Healthier Materials

MSBA Roundtable

HMFH ARCHITECTS

Presenters

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Pilot Program History

Harvard University used the construction of the new SEC building as a living lab and had a goal to minimize the use of products with toxic disease-causing substances such as PFAS, chemical flame retardants and PVC in floor to ceiling building materials and everything in between.

Inspired by Harvard's Healthy Building initiative, MSBA and HMFH started a pilot program to understand what types of chemicals go into our public schools.

'The more you dig into it, you think, Oh, God.' A growing mission seeks to reduce toxic chemicals in schools

By **Kay Lazar** Globe Staff, Updated May 2, 2022, 7:15 a.m.

Jack McCarthy, executive director of the Massachusetts School Building Authority, a toxic chemicals used in construction and renovation projects in the state's schools. STAFF

THE SIX CLASSES OF HARMFUL CHEMICALS

1	2	3	4	5	6
PFAS	Anti-microbials	Flame Retardants	Bisphenols + Phthalates	Some Solvents	Certain Metals

Green Science Policy Institute 6 Classes

H M
F H

Pilot Program Material Goals:

Specify Red List free non-toxic materials for all touch surfaces

Require Transparency labels for all materials in a building

Why is this so important?

By the time a student graduates from high school, they will have spent **more than 15,000 hours in a school,** which is the second longest indoor exposure time after their home. For more than 50 million K-12 students this is a time of critical physiological, social and emotional growth and development.

https://schools.forhealth.org/#relevant-research-sidebar

AIA Material Pledge

- support **human health** by preferring products that support and foster life throughout their life cycles and seek to eliminate the use of hazardous substances
- support **social health & equity** by preferring products from manufacturers that secure human rights in their own operations and in their supply chains, positively impacting their workers and the communities where they operate
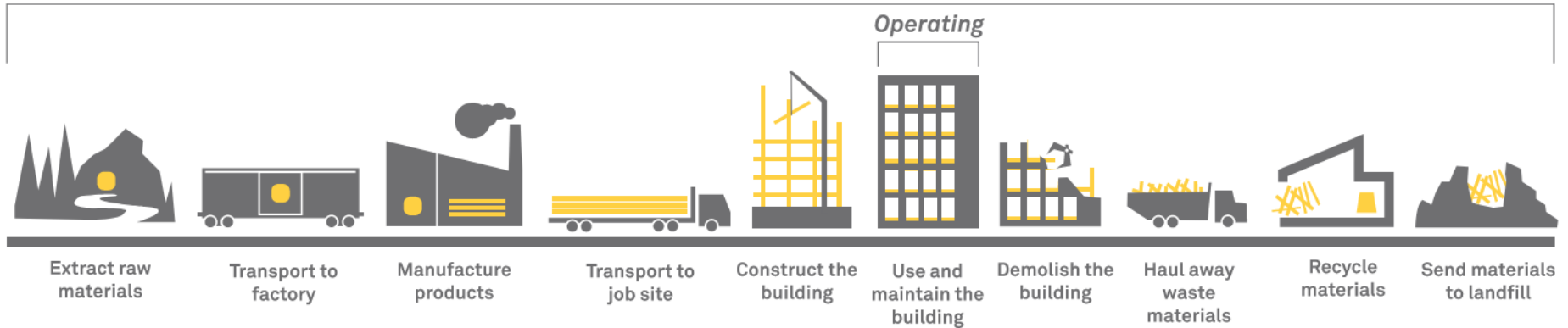
AIA Material Pledge

- support **climate health** by preferring products that reduce carbon emissions and ultimately sequester more carbon than emitted

- support a **circular economy** by reusing and improving buildings and by designing for resiliency, adaptability, disassembly, and reuse, aspiring to a zero-waste goal for global construction activities.

Beyond the Building Occupancy

Embodied

Operating

Extract raw materials · Transport to factory · Manufacture products · Transport to job site · Construct the building · Use and maintain the building · Demolish the building · Haul away waste materials · Recycle materials · Send materials to landfill

H M F H

It's Complex…

How to get started:

Focus on **healthier** materials.

Push manufacturers for **greater transparency** as a first step so at a minimum we understand what materials are going into our schools.

Harvard was able to convince more than **1,200 companies** to publicly disclose the ingredients in their products and create labels to help others make healthy decisions. Many manufacturers **reformulated** their products to remove harmful chemicals.

