authorisation applies only to the chemical itself, not to finished products containing that chemical that are imported into the E.U. A separate REACH provision, called Restriction, can be used to ban the importation of products containing a particular SVHC.

Denmark filed a petition in August 2011 for a Restriction on the use of certain phthalates (BBP, DEHP, DBP, and DIBP) in any product intended for indoor use, including vinyl flooring, on the theory that the effect of combined exposure to these phthalates presented a health risk.<sup>54</sup> Although a final decision has not been formally issued, the two REACH committees tasked with evaluating the basis for this proposal found it to be unjustified. The European Chemicals Agency’s (ECHA) Committee for Risk Assessment issued its findings and recommendations on June 12, 2012. This committee concluded “that the available data does not indicate that there is currently a risk from combined exposure to the four phthalates” and therefore the “proposed restriction is not justified.”<sup>55</sup> The ECHA’s Committee for Socio-economic Analysis issued its findings and recommendation on December 7, 2012. The committee concurred that “there is no basis for a supportive opinion as risk from combined exposure was not

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<sup>53</sup> USGBC, Building product disclosure and optimization - material ingredients, <https://new.usgbc.org/node/2616399?return=/credits/new-construction/v4-draft/material-%26-resources>. We assume this credit applies only to chemicals officially listed as SVHCs and not to some broader universe of substances that potentially would “meet REACH criteria” for listing, as the credit language states. This issue must be clarified, however, because it would be impossible for LEED users to determine with any degree of confidence what substances not presently listed as SVHCs would meet the general and largely subjective REACH criteria for listing. Chemicals proposed to be listed as SVHCs undergo a lengthy multi-faceted review and evaluation process, with final listing decisions subjected to a vote of European Union member states. See REACH Art. 59.

<sup>54</sup> See Danish Environmental Protection Agency, Annex XV Restriction Report; Proposal For A Restriction (Aug. 12, 2011), available at [http://echa.europa.eu/documents/10162/13641/restriction\\_report\\_phthalates\\_en.pdf](http://echa.europa.eu/documents/10162/13641/restriction_report_phthalates_en.pdf).

<sup>55</sup> ECHA, press release, Proposal to restrict four classified phthalates under REACH not justified (June 12, 2012), [available at http://echa.europa.eu/view-article/-/journal\\_content/title/proposal-to-restrict-four-classified-phthalates-under-reach-not-justified](http://echa.europa.eu/view-article/-/journal_content/title/proposal-to-restrict-four-classified-phthalates-under-reach-not-justified).

demonstrated.”<sup>56</sup> Notwithstanding that REACH is expressly predicated on the precautionary principle, REACH Art. 1.3, ECHA authorities applied sound risk assessment principles when evaluating a proposal to ban these SVHCs for use in indoor products, including flooring.

A plasticizer commonly used in vinyl flooring, BBP, is listed as an SVHC under REACH. The REACH compliance path in Option 2 would exclude a flooring product from contributing toward the credit merely because the product contains BBP. In the case of BBP, USGBC has adopted the E.U.’s determination that this material contains a potential hazard but selectively ignores the relevant ECHA authorities’ finding that this hazard does not translate into risk when BBP is used in indoor products. This creates an absurd result: If Option 2 is finalized in its current form, it will be possible for a U.S. manufacturer of vinyl flooring to export flooring products to the European Union in full compliance with REACH even though those products may fail to satisfy Option 2’s REACH compliance option. USGBC is misusing the REACH SVHC list as a red list for material avoidance. The REACH alternative in Option 2 therefore should be withdrawn.

#### **4. Red List 4: To Be Determined**

Option 2 contains a standardless provision that would allow USGBC to subsequently approve any program or products that “comply with building product optimization criteria approved by USGBC.” This provision is fundamentally inconsistent with a consensus-based standard. Consensus, by definition, requires that a standard be developed only by the general agreement of its members with a process to fairly consider and resolve the objections of members who disagree with the action. See Office of Management and Budget, Circular A-119 § 4.a.1.v. (Feb. 10, 1998). This provision contains no opportunity for member comment or approval before the credit is amended. It does not even include standards or criteria by which such a decision will be made or identify which USGBC staff or committees have authority to make such decisions. Thus, this provision removes decision making and approval authority from USGBC’s membership and vests it solely in the hands of USGBC staff.

Furthermore, the “USGBC approved program” provision does not comply with the Foundations of LEED. According to LEED’s foundational document,

Substantive revisions to LEED may go through pilot testing but must undergo public comment and USGBC member ballot. Substantive revisions are considered anything other than simple errors and corrections to LEED.

