Hazard Assessment in Standards

Desired Outcomes:

• Be aware of GreenScreen® hazard assessment tools
• Understand how hazard assessment is used in four standards/ecolabels
• Learn about success and challenges with integrating hazard assessment into standards and ecolabels
GreenScreen in Sustainability Standards

Building Sector

Electronics Sector

Textiles Sector

https://www.greenscreenelectronics.org/learn/gs-in-sustainability-standards
# Hazard Assessment in Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Required or Optional</th>
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<th>GreenScreen Tool</th>
<th>Other Tools</th>
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# Hazard Assessment in Standards

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<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>EPEAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Deselection</td>
</tr>
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<td>HPD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reporting</td>
</tr>
<tr>
<td>LEED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hazard assessment</td>
</tr>
<tr>
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</tr>
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<td>List Translator</td>
<td>Yes</td>
<td>Reporting</td>
</tr>
<tr>
<td>LEED</td>
<td>Optional</td>
<td>All</td>
<td>List Translator, GreenScreen</td>
<td>Yes</td>
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GreenScreen Hazard Assessment Tools

Foundation 2007
## GreenScreen Hazard Endpoints

<table>
<thead>
<tr>
<th>Human Health Group I</th>
<th>Human Health Group II and II*</th>
<th>Environmental Toxicity &amp; Fate</th>
<th>Physical Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenicity</td>
<td>Acute Toxicity</td>
<td>Acute Aquatic Toxicity</td>
<td>Reactivity</td>
</tr>
<tr>
<td>Mutagenicity &amp; Genotoxicity</td>
<td>Systemic Toxicity &amp; Organ Effects</td>
<td>Chronic Aquatic Toxicity</td>
<td>Flammability</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Neurotoxicity</td>
<td>Other Ecotoxicity studies when available</td>
<td></td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>Skin Sensitization</td>
<td>Persistence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Respiratory Sensitization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocrine Activity</td>
<td>Skin Irritation</td>
<td>Bioaccumulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eye Irritation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each Hazard Endpoint has criteria to assign a hazard level (i.e., High, Moderate, or Low)
GreenScreen Hazard Assessment Tools

Benchmark 1
Avoid – Chemical of High Concern

Benchmark 2
Use but Search for Safer Substitutes

Benchmark 3
Use but Still Opportunity for Improvement

Benchmark 4
Prefer – Safer Chemical

Benchmark U - Unspecified
GreenScreen Hazard Assessment Tools

Automation!
2012

Foundation
2007

Recognition!
2017
BizNGO Panel
Hazards Assessment

Erin Gately
Conformity Assurance Senior Manager
Green Electronics Council

December 5, 2018
AGENDA

• Who is the Green Electronics Council?
• Implementing GreenScreen in EPEAT Standards
• Challenges and/or successes with GreenScreen and hazard assessment in standards
• Why is GreenScreen in the standards?
WHO IS THE GREEN ELECTRONICS COUNCIL?

• The Green Electronics Council (GEC) is a mission driven non-profit founded in 2006

• Our vision is a world in which only sustainable IT products are designed, manufactured, and purchased

• GEC seeks to fulfill our Mission by supporting large-scale purchasers to buy sustainable IT products and services as a way to incentivize IT producers to make sustainable IT products

• Our flagship program is EPEAT, the leading global “type-1” ecolabel for IT Products
## IMPLEMENTING GREENSCREEN IN EPEAT

