Contributing to LEED v4
Health Product Declaration (HPD) Option

Wed, Aug 17, 2016 | 1:00 PM - 2:00 PM EDT

Panelists

Ed Pavia
Env. Engineer
ToxServices LLC

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Sr. Certification Analyst
Green Circle Certified

James Bogdan
Sustainability Initiatives
NRMCA
Agenda

• Product transparency within LEED v4
• NRMCA Guidance document
• Developing an HPD
• Verifying an HPD
• Q&A

Transparency

• Marketing in the age of transparency
• Customers and other stakeholders are inquiring about product or enterprise disclosure practices
• Effort of making more informed and responsible decisions
LEED v4 - M&R credit: Material Ingredient Disclosure

Intent:

- To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. **To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology** and for selecting products verified to minimize the use and generation of harmful substances. **To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.**
Material Ingredient Disclosure

Option 1: Material Ingredients Reporting

- inventoried to 1000 ppm
- Manufacturer Inventory
- Health Product Declaration (HPD)
- Cradle to Cradle (Basic)
- USGBC Approved Program

Material Ingredients

Option 2: Material Ingredients Optimization

- Inventory to 100 ppm
- Green Screen with no benchmark 1 hazards
- Cradle to Cradle Certification
- International Alternate – REACH
- USGBC Approved Program

Option 3: Supply Chain Optimization

- Best in class product stewardship practices across the supply chain
NRMCA Material Ingredient Reporting Guidance

• Released April 2016
• 2 year research by Arup funded by RMCREF
• Reviewed all pathways to meet credit criteria
• Input from over 30 stakeholders
• Recommended that concrete producers start with the Health Product Declaration v2.0 pathway

• Economical, efficient, and effective method
  – For engaging supply chain for the information necessary to contribute
• http://www.nrmca.org/sustainability/

Health Product Declaration 2.0

Edward Pavia
ToxServices LLC

National Ready Mixed Concrete Association
August 17th, 2016
What we will cover today:

- Who is ToxServices and why would your company be inclined to hire us for your HPD needs?
- What is a Health Product Declaration (HPD)?
- What an HPD is not
- Where HPDs fall in the current market of “Green Assessments”
- Who is asking for HPDs and how are they used?
- Who can build/create an HPD?
- Who can verify an HPD?
- What information is needed from you to get started?
- Proprietary information and how we handle it
- Sample HPD for Ready-Mix Concrete formulation review
- ToxServices cost and timelines for the creation of an HPD

ToxServices LLC

- ToxServices is a Scientific Consulting Firm Providing Expert, Professional Services to Industrial, Commercial, and Public Sector Clients
- ToxServices is a partner with the following assessment programs:
  - Third Party Profiler for GreenScreen®
  - Accredited Assessor for the Cradle to Cradle Certified™ Program
  - Approved Material Health Assessor for the International Living Future Institute’s Living Product Challenge
  - Third Party Builder and Verifier for the HPD 1.0 and 2.0 Standard
  - Third Party Profiler for the US EPA Safer Choice Program

The above only covers the “green labeling” programs that we participate with, as our firm offers many additional services outside of the green assessment programs.
Why Choose ToxServices?

- Industry leader in Material Health Assessments
  - At ToxServices, our business model is based on establishing professional relationships with our clients and client’s supply chain partners to work together to obtain all of the necessary information (proprietary or not) that is needed for completing the targeted assessment.

- ToxServices has recently teamed with the USGBC for consulting in regard to USGBC LEED v4 development for numerous credits involving material health.

- ToxServices is an all woman owned firm and employs some of the top scientists and toxicologists in the country at locations spanning multiple time zones located in Washington, DC, Ann Arbor, Michigan, and London, England.

- ToxServices is a small firm of about 30 employees which allows for our team members to take a much more personal approach with each of their clients to make sure that their clients are getting the best services for the most affordable costs with the expert attention that they deserve.

What is an HPD?

An HPD is a chemical inventory listing based upon the disclosure of a product(s) chemical content (1,000 ppm or 100 ppm level) and provides associated human health and environmental concerns for formulations by comparing a product’s individual ingredients against a large database of “hazard” lists published by both scientific associations and government authoritative bodies (The Pharos Project Chemical Screen Library).