USGBC, Foundations of LEED § III.3 (June 15, 2010). The addition of a new red list to MR Credit 4 cannot be deemed a “simple error” or “correction.” If the addition is made available for use by all projects, then it is not a project-specific adaptation authorized by the Foundations of LEED. Instead, such a change would be a “substantive revision” that “must undergo public comment and USGBC member ballot.”

Under a separate provision in the Foundations of LEED, certain changes to credit language may be made through the Addenda process. Id. § VII, App’x 3. Even if the addition of a new red list to Option 2 were considered an Addenda, it would have to follow the process set forth in the Foundations. Moreover, the existence of the Addenda process presumably makes it unnecessary to include credit

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<sup>56</sup> See ECHA, press release, SEAC concludes on scientific opinions for two restriction proposals (Dec. 7, 2012), [available at http://echa.europa.eu/view-article/-/journal\\_content/title/seac-concludes-on-scientific-opinions-for-two-restriction-proposals](http://echa.europa.eu/view-article/-/journal_content/title/seac-concludes-on-scientific-opinions-for-two-restriction-proposals); ECHA, press release, Public consultation launched on SEAC's draft opinion on restricting four phthalates (July 12, 2012), [available at http://echa.europa.eu/view-article/-/journal\\_content/title/public-consultation-launched-on-seac-s-draft-opinion-on-restricting-four-phthalates](http://echa.europa.eu/view-article/-/journal_content/title/public-consultation-launched-on-seac-s-draft-opinion-on-restricting-four-phthalates).

language in Option 2 that ostensibly allows changes to be made without the observance of any established procedures, criteria, or approval requirements. Accordingly, this provision should be deleted from Option 2 as contrary to consensus-based principles and the Foundations of LEED.

**C. USGBC Has Not Finished Its Pilot Credit Testing Of The Material Avoidance Credit Which Needs To Be Completed And Evaluated Before Being Considered For Inclusion In LEED v4**

For a disfavored material avoidance credit with this many implications, it is incumbent upon USGBC to subject the credit to a comprehensive review and vetting process. Submitting the credit to pilot testing would greatly aid this process. According to the Foundations of LEED, the Pilot Credit Library provides a process for proposed credits to be “tested and evaluated before they can be considered for incorporation into the LEED consensus process for approval by USGBC membership.” USGBC, Foundations of LEED § III.3 (July 2009).<sup>57</sup>

USGBC apparently recognizes the importance of pilot testing because it has been revising its pilot credits to reflect changing material avoidance credit. A pilot credit mirroring Option 2, Pilot Credit 77: Material Ingredient Optimization, was introduced on January 15, 2013. The pilot period for Pilot Credit 77 should be allowed to conclude and the Pilot Credit Working Group’s report should be widely circulated and considered (both internally and externally) prior to any action by the LEED Steering Committee. The adverse impacts of this proposed credit warrant that the final decision on its inclusion or rejection be made by USGBC members on a fully informed basis. The proposed credit should be withdrawn from the LEED v4 balloting until its pilot evaluation is completed in full.

**IV. OPTION 3: PRODUCT MANUFACTURER SUPPLY CHAIN OPTIMIZATION IS UNWORKABLE AND SHOULD BE PILOT TESTED BEFORE BEING CONSIDERED FOR INCLUSION IN LEED V4**

RFCI supports in principle the concept that manufacturers may be rewarded for encouraging their suppliers to engage in environmentally beneficial practices. However, this support must be qualified by the recognition that even the largest manufacturers do not necessarily possess the clout to force their suppliers to make operational changes. Manufacturers source their raw materials from multiple suppliers, and the value of that manufacturer’s continued purchases may not be sufficient to prompt any given supplier to implement potentially costly changes. For this credit to be of any practical use, these limitations must be accounted for in how this credit is drafted and implemented.

Option 3 is hopelessly muddled and should be subjected to pilot credit testing before it is given consideration for inclusion in LEED. RFCI fails to understand how, or if, this credit will be earned in practice, which makes it difficult to form a position on whether to support or oppose this credit. This Option allows a project to earn one point if at least 25% of the project’s building materials, by cost, are obtained from manufacturers that satisfy the requirements of this credit. For a product to be eligible under Option 3, its manufacturer must have documentation that at least 99%, by weight, of the ingredients in its product are sourced from suppliers that have third-party verification that they have six poorly defined “processes” in place. These processes include: “communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information,” “manage the health, safety, and environmental hazard and risk of chemical ingredients,” and “optimize health, safety, and environmental impacts when designing and improving chemical ingredients.” It is not clear precisely what these processes mean or how they will be evaluated.

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<sup>57</sup> Available at <http://www.usgbc.org/ShowFile.aspx?DocumentID=6103>.

Furthermore, we are unaware of any existing third-party that has a program to verify that such processes are in place.