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Criteria</th>
<th>Target of GreenScreen</th>
<th>How Points are Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers and Displays (2018)</td>
<td>4.1.8.1 (related to 4.1.5.1)</td>
<td>Product criterion: All flame retardants and plasticizers in plastic parts &gt; 25g in a product.</td>
<td>Based on GreenScreen Benchmark score (If all assessed substances are benchmark 2, 3, or 4 – 1 point. If all are benchmark 3 or 4 – 2 points).</td>
</tr>
<tr>
<td>Mobile Phones</td>
<td>7.3.1</td>
<td>Product criterion: Assessment conducted on at least one substance used in the declared product.</td>
<td>Manufacturer achieves full points by doing assessment and electing to use if assessment indicates lower-hazard alternative.</td>
</tr>
<tr>
<td>Servers</td>
<td>6.2.5</td>
<td>Product criterion: All flame retardants and plasticizers in plastic parts &gt; 25g in a product and top 3 cleaning solvents used during final assembly.</td>
<td>All substances assessed are not in highest hazard categories (If GreenScreen is used no Benchmark 1 – 1 point. If GreenScreen is used, no Benchmark 1 or 2 – 2 points.)</td>
</tr>
<tr>
<td>Servers</td>
<td>6.2.6</td>
<td>Public disclosure of hazard assessment score of substances for criterion 6.2.5.</td>
<td>One point assigned for URL disclosure of publicly available hazardous assessment.</td>
</tr>
</tbody>
</table>
CHALLENGES AND/OR SUCCESSES WITH GREENSCREEN AND HAZARD ASSESSMENT

• Success - general: GreenScreen is a well designed, credible protocol that can be referenced in EPEAT

• Challenge - in EPEAT process: Ensuring Assessors are qualified (if they aren’t GreenScreen profilers or practitioners!)

• Challenge - in EPEAT process: Uncertainty about EPEAT process if new research emerges which changes benchmark score
WHY IS GREENSCREEN IN EPEAT?

• Many manufacturers are already committed to using GreenScreen
• EPEAT criteria are multi-attribute and full life cycle and therefore hazard is an important element
• GreenScreen was identified by the criteria developers as the best tool available
• Builds on EPEAT’s practice of referencing credible protocols/standards
95,000+ COMMERCIAL LEED PROJECTS

2.4 Million CERTIFIED SQUARE FEET PER DAY

1.6 million RESIDENTIAL UNITS REGISTERED & CERTIFIED

20 billion TOTAL SQUARE FEET PARTICIPATING IN LEED

201,000 TOTAL LEED PROFESSIONALS
LEED v4 SYSTEM GOALS

- **Climate Change**: 35%
- **Human Health**: 20%
- **Water Resources**: 15%
- **Biodiversity**: 10%
- **Green Economy**: 10%
- **Community**: 5%
- **Natural Resources**: 5%
LEED version 4 takes a holistic approach to evaluating the attributes of building products and materials

- Building reuse
- Lifecycle analysis (WBLCA and EPDs)
- Material ingredient reporting & optimization
- Responsible sourcing of raw materials
- Waste reduction and waste management
USGBC Materials and Resources

Strategic Vision

- Embodied carbon reductions
- Green Chemistry & Health
- Circularity
Circularity & Health

Carbon

optimization is continuous
LEED v4 Material Ingredients Credit Option 1: Disclosure

• Manufacturer self declared Inventory
  • Publically Available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN)
  • Materials defined as trade secret of intellectual property may withhold the name and/or CASRN/EC Number but must disclosure role, amount and hazard of screening using:
    • GreenScreen Benchmark, and defined by GreenScreen v1.2

• Health Product Declaration
• Cradle to Cradle Certification
• Declare
• Product Lens, Facts, Level, more...
LEED v4 Material Ingredients Credit Option 2: Optimization

- Product Inventories to 100ppm that have no Benchmark 1 Hazards:
  - Using LT =100% by Cost
  - Full GreenScreen Assessment= 150% by cost
- Cradle to Cradle
  - V2 Gold=100%
  - V2 Platinum=150%
  - V3 Silver=100%
  - V3 Gold & Platinum=150%
Problem: Uptake in LEED v4 has been low

No one knew what any of these things were......

Full assessments are new to many, and expensive....

Manufacturers have trouble getting a benchmark score on every chemical within a complex finished product

100ppm screening threshold is much harder than anticipated, especially if your supply chains have dark spots

Hard to avoid LT-1 and GS or BM 1 chemicals within building products at 100ppm levels.....
LEED Version 4.1

- Timely update to the standard
- Refresh credits with low achievement rates to have more realistic thresholds and additional pathways
- Not a complete overhaul

- Beta release of Rating System in mid-December
- Launch of v4.1 begins in January 2019
Hazard Screening in the HPD Open Standard

Wendy Vittori
Executive Director
HPD Collaborative
What is Hazard Screening in the HPD Open Standard?

• HPDs do not “conduct” hazard screening – they report the results of hazard screening using specified methods
  • Assesses whether chemicals in a product’s content inventory have been identified on one or more Authoritative or Screening lists
    • HPD Open Standard hazard screening reporting is principally based on GreenScreen® for Safer Chemicals methodology
    • Includes Hazard Score and Hazard Warnings
  • Provides an “alert” - a first-step in further analysis of potential human and/or environmental health interaction of chemicals in a product
    • Not sufficient alone to determine if a product is “safer”
• Hazard Screening Data - Required element of a “complete” HPD report
  • Manufacturers may use the confidential business information feature of HPDs, which allows for reporting of Hazard Screening results, while not disclosing chemical name or CASRN
Hazard Scores in the HPD Open Standard

• Hazard Scoring in HPDs has been based on the GreenScreen® method since inception
  • Includes Hazard Level (ex: LT-1, BM-1) and Hazard Type (ex: Cancer)
• GreenScreen-based hazard scores, for all reported chemical substances, are required for an HPD to be considered complete, using one of these two approaches:
  • List Translator™ score (LT-)
    -or-
  • Public Benchmark score (BM-) – if publicly available, a BM score will be reported instead of the List Translator result
• Optionally, a manufacturer may also include in Substance Notes, indication that a private Benchmark assessment has been conducted, but may not include private Benchmark scoring
### Example: Summary of Hazard Scores

**CONCEPT 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 Sater 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**
--- | --- | --- | --- | ---
**WATER** | **BM-4 TITANIUM DIOXIDE LT-1** | **CAN** | **END UNDISCLOSED**
**LT-UNK KAOLIN (CALCINED) LT-1 | CAN** | **MUL LUMINITE; CALCIUM CARBONATE LT-UNK SILICA, AMORPHOUS LT-1 | CAN ALUMINUM OXIDE LT-1 | RES ZIRCONIUM DIOXIDE LT-1 | UNDER DISCLOSED**
**LT-UNK; MUL LUMINITE** | **END UNDISCLOSED** | **CAN** | **BASEMENT; SALDIN (MICRO-1)** | **SHRINKAGE; REACTIVATION; 1-OXIDE, 2-PYRIDINYL-1-OXIDE; 1-OXIDE, 2-PYRIDINYL-1-OXIDE; 1-OXIDE, 2-PYRIDINYL-1-OXIDE**
**LT-1 | CAN** | **MUL QUARTZ LT-1 | CAN SILOXANES AND SILICONES, DI-ME, HYDROXY-TERMINATED LT-1**
**LT-1 | CAN** | **MUL GLYCERINE LT-1 | UNDER DISCLOSED**
**LT-1 | CAN** | **MUL LUMINITE** | **END UNDISCLOSED**
**LT-1 | CAN** | **MUL LUMINITE** | **END UNDISCLOSED**
**LT-1 | CAN** | **SHRINKAGE; REACTIVATION**
**LT-1 | CAN** | **MUL LUMINITE** | **END UNDISCLOSED**
**LT-1 | CAN** | **MUL LUMINITE**

**INVENTORY AND SCREENING NOTES:**
Imperial Paints worked with the Third Party HPD Preparer, Toxinscreen, to properly screen and disclose all chemical information listed in the current HPD.

**VOLATILE ORGANIC COMPOUND (VOC) CONTENT**
Materials ≥ 500 g/L VOC (volatile organic compound) at ≥ 0.65% does not contain chromatography (A/C) 1.00% No

**CERTIFICATIONS AND COMPLIANCE**
This product meets the following requirements:

- **VOC** (volatile organic compounds) (U.S. EPA Method 4050 E/EQO: 0.05% (0.05% organic, 0.07% inorganic, 0.004% moisture) (organic, 0.004% inorganic, 0.025% moisture, 0.004% moisture) (inorganic, 0.004% inorganic, 0.025% moisture, 0.004% moisture) (inorganic, 0.004% inorganic, 0.025% moisture, 0.004% moisture) (inorganic, 0.004% inorganic, 0.025% moisture, 0.004% moisture) (inorganic, 0.004% inorganic, 0.025% moisture, 0.004% moisture)