The HPD is a valuable entry level tool for all aspects of the supply chain and is an important first step in a manufacturer’s commitment to product sustainability.
What an HPD is NOT!

An HPD is not a full chemical assessment of your product formulation, and should be described as a chemical ingredient inventory listing of your product’s formulation which in turn provides the potential hazards that may, or may not, be associated with each chemical ingredient in the product formulation.

The HPD 2.0 Standard currently does not take into consideration Risk and Exposure scenarios, so the HPD report is solely based upon the hazard classifications of each ingredient. Programs such as C2C and LPC go the extra distance with the Risk and Exposure component.

When reviewing an HPD document, it is very hard to compare the “safety” of one product against another and it should not, and can not, be considered a complete health assessment or Certification of your product’s formulation(s).

Where HPDs fall in the World of Green Assessments

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Characterize</th>
<th>Screen</th>
<th>Optimize</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chemical Foot Print: Chemical Inventory - Manufacturer's Inventory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Health Product Declaration (HPD):</td>
<td>Chemical Inventory &amp; Hazard Characterization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Declaree / Living Building Challenge</td>
<td>Chemical Inventory &amp; Hazard Characterization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pharos GreenScreen List Translator:</td>
<td>Chemical Inventory &amp; Hazard Characterization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. GreenScreen:</td>
<td>Chemical Inventory, Hazard Characterization, &amp; Chemical Screening</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Cradle to Cradle:</td>
<td>Chemical Inventory, Hazard Characterization, Chemical Screening, &amp; Optimization Potential</td>
<td></td>
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</tr>
</tbody>
</table>
Who is Accepting HPDs and How are they used?

- Currently, the major body that is accepting and providing “credit” for HPDs is the USGBC LEED v4 Certification Program.

- The USGBC LEED v4 Material Health Credit provides the opportunity to earn two points under the credit: (Building product disclosure and optimization - material ingredients)
  - Option 1 - Inventory Disclosure
  - Option 2 - Optimization

- Option 1 - Inventory Disclosure is where the HPD will benefit you most under the LEED program. It is possible to also fulfill
- Option 2 - Optimization, if you can show that your HPD does not included an LT-1 or BM-1 assessed chemicals….we will talk about this a bit later in the slides.

Who can build an HPD?

Even though ToxServices would love to have every NRMCA member’s business, there are times when our services will not be needed....

The times that you would need to hire a third party such as ToxServices to build your HPD would be if:

1.) There is proprietary information in the formulation that you cannot obtain from your supply chain and need a third party to reach out for the info via a NDA.

2.) You or your team just do not have the time to build the HPD and are set on having an outside firm build the HPD for you.

Therefore, if you already have full formulation disclosure on your product to the 1,000 or 100 ppm level, you can build the HPD yourself through the online HPD 2.0 Builder Tool by just becoming a member of the HPDC online ($ membership fee). Once you build your HPD, you can then send if to an approved HPDC Third Party to have it verified.

YOU CAN DO IT YOURSELF !!
Who can verify an HPD?

- When it comes to having a built HPD that is now in need of verification by a Third Party - that is when you need to have the services of an approved HPDC Third Party Verifier.

- This will be discussed more by Natalie Walker of GreenCircle Certified, LLC later during this presentation.

Let’s get started!! - What information do we need???

To get you started, here are the important information details that we would need in regard to the chemical formulation for your product:

- Full formulation disclosure of all intentionally added chemicals to the 1,000 (0.1%) ppm or 100 ppm (0.01%) level by weight in the product formulation (this includes CAS#, Chemical Names, % composition of each chemical, and function of each chemical in formulation)

- Any residuals that are present in the product formulation at the 1,000 ppm or 100 ppm levels

- Detailed description of the product

- Any additional SKUs/models that you would like to be included under the one HPD
  - There are specific HPD guidelines on how to group products on one HPD

- Any current certifications or certificates that the product has received or been awarded

- Membership or “Token” purchase in regard to the HPDC (ToxServices requires that all of our clients become members of the HPDC at the affiliate level).
Proprietary Information

- Some of your may be using products that you do not have full formulation disclosure for and will need to get that information from your supplier(s). This is when a third party is needed.

