DIALOGUE4HEALTH and The San Francisco Foundation Introduce

Healthy Homes: You Are Where You Live

How Careful Building Materials Selection Can Improve Public Health

Bill Walsh
Executive Director
Healthy Building Network
January 19, 2012

www.healthybuilding.net
2010 green building materials market: $38.7 billion

84% increase forecast for the next five years.

Green Building sector outperformed general construction sector during recession

Source: Fredonia Group
Ineffective Chemical Regulation = Ineffective Green Product Guidelines
Chemicals of High Concern:

- **VOCs** (volatile organic compounds)
  - formaldehyde, benzene, toluene, etc

- **Metals**
  - lead, mercury, cadmium, arsenic, and chromium

- **SVOCs** (semi-volatile organic compounds)
  - Carbon bonded to bromine, chlorine, fluorine
    - Flame retardants, stain repellents, etc

- **Other endocrine disruptors**
  - Phthalates, BPA
    - Softeners in plastics, cash register receipts
HEATLOK® Soy is a spray foam insulation that gives, in a single application, an engineered building envelope with a high long-term thermal resistance, an excellent air barrier, and a recognized vapor retarder. This high performance closed cell rigid polyurethane foam is used for commercial and residential perimeter wall insulation and is spray-applied by authorized applicators. With HEATLOK® Soy, Demilec (USA) continues to pioneer advancements in high efficiency spray foam insulation which affirms Demilec (USA)'s commitment to environmental protection and superior quality of life.

**ENERGY EFFICIENCY**
- Exceptional air sealing
- Heating and cooling cost savings

**SUSTAINABLE DEVELOPMENT**
- Recycled and renewable resources
- Soy and vegetable oils

**ECOLOGICAL SPRAY FOAM**
- Zero ozone depletion
- Minimum impact on environment

**EARTH FRIENDLY**
- Soy based
- Recycled Plastics
- Zero ozone depletion blowing agents

Demilec (USA) LLC
2925 Galleria Drive • Arlington, TX 76011
Tel: (817) 640-4900
www.DemilecUSA.com

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Styrofoam XPS containing the highly persistent and toxic brominated flame retardant HBCD received Cradle 2 Cradle Silver
ToughRock® gypsum boards include paper-faced gypsum panels for a variety of applications including interior wall, floor and ceiling applications, Types X boards, abuse-resistant boards, veneer plaster base systems, and panels for use in fire-rated assemblies.

Georgia-Pacific Gypsum supports sustainable production of gypsum wallboard by using reclaimed gypsum, recycled plant waste, recycled paper, and clean fuels. We recycle enough wallboard annