CiP Building Products Case Study: Analysis of Findings and Recommendations

Presented by Jack R. Geibig, Director
Center for Clean Products
University of Tennessee, Knoxville

Project Team: C. Wilt, J. Monaco, J. Geibig, A.Hite

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CENTER FOR CLEAN PRODUCTS

Overview of Presentation

- Review of sector definition
- Review of existing information landscape
- Highlights of survey findings
- Recommendations

Definition of Building and Construction Materials

Includes:

- Consumer products manufactured or processed with the intended or common end use as a component of a building or structure.
- Permanent components of buildings including fixed elements (ex., framing, sheathing, and decking)

Excludes:

- Paints, sealants, and adhesives unless used in manufacturing of another material
- Non-fixed elements such as drapery and furnishings.

Sector Definition, cont.

Also excludes:

- Materials extracted and used locally in raw form and with minimal processing
  - Example: Bamboo cured for use locally as a structural element vs. bamboo manufactured into flooring

Note: Exception is made where known hazards are associated with locally extracted and minimally processed materials

Chemicals of Concern in Building Materials

Volatile organic compounds (VOCs)

- Common Building Material Contents, including formaldehyde, acetaldehyde, toluene, isocyanates, xylene, benzene.
- Associated Concerns:

Human Health: Acute and Chronic - known or suspected contributors to cancer, leukemia, lymphoma, liver, kidney and nervous system damage; sick building syndrome

Environment: Photochemical reactions in atmosphere contribute to smog and global climate change

Chemicals of Concern in Building Materials

Persistent Bioaccumulative Toxicants (PBTs)

- Common Building Material Contents: phthalates, heavy metals, halogenated flame retardants (HFRs), perfluorochemicals (PFCs), polychlorinated biphenols (PCBs) and dioxins.
- Associated Concerns:

Human Health: known or suspected contribution to reproductive and developmental harm, chronic respiratory problems, cancer.

Environment: accumulation in rivers, lakes and streams.

Chemicals of Concern in Building Materials

- Other common chemicals/products of concern:
  - Asbestos
  - Fiberglass
  - Biocides, Pesticides, Herbicides. Fungicides
- Emerging Concerns:
  - Nanomaterials
  - Antimicrobials

Barriers to CiP Information Exchange

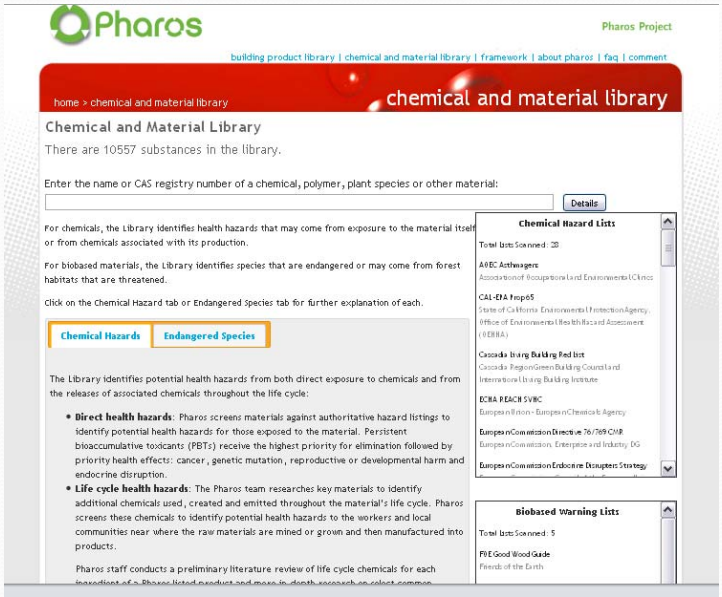
- Cross-referencing of product contents with disparate hazard identification and action lists.
- Differing regulatory requirements create further confusion in hazard identification lists.
- Lack for full disclosure of product specific chemical contents by manufacturers to identify potentially hazardous chemicals.
- Cross-referencing of product-specific performance and design data with CIP information.

Examples of Information Resources

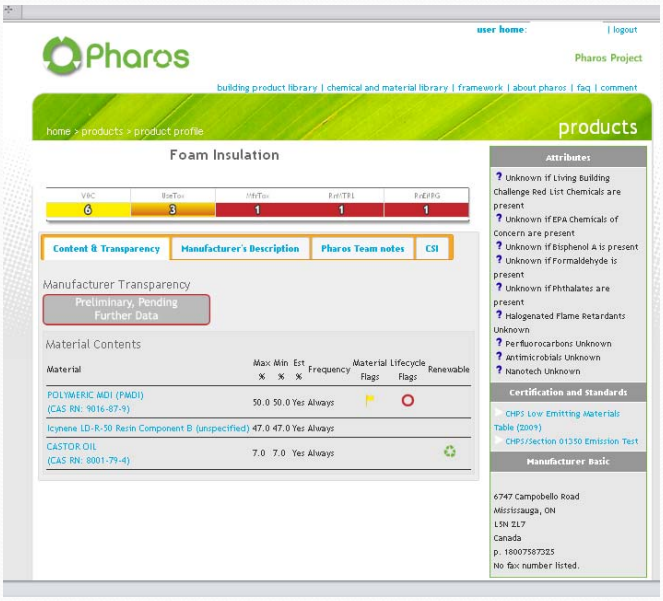
Pharos (USA)

- Expanding library of building products with comparative information about material contents
- Maintains a Chemical and Material Library compiled of published, third-party hazard identification and action lists.