1. **Request transparency in ingredients and health impacts from manufacturers.** Transparency and disclosure documentation include Health Product Declarations, Declare Label, Living Products, Cradle2Cradle, BIFMA LEVEL, OEKO-TEX, and others.

2. **Eliminate "red list," or problematic, chemicals from specifications.** The International Living Future Institute's Red List is one example of a restricted substance list. Others include the Green Science Policy Institute's Six Classes and Cradle to Cradle Banned Chemicals List.

3. **Integrate VOC limits and emissions test requirement thresholds** into your standard specifications. Make sure to address both VOC limits and emission tests for a more holistic assessment of health impacts.

Bristol-Plymouth Regional Technical High School

BP stats:

410,000 GSF
1,430 students
23 Vocational Programs
Ch. 149 Construction

H M
F H

Designing Public Schools

Material Challenges:

Are there three equals?

Are they proven & durable materials?

Do they fit in our budget?

Are they produced locally?

Designing Public Schools

Strategies:

Use a ranking system

Create a database of products

Target easy wins

Rating Systems and Labels

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- Transparency Labels

- Classes

- Red List

- Restricted Substances List

- Databases

DECLARATION STATUS

A product's compliance with the LBC Red List is represented on the Declare label by the product's Declaration Status. There are three Declaration Statuses:

- **LBC RED LIST FREE** products disclose 100% of ingredients present at or above 100 ppm (0.01%) in the final product and do not contain any Red List chemicals.

- **LBC RED LIST APPROVED** products disclose a minimum of 99% of ingredients present in the final product and meet the LBC Red List Imperative requirements through one or more approved exceptions.

- **DECLARED** products disclose 100% of ingredients present in the final product, but contain one or more Red List chemicals that are not covered by an approved exception.

ILFI Declare Labels

Cradle to Cradle
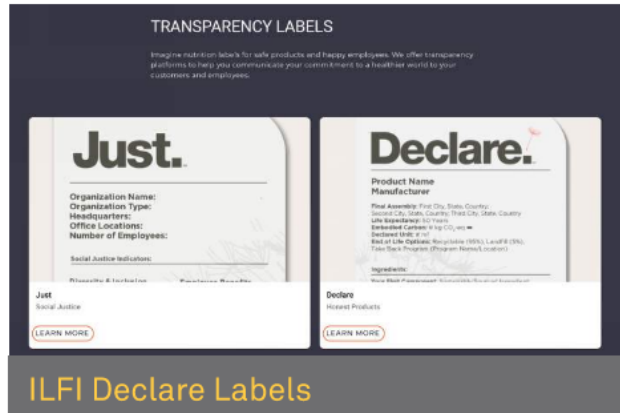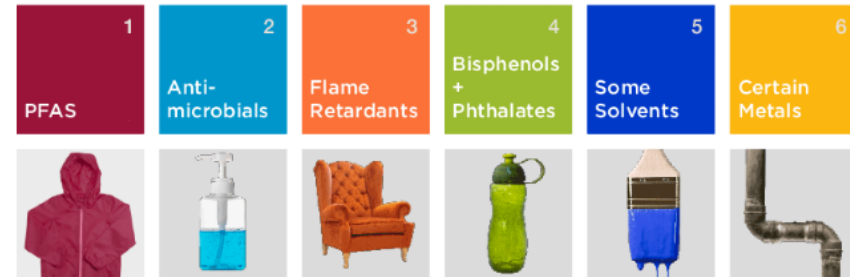
Green Science Policy Institute 6 Classes

Declarations

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HMFH Ranking System

Tiers added to specifications based on material transparency

Tier 1: Declare Label – Red List Free (2022)

Tier 2: Declare Label – Red List Approved (2022)

Tier 3: Cradle to Cradle (C2C) Product Certificate/C2C Material Health Certificate (v4.0), Silver or higher

Tier 4: C2C/C2C Material Health Certificate (v3.0), Silver or higher

Tier 5: Declare Label – Declared (v2022)/C2C (v3.0/4.0) Bronze

Prerequisite: All products must be submitted with an EPD and HPD or a letter from the manufacturer will be required stating that they do not have a declaration.