- **ASTM D4910 Certificate of Toxicological Risk Assessment**

- **ASTM D4910 Certificate of Toxicological Risk Assessment**

- **10461: A Test for Heavy Metals in Paints and Coatings for use in Children’s Toys**

- **10461: A Test for Heavy Metals in Paints and Coatings for use in Children’s Toys**

**CONSISTENCY WITH OTHER PROGRAMS**
Pre-checked for LEED v4 Material Ingredients, Option 1
Hazard Warnings – Also Reported in HPDs

• Hazard Warnings are also reported in HPDs
  • Complement List Translator/Benchmark score
  • Identify the applicable warnings, the hazard types they represent, and the agencies that issued the warnings for each substance listed on the HPD
  • Provide a fuller picture of known hazard warnings

• Based on HPD Open Standard-specified screening of reported chemicals against HPD Priority Hazard Lists
  • All GreenScreen Specified Lists that may result in a List Translator score of LT-1 or LT-P1
  • All GreenScreen Specified Lists that, when evaluated with the GreenScreen Hazard Criteria, result in a hazard level or range as follows and a score of LT-UNK:
    • Very High, High, or Moderate for GreenScreen Group 1 human health effects (Carcinogenicity, Mutagenicity/Genotoxicity, Reproductive Toxicity, Developmental Toxicity, Developmental Neurotoxicity, and Endocrine Activity).
    • Very High or High for all other human health effects (Systemic Toxicity/Organ Effects including Immune System effects, Neurotoxicity, Respiratory Sensitization, and Skin Sensitization) plus Ecotoxicity, Flammability, and Reactivity.
  • Also includes a small number of authoritative lists not currently included in GreenScreen Specified Lists – approved by HPDC Technical Committee
Example: Hazard Warnings
Established HPDC Hazard Screening Technical Sub-Group in 2018

- Responsible for ongoing oversight and evolution of hazard screening methods and reporting in the HPD Open Standard, Sub-committee of HPDC Technical Committee
- Members include key ecosystem participants in Hazard Screening, other appointed HPD user and manufacturer members

Details of Hazard Screening method included in “Emerging Best Practices” portion of HPD Open Standard v2.1.1 (Implementation – September 2018)

- Recognizes the frequent evolution of underlying hazard screening methods and authoritative/screening lists
- “Harmonized Method for Hazard Screening”
  - More precise specification of how to report hazard information than in previous versions of the Standard
  - Helps to ensure consistent implementation with different automated hazard screening tools
  - Updating Policy
  - Chemical Grouping Policy
For more information on Hazard Screening in HPDs

Visit our website:  
https://www.hpd-collaborative.org/hazard-screening/

Wendy Vittori  
Executive Director  
HPD Collaborative  
wdvittori@hpd-collaborative.org

Thank You!
Hazard Assessment in Standards
Discussion

• Alexandra Mueller, International Living Futures Institute
  – Living Product Challenge
• Erin Gately, Green Electronics Council
  – EPEAT Standard
• Wendy Vittori, Health Product Declaration Collaborative
  – Health Product Declaration Open Standard
• Wes Sullens, US Green Building Council
  – LEED Standard
Small Group Discussion – Hazard Assessment in Standards and Decision-making

December 5, 2018
Berkeley, CA
Desired Outcomes

• Learn how organizations use hazard assessment to support communication and decision-making
• Learn what barriers organizations face with using hazard assessment and potential solutions
• Discuss what you would want from a BizNGO community of practice on hazard assessment in decision-making
• Identify ways BizNGO could support organizations in using hazard assessment in decision-making in 2019
Instructions

20 minutes – Small Group Discussion
  – Fill out your individual worksheet
  – Select a spokesperson
  – Discuss the answers to the questions while spokesperson takes notes on the group worksheet

20 minutes – Small Group Report Back

15 minutes – Panelist Reflections