Pharos Chemical & Material Library



Pharos Material Contents

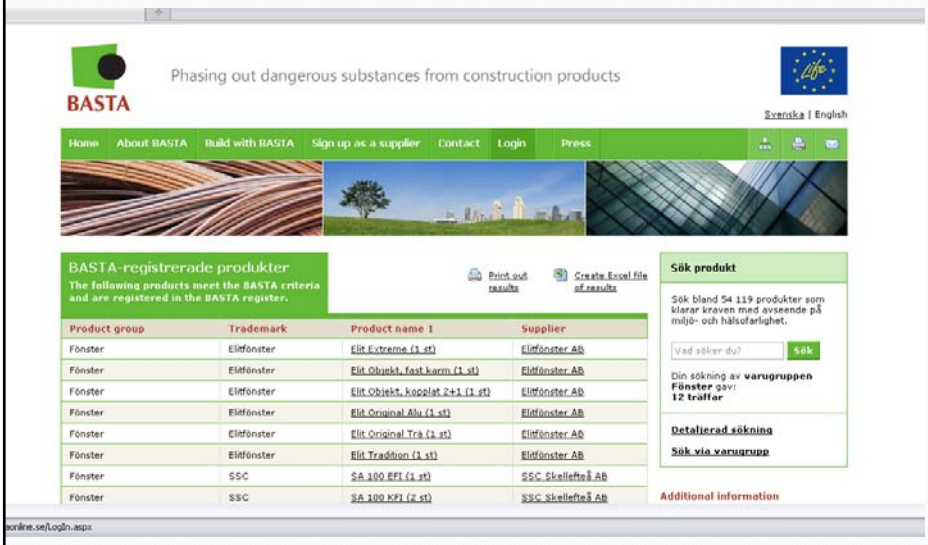


BASTA (Sweden)

BASTA

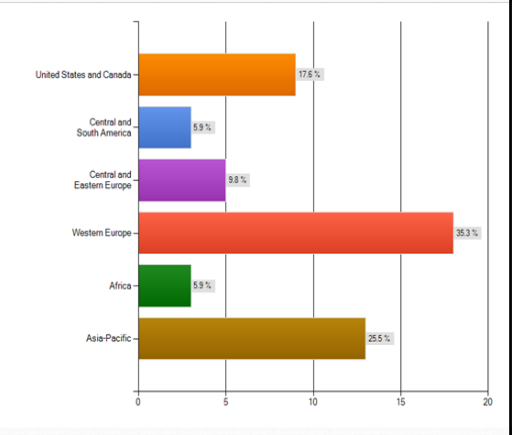
- Maintains database of materials which **do not contain** chemicals prohibited under European Community Regulation on chemicals and their safe use (REACH)
  - Carcinogens, Mutagens, or Reproductive Toxins
  - Persistent, biaccumulative substances
  - Ozone depleting substances
  - Heavy metals, etc
- Includes numerous prioritized product groups including wood products, building materials, others
- Requires manufacturer assessment (not 3rd party) and declaration, and is audited by BASTA

BASTA registered products with links to manufacturer websites



Survey Findings— Distribution of Responses

- 52 surveys received to date, representing all geographic regions.
- 35 surveys from developed / 16 from developing countries.
- Excellent distribution across stakeholder categories



Survey Findings, cont.

- 68% of respondents report seeking/using chemical information to identify building materials meeting regulatory standards set for their region or industry sector.
- Respondents rank a "high" or "very high" priority for additional information related to "scientific data on the health impacts of materials and chemicals" and "chemical and material content of products."

Survey Findings, cont.

- 38% of respondents report being able to find information about chemicals in specific building products. However, more than half of those respondents (54.5%) say that the information found is inadequate, and generally not specific enough.
- 77% of respondents feel that existing information systems do not provide balanced chemical information across the life-cycle stages of the product,

Survey Findings, Cont.

- Products ranked highest priority for chemicals information include:
  - interior finishing (including paints),
  - flooring,
  - structural materials (e.g. wood, metal and concrete),
  - insulation, and
  - material feedstocks/ingredients for material production.
- Indicated research priorities for chemical information include: use (occupation, performance), product/material manufacturing, and end-of-life (demolition, reuse, recycling).

Survey Findings: Needs/Constraints

- Perceived lack of data / lack of data that is specific enough;
- Available information is more germane to European and North American countries;
- Time-consuming nature of finding CiP information, particularly amidst shifting regulatory requirements at local and regional levels;
- Time-consuming nature of cross-referencing performance data with CiP data;
- Potential gaps in data from existing chemical reporting mechanisms, such as MSDSs; and
- Poor CiP information for end-of-life disposition of materials.

Recommendations

1) Leverage the Role of Green Building Standards & Certification Programs

Recommendations, cont.

2) Promote Standardized Reporting of Environmental Data

- expansion of the use of GHS
- "FAQs" of what stakeholders should expect from information sources such as MSDSs or EPDs

Recommendations, cont.

3) Support development of additional life-cycle research
   - Centralized support to "mine" past research

Recommendations, cont.

4) Provide ways for architects, designers and specifiers to cross-reference performance and application data with CiP information

Merci beaucoup!

For further communications:

Jack R. Geibig, jgeibig@utk.edu
or Catherine A. Wilt, catwilt@utk.edu