- The Third party should obtain the proprietary information from your supplier via a non-disclosure agreement (NDA), and will then enter that info into the HPD. Once the information is entered into the HPD, the third party builder of the HPD then has the option to “REDACT” the chemical name and CAS# in regard to the proprietary information, and only allow for the % composition, function, and identified hazards of that chemical(s) appear on the HPD. An example of this is shown in a later slide.

What makes your Ready-Mix Concrete formulation different from the rest?

- Each Ready-Mix Concrete product on the market has it own special characteristics - and 9 times out of 10, those special characteristics come from the “Additives” which are present in your product formulation. We will see an example of this on the next slide.

- As these additives are mainly used at small amounts (0-2%), this information is critical to the HPD, as if any of the additives are used in the formulation at or above levels of 1,000 ppm or 100 ppm in the final mixture, they are required to be included on the HPD. This is the majority of the time when our clients run into the need for help with supplier contact and proprietary information.
**HPD Formulation Example for Ready-Mix Concrete**

### Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent (By Weight)</th>
<th>CAS Number</th>
<th>OSHA PEL -TWA (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica</td>
<td>0-90</td>
<td>14808-60-7</td>
<td>[(10) / (%SiO₂+2)] (R); [(30) / (%SiO₂+2)] (T)</td>
</tr>
<tr>
<td>Calcium Carbonate*</td>
<td>25-65</td>
<td>1317-65-3</td>
<td>15 (T); 5 (R)</td>
</tr>
<tr>
<td>Portland Cement*</td>
<td>10-30</td>
<td>65997-15-1</td>
<td>15 (T); 5 (R)</td>
</tr>
<tr>
<td>Calcium Hydroxide</td>
<td>15-25</td>
<td>1305-62-0</td>
<td>15 (T); 5 (R)</td>
</tr>
<tr>
<td>Fly Ash</td>
<td>0-20</td>
<td>68131-74-8</td>
<td>NA</td>
</tr>
<tr>
<td>Calcium Oxide</td>
<td>0-5</td>
<td>1305-78-8</td>
<td>5 (T)</td>
</tr>
<tr>
<td>Magnesium Oxide</td>
<td>0-4</td>
<td>1309-48-4</td>
<td>15 (T)</td>
</tr>
<tr>
<td>Calcium Sulfate*</td>
<td>0-2</td>
<td>13397-27-2</td>
<td>15 (T); 5 (R)</td>
</tr>
<tr>
<td>Particulate Not Otherwise Regulated</td>
<td>-</td>
<td>NA</td>
<td>15 (T); 5 (R)</td>
</tr>
</tbody>
</table>

**How is this information displayed on the HPD?**

**LIMESTONE, CALCIUM CARBONATE (POST-CONSUMER)**

- **ID**: 1317-65-3
- **%**: 25.0000 - 65.0000
- **GS**: LT-UNK
- **RC**: None
- **NANO**: NO
- **ROLE**: Binder Component

**HAZARDS**: None Found

**AGENCY(IES) WITH WARNINGS**: No warnings found on HPD Priority Lists

**SUBSTANCE NOTES:**
### Section 1: Summary

**CONTENT INVENTORY**

<table>
<thead>
<tr>
<th>Threshold per material</th>
<th>Residuals and impurities considered in 1 of 1 materials</th>
<th>Based on the selected Content Inventory Threshold:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 ppm</td>
<td>see Section 2: Material Notes</td>
<td></td>
</tr>
<tr>
<td>1,000 ppm</td>
<td>see Section 5: General Notes</td>
<td></td>
</tr>
<tr>
<td>Per GHS SDS</td>
<td>Are the Percent Weight and Role provided for all substances?</td>
<td></td>
</tr>
<tr>
<td>Per OSHA MSDS</td>
<td>Yes No</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Are all substances screened using Priority Hazard Lists with results disclosed?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Are all substances disclosed by Name (Specific or Generic) and Identifier?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes No</td>
<td></td>
</tr>
</tbody>
</table>

