

Q3: Do you have any suggestions on how to improve the technical requirements of this credit? Please explain, providing citations to data and research where possible

First, MR 4.1 as currently drafted should not be proposed in the LEED Health Care Guideline without more rigorous analysis of benefit. However, in lieu of that, we suggest a PBT reduction credit based on a whole building LCA / risk assessment approach.

CREDIT MR 4.1 SETS A PRECEDENT OF AVOIDING PRODUCTS THAT MEET BUILDING CODE REQUIREMENTS AND HAVE PROVEN SAFE USE

VI would like to reiterate its concern that the approach proposed in MR4.1 is inconsistent with the recommendations and conclusions of the USGBC review of PVC and with USGBC commitment to take life-cycle-based approaches. The credit is directly contrary to the key conclusion of the TSAC Report on PVC and competing building materials, approved by the USGBC Board, which recommends against material avoidance credits.)

Credit 4.1 has the effect of eliminating use of materials that not only meet the requirements of life safety and fire safety codes but also have a long history of proven safe use in critical applications such as building wire and cables and electrical components. It is risky to suggest substitution of these products with products of less proven or unproven performance in critical health care facilities.

Preventing and mitigating the spread of fire is a critical goal of modern building codes. VI suggests that USGBC review all materials for any potential unwarranted threat to building occupants in this and all of their LEED credits, and be particularly cautious in healthcare facilities.

COMPARATIVE RISK BENEFIT AND LIFE CYCLE ANALYSIS SHOULD BE INCLUDED IN MR CREDIT 4.1 AS A PBT REDUCTION STRATEGY

The stated justification for the LEED Health Care Core Committee (HCCC) MR Credit 4.1 is reduction in generation and release of persistent bioaccumulative toxic chemicals (PBTs) associated with the life cycle of building materials. The HCCC specifies elimination of the use of halogenated compounds and cement from kilns fired with hazardous waste in order to obtain this credit. This uni-dimensional approach circumvents a more rigorous process of material selection based on measured multivariate performance and positively incentivized improvement based upon overall health and environmental risks and benefits.

USGBC should determine the true value of MR Credit 4.1 as a preemptive signal to the market by performing analysis of potential risks, benefits and uncertainties of this credit. VI believes this review should be consistent with life cycle thinking and with the whole-building comprehensive approach as recommended in the TSAC report. It should have sensitivity analysis including potential negative impacts to overall USGBC efforts and greater emphasis on credits to improve

critically needed energy efficiency, material efficiency, GHG reduction and other environmental impacts.

The VI understands that USGBC believes that LEED HC does not need rigorous review based on the Green Guide for Health Care (GGHC) Version 2.1 Pilot; however, there is evidence that GGHC suboptimizes its impact. The Program Report of this pilot indicates a relatively high overall point achievement in pilot programs for Material & Resources, Sustainable sites, and Environmental Quality points. However, the report also shows the lowest achievement in Water and Energy Efficiency. This result is undoubtedly due to the incentives and penalties incorporated in GGHC.

Recognizing that the greatest environmental impact of a building is derived from its decades of use rather than its materials of construction, VI suggests that the incentives and penalties in GGHC are not creating maximal environmental benefits unless greater Water and Energy Efficiency is achieved.

The PBT credit should be a performance-based credit that informs the healthcare facility design community. It should consist of design and operational strategies that could result in PBT reductions without compromising already important water, energy, and environmental credits. VI supports the use of tools like U.S. National Institute of Standards and Technology (NIST), Building for Environmental and Economic Sustainability, (BEES). (NIST 2007) BEES is currently available and can be used by designers to screen materials and reduce PBT impacts over the full life of the building.

BEES clearly points out:

- Better PBT source reduction strategies exist than those proposed in MR Credit 4.1
- PVC avoidance as proposed in MR Credit 4.1 can result in higher dioxin burdens.
- There is overall a questionable benefit to MR Credit 4.1
- Guidance on PBT and other toxics reduction strategies for building materials and designs can be evaluated more comprehensively with other important environmental and health factors using LCA and risk assessment approaches.

The particular advantage of BEES is that it accounts for PBT generation due to materials as well as energy consumption. Thus, it provides greater PBT reduction and better direction to the marketplace. The BEES tool helps convert PBTs and other toxics including dioxins, lead and mercury into a common potential human health risk factor for both cancer and non-cancer effects.

Use and further development of the BEES tool helps designers identify which PBTs are of greatest impact. Designers can then make choices that will reduce PBTs while being informed of other key health, environmental and affordability factors. Below are four example comparisons of building cladding materials (Fig. 1), framing materials (Fig. 2), foundation materials (Fig 3), flooring materials (Fig. 4), including comparison of halogen and non halogen alternatives.

ALTERNATIVES LACK SUFFICIENT LCA DATA

Many alternatives to products subject to MR 4.1 lack environmental and health data and should not be promoted without life cycle analysis. Without such analysis of all aspects of a product's manufacture and delivery it is impossible to determine if MR 4.1 would result in PBT reduction at all.

U.S. EPA's DfE Program and the Massachusetts Toxics Use Reduction Institute (TURI) Wire and Cable Project (WCP) recently completed a life-cycle study of the impacts of heat stabilizers, flame retardants, and polymer systems used in insulation and jacketing for selected wire and cable products. Halogen-free constructions and NM-B cable (typical wiring in building) were considered, however, full life-cycle data could not be obtained to complete the evaluation. The study found that halogen-based lead-free Category 6 CMR and CMP cables (communication wiring) performed better than lead based polymer systems, and that processing energy was important factors in overall environmental benefit.

CREDIT ARBITRARILY RESTRICTS RECYCLING

The credit discriminates against the use of recycled materials. This approach conflicts with other LEED material credits. Vinyl materials are recyclable, and likely will be more recyclable in the future. The credit also conflicts with the requirements of EQc4 which permits recycled vinyl products.

REFERENCES

NIST. (2007). "BEES 4.0." Retrieved December 14, 2007, 2007, from <http://www.bfrl.nist.gov/oae/software/bees/>