Implementing Chemical Classes in GreenScreen Certified™

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Chemical Classes

• Rooted in already well established toxicology methods

• Chemical classes are an evolution of this practice
Expanded use of a Toxicology tool

Analogs

No toxicity data
Has toxicity data

Models

QSAR

The OECD QSAR Toolbox for Grouping Chemicals into Categories

OECD
ECFH
Oasis
Value of Chemical Classes

• Efficient and precautionary framework
• Supports decision-making in absence of complete data
• Supports decision-making for new chemicals coming onto the market daily
Popularizing this Strategy for Action

The Six Classes Approach to Reducing Chemical Harm
Healthier Products, Healthier People

1. Highly Fluorinated
2. Antimicrobials
3. Flame Retardants
4. Bisphenols + Phthalates
5. Some Solvents
6. Certain Metals
INSIGHT: The Case for Regulating All PFAS Chemicals as a Class

Bloomberg Environmental, May 20, 2019 by David Andrews, Environmental Working Group
Defining Chemical Groups

Approaches:
1. Chemical structure
2. Function
3. Toxicity
4. Combination of any/all above
Chemical Structure e.g., Organohalogens

Definition: A chemical containing one or more halogen atoms bound to a carbon atom.

alpha-Hexabromocyclododecane
Function e.g., Flame Retardants

Is this function **necessary** for this product or product category?
Combination e.g., BPA analogs

<table>
<thead>
<tr>
<th>Structure:</th>
<th><img src="image1.png" alt="BPA Structure" /></th>
<th><img src="image2.png" alt="BPC Structure" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity:</td>
<td>Estrogenic, anti-androgenic</td>
<td>Estrogenic, anti-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>androgenic</td>
</tr>
<tr>
<td>Function/Use:</td>
<td>Includes receipts; Human serum</td>
<td>Receipts; Human serum</td>
</tr>
</tbody>
</table>
How wide do you cast the net?

- Depends on intended use
  - Flag (highlight as possible)
  - Restrict (e.g. voluntary certification)
  - Ban (e.g., regulatory bans on PFAS)
Live Poll Question

http://etc.ch/6pnt
GreenScreen® Certified™ has evolved to incorporate chemical classes

GreenScreen List Translator
Bronze: No LT-1

GreenScreen for Safer Chemicals
Silver: No BM-1
Gold: No BM-1 or BM-2
The Problem

GreenScreen Certified (Bronze) may not capture:

– Emerging classes of concern e.g., PFAS
– Emerging science e.g., PMT
– Transformation products e.g., APEs
The Solution

GreenScreen Certified now includes Restricted Substances List

That is:

– Specific and pragmatic,
– Scientifically robust
– Precautionary

With:

– Defined boundaries around classes of chemicals
– Specified members of classes for clarity and consistency
### Six Chemical Classes Now Included

<table>
<thead>
<tr>
<th>Chemical Class</th>
<th>Strategy</th>
<th>Implement</th>
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</thead>
<tbody>
<tr>
<td>PFAS</td>
<td>Definition &amp; reference list (OECD)</td>
<td>~ Jan 2020</td>
</tr>
<tr>
<td>BPA analogs</td>
<td>Criteria (structure, toxicity, use) &amp; reference list</td>
<td>~ Mar 2020</td>
</tr>
<tr>
<td>Ortho-phthalates</td>
<td>Definition (USEPA) &amp; reference list</td>
<td>~ Mar 2020</td>
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<tr>
<td>Organohalogens</td>
<td>Definition</td>
<td>~ Jan 2020</td>
</tr>
<tr>
<td>Alkylphenol &amp; ethoxylates</td>
<td>Definition, criteria (structure), reference list</td>
<td>~ Jan 2020</td>
</tr>
<tr>
<td>Siloxanes</td>
<td>Fixed List</td>
<td>~ Jan 2020</td>
</tr>
</tbody>
</table>