RFCI believes that this credit has the potential to be a positive addition to LEED, but as drafted, it appears to be too ambiguous to be of much practical use. Accordingly, RFCI recommends that Option 3 be revised to utilize clear, objective standards to define the relevant “processes” requiring compliance and that the revised Option 3 be submitted for pilot credit testing.

## V. CONCLUSION

For the reasons explained in detail above, the material avoidance option (Option 2) of MR Credit 4: Building Product Disclosure and Optimization – Material Ingredients is fatally flawed and should be withdrawn from the final version of LEED v4 that USGBC currently intends to submit to its membership for a vote in the summer of 2013. This credit has now been introduced in at least five different forms (more if similar pilot credits are included), and each time the building material industry and other LEED users have explained in detail the numerous problems with its approach to material avoidance decisions. We do so again and urge USGBC to once and for all remove the material avoidance credit embodied in Option 2. At most, the pilot credit process for Option 2 should be completed and evaluated before any form of material avoidance credit is considered for permanent adoption in LEED.

With respect to material ingredient reporting option (Option 1), the reporting thresholds should be revised to conform with the OSHA Hazard Communication standard as we have explained.

The product manufacturer supply chain optimization option (Option 3) should be withdrawn from the final version of LEED v4 because it is too ambiguous and subjective for feasible use at this time. It should be revised to establish clear and objective “processes” requiring compliance and then pilot tested before being considered for permanent adoption in LEED.

Please contact me or RFCI’s counsel, Bill Hall at Venable LLP, if you have any questions.