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Specifications

- Getting the construction team onboard
- Getting the products you want without adding cost or time

1.6   SUBMITTALS

A.   All product submittals are required to include a PRODUCT DATA REPORTING FORM for LEED-S Projects
1.   The form is to be completed for all products which are included within the submittal which it is part of.
2.   All data columns within the form are to be completed by the submitting subcontractor
3.   Data columns which are not relevant / applicable to a product are to be marked with an N/A or '0' as appropriate.
4.   See Section 018111 for a form example, a digital copy of this form will be provided by the Architect

B.   [LEED Document Tracking Software]

C.   Healthy Material Transparency Label Submittals (MSBA Pilot Program):

1.   Where possible, products are specified based on the level of transparency provided by the manufacturer relative to material ingredients and their level of risk to manufacturers, contractors, and building occupants.
a.   Products will be evaluated based on providing the required documentation reflecting one of the following transparency labels:
1)   LBC RED LIST FREE products disclose 100% of ingredients present at or above 100 ppm (0.01%) in the final product and do not contain any Red List chemicals.
2)   LBC RED LIST APPROVED products disclose a minimum of 99% of ingredients present in the final product and meet the LBC Red List Imperative requirements through one or more approved exceptions.
3)   CRADLE TO CRADLE GOLD + PRODUCT SPECIFIC EPD
4)   CRADLE TO CRADLE SILVER + PRODUCT SPECIFIC EPD
5)   DECLARED products disclose 100% of ingredients present in the final product, but contain one or more Red List chemicals that are not covered by an approved exception.
2.   The transparency label will be evaluated based on the following hierarchy (with Tier 1 being most preferred down through Tier 5). When all products specified the lowest tier label is required to be met for any substitution requests. If all are of a particular tier, then no substitutions can have a lower tiered label.

QUALITY ASSURANCE

LEED / MSBA Healthy Materials Pilot Program Coordinator: Engage an experienced LEED-Accredited Professional to coordinate LEED and Healthy Material Pilot Program requirements. LEED / Healthy Materials coordinator may also serve as waste management coordinator.

SUSTAINABLE DESIGN REQUIREMENTS
018110 - 4

LEED v4 PRODUCT DATA SUBMITTAL FORM

THIS FORM IS REQUIRED TO BE SUBMITTED WITH Product Data Submittals.
You must include backup documentation such as SPECIFIC Product Data Sheets and Third Party Certifications. DO NOT INCLUDE GENERIC MARKETING MATERIAL.

PROJECT NAME:
SUBCONTRACTOR:
Specification Section No.:   Submittal Number:

Database-Are we making progress?