**CONTENT IN DESCENDING ORDER OF QUANTITY**

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

**MATERIAL | SUBSTANCE | RESIDUAL OR IMPURITY | GREENSCREEN SCORE | HAZARD TYPE
---------------------------------------------------------|-------------------|-----------------|-----------------|-----------------|
READY-MIX CONC | SILICA, CHRISTOPHITE | CAN LIMESTONE CALCIUM CARBONATE (POST CONSUMER) | CAN | UNDISCLOSED | CAN |

**Number of Greenscreen BM-4/EM3 contents:** 0
Contents highest concern: GreenScreen Benchmark or List translator Score: LT-1
Nanomaterial: No

**INVENTORY AND SCREENING NOTES:**
### Listing Proprietary info in an HPD

<table>
<thead>
<tr>
<th>UNDISCLOSED</th>
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<tbody>
<tr>
<td>%: 1.0000 - 2.0000</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>HAZARDS:</th>
<th>AGENCY(IES) WITH WARNINGS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CANCER</td>
<td>CA EPA - Prop 65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBSTANCE NOTES:</th>
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ToxServices Costs and Timeline

For the remaining 2016 calendar year, ToxServices will be charging the following fees to BUILD an HPD for a client under the new 2.0 Standard:

- **Requirement of HPDC Affiliate Membership ($500)**
  - This is required so the HPD can be built directly under the client’s account which allows for the client to publish the HPD when complete

- **Health Product Declaration Report ($950)**
  - This includes the review and creation of the HPD 2.0 document for up to 12 CAS#s under a single product formulation

- **Additional CAS# Fee**
  - ToxServices charges an additional fee of $85/CAS# for any CAS#s over the allotted initial 12 CAS#s

- **Additional SKU/Model Fee (for inclusion on one HPD)**
  - Under the HPD 2.0 Standard, there are specific guidelines on when you are allowed to “group” similar products together under one HPD document. For this grouping of similar product formulations that meet the grouping criteria, ToxServices charges a fee of $50 - $150 per additional SKU or model included.

- **Timeline for Completion**
  - Once ToxServices has all the required information in hand, our team can provide the client with a Scope of Work (SOW) within three business days. Once the SOW has been agreed to by the client, ToxServices then quotes an average time of 10 business days to complete the HPD.

Thank you NRMCA !!!

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Why Third-Party Verification?

- Confusion in marketplace
- Manufacturer Demand
- Lack of accuracy
- Ensures compliance with HPD Standard

Verification Procedure

- Step 1: Create an HPD or have a preparer create for you
- Step 2: Contact an accredited HPD verifier
- Step 3: Data collection and desk audit
  - Initial data collection phase (includes call(s) with manufacturer contact)
  - Desk analysis to verify manufacturer’s documentation
  - Conclusion call to report results of verification
  - A final report will be submitted to the manufacturer documenting the audit process
Documentation Needed for Verification

- Fully completed HPD
- Current bill of materials
- Purchase orders (sampling) for all ingredients within your product
- All MSDS or SDS sheets for all ingredients within your product
- A technical sheet for your product (if applicable)
- Copies of valid and certified GreenScreen assessment summary reports (if applicable)
- Third-party validation documents of claims in HPD (VOC, recycled content, etc.)
- Any laboratory testing reports to validate chemicals in products (VOC, ASTM, etc.)
- Additional information may be requested (nanomaterials, accessory materials, etc.)

Verification Procedure (Cont.)

- Step 4: HPD verification
  - HPD uploaded to online product Database:
    - HPD must be publicly available
    - Manufacturer documentation can be uploaded and stored on the online product database for download
Costs for HPD Verification

- Factors affecting cost
  - Preparer experience with HPDs
  - Completeness of supplier data
  - Additional data gaps
  - Number of products included

- Range $3,000-6,000

Challenges

- Resistant suppliers
- Referencing full GreenScreen Assessments
- Lack of understanding of HPD tool and methodology
Benefits of Verification

• Transparency
• Assurance
• Brand Recognition
• Preference
• LEED V4 Compliance

Thank you!

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Q&A

Thank You

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