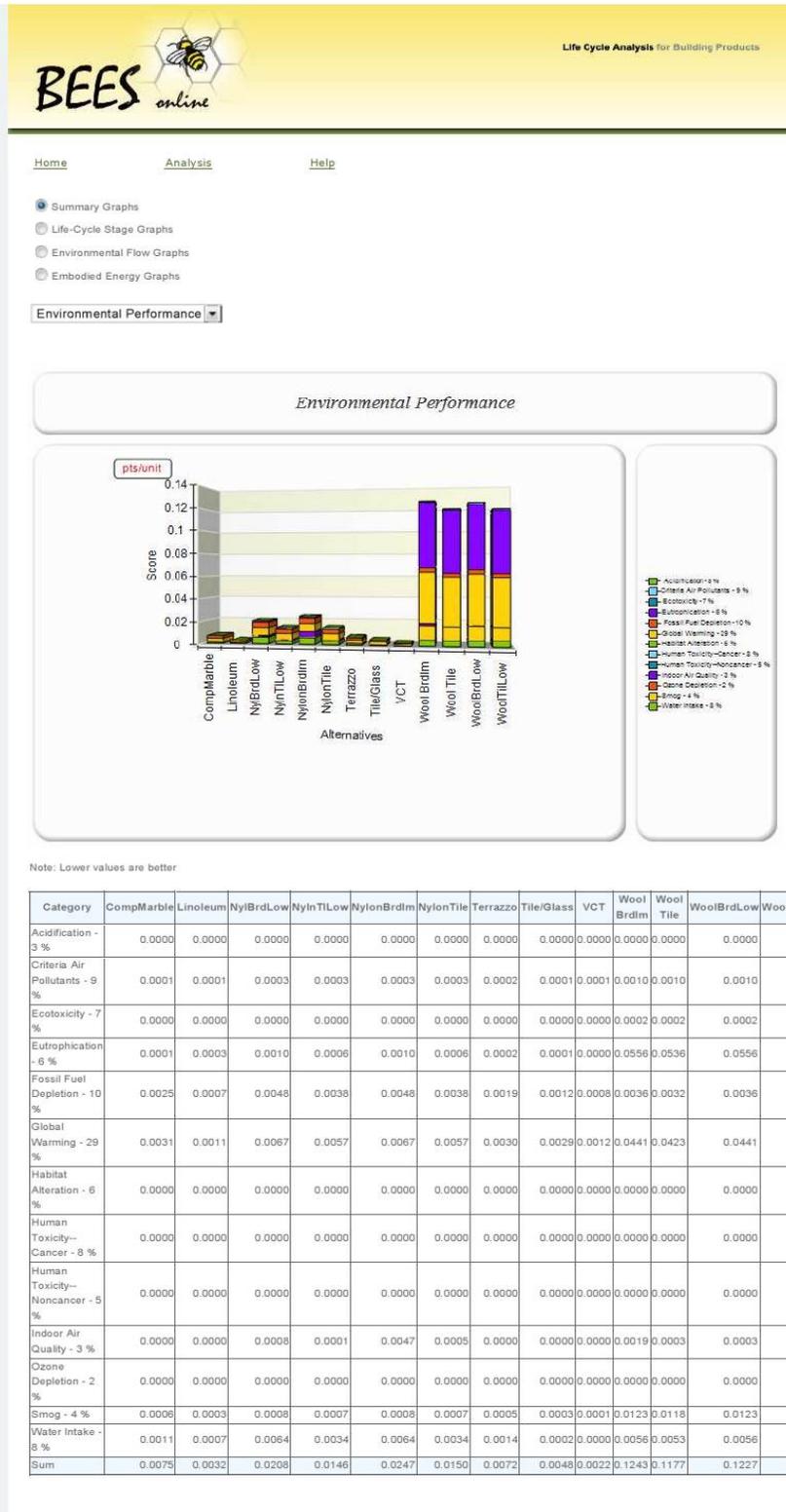
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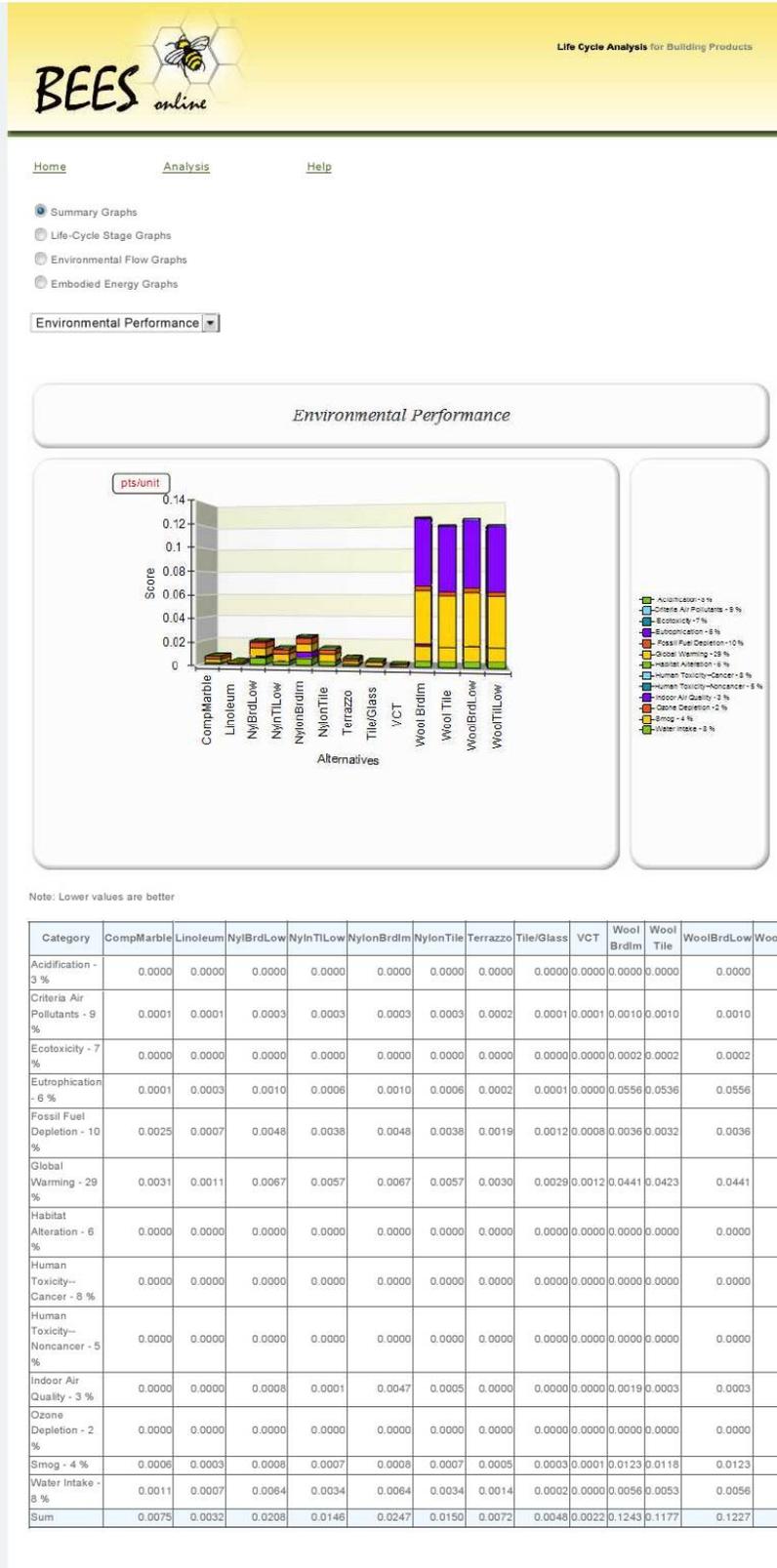
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