Cell: B3 — Concrete Finishes

	Spec #	Specificati	Product Type	Product Name	Manufacturer	R2G ID	Tiers	On 60% CD	Groups
208	057300	Decorative Gl	Glass Railings		Julius Blum & Co. Inc.	BPHS-60580		YES	
209	057300	Decorative Gl	Glass Railings		Livers Bronze	BPHS-60583		YES	
210	057300	Decorative Gl	Glazing	Taper-Loc Dry Glaze System	C.R. Laurence	BPHS-60586		YES	
211	057300	Decorative Gl	Nonshrink, Nonmetallic Grout			BPHS-60593		YES	
212	057300	Decorative Gl	Stainless Steel			BPHS-60590		YES	
213	057300	Decorative Gl	Top Rail	GRL 10BS	C.R. Laurence	BPHS-60587		YES	
214	078100	Applied Firepr	Cementitious Sprayed Fire-Resistive Material	Pyrolite 15	Carboline Company	BPHS-61034		YES	No Longer Considered
215	078100	Applied Firepr	Cementitious Sprayed Fire-Resistive Material	Southwest Type 5GP (Std. Density)	Carboline Company	BPHS-61035	Tier 1	YES	Approved
216	078100	Applied Firepr	Cementitious Sprayed Fire-Resistive Material	CAFCO 300 Series (Std. Density)	Isolatek International	BPHS-61033	Tier 1	YES	Approved
217	078100	Applied Firepr	High Density Cementitious Sprayed Fire-Resistive Material	Southwest Type 7HD (High Density)	Carboline Company	BPHS-61075	Tier 1	YES	Approved
218	078100	Applied Firepr	High Density Cementitious Sprayed Fire-Resistive Material	Monokote Z-146 (High Density)	GCP Applied Technologies	BPHS-61074	Tier 1	YES	Approved
219	078100	Applied Firepr	High Density Cementitious Sprayed Fire-Resistive Material	CAFCO FENDOLITE M-ll (High Density)	Isolatek International	BPHS-61073	Tier 1	YES	Approved
220	078100	Applied Firepr	Intumescent Fire-Resistive Coatings	Firefilm lll	Carboline Company	BPHS-61091			
221	078100	Applied Firepr	Intumescent Fire-Resistive Coatings	FS-ONE MAX	Hilti	BPHS-64264	Tier X; C2C Silver V3.1		Proposed Option
222	078100	Applied Firepr	Intumescent Fire-Resistive Coatings	CAFCO SprayFilm WB 3	Isolatek International	BPHS-61094			
223	078100	Applied Firepr	Intumescent Fire-Resistive Coatings	CAFCO SprayFilm WB 4	Isolatek International	BPHS-61095	Tier 1		
224	078100	Applied Firepr	Intumescent Fire-Resistive Coatings	CAFCO SprayFilm WB 5	Isolatek International	BPHS-61092	Tier 1		
225	078100	Applied Firepr	Intumescent Fire-Resistive Coatings	FireTex FX5120	Sherwin-Williams	BPHS-61093			
226	078100	Applied Firepr	Medium Density Cementitious Sprayed Fire-Resistive Material	Southwest Type 5MD (Med. Density)	Carboline Company	BPHS-61039	Tier 1	YES	Approved
227	078100	Applied Firepr	Medium Density Cementitious Sprayed Fire-Resistive Material	Monokote Z-106/G (Med. Density)	GCP Applied Technologies	BPHS-61071	Tier 1	YES	Approved
228	078100	Applied Firepr	Medium Density Cementitious Sprayed Fire-Resistive Material	CAFCO 400 (Med. Density)	Isolatek International	BPHS-61072	Tier 1	YES	Approved
229	078100	Applied Firepr	Spray-Applied Fireproofing	Monokote MK-6/HY (Std. Density)	GCP Applied Technologies	BPHS-60931	Tier 1	YES	Approved
230	078400	Firestopping	Cast-in Firestop Sleeve	CP 680-M	Hilti	BPHS-64267	Tier X; C2C Bronze V3.1		Proposed Option
231	078400	Firestopping	Penetration Firestopping Device	CFS-BL	Hilti	BPHS-64266	Tier X; C2C Bronze V3.1		Proposed Option
232	078400	Firestopping	Penetration Firestopping Device	CP 653 BA	Hilti	BPHS-64265	Tier X; C2C Bronze V3.1		Proposed Option
233	081400	Flush Wood D	Doors for Transparent Stained Finish			BPHS-59738			
234	081400	Flush Wood D	Fire-Rated Doors			BPHS-59737			
235	081400	Flush Wood D	Flush Wood Doors	Aspiro Series Doors	Masonite International Corporatio	BPHS-59733		YES	
236	081400	Flush Wood D	Flush Wood Doors	Architectural Series Flush Wood Door - SCL	Oregon Door	BPHS-59846	Tier 1		
237	081400	Flush Wood D	Flush Wood Doors		Oshkosh Door Company	BPHS-59734		YES	
238	081400	Flush Wood D	Flush Wood Doors	Architectural Wood Doors - Heritage Collecti	VT Industries	BPHS-59731		YES	
239	081400	Flush Wood D	Interior Veneer-Faced Doors			BPHS-59736			
240	081400	Flush Wood D	Solid-Core Doors			BPHS-59755			
241	092900	Gypsum Boar	Abuse-Resistant Panels	DensArmor Plus Abuse-Resistant Type X	Georgia-Pacific	BPHS-59665		YES	
242	092900	Gypsum Boar	Abuse-Resistant Panels	Gold Bond Hi-Abuse XP Gypsum Board	National Gypsum	BPHS-59666		YES	
243	092900	Gypsum Boar	Abuse-Resistant Panels	Glass-Mat Mold Tough AR Firecode X	United States Gypsum (USG)	BPHS-59667		YES	

Easy Win- Ceiling Tile

Easy Win- Acoustic Room Components

Easy Win-Spray Fireproofing

Easy Win-Flooring

Easy Win-Tile

Material Challenges:

- Coatings
  - Paint
  - Lockers
  - Marker Boards
- Gypsum
- PVC Vinyl
  - Gym Wall Pads
  - Gym Divider Curtain
  - Window Shades

- MEP FP Technology

Cost Challenges:

- HDPE Lockers or Metal Lockers- 34% More Expensive
- Glass Marker Boards or Marker Boards- 42% More Expensive
- Porcelain Wall Tile or FRP- 79% More Expensive
- Proprietary Items

Material Goals Recap

Do the best you can now
•Start with transparency

Try to do better in the future
•Drive market change

Aim for the Ideal Work Together
•Full Transparency
•Remove all chemicals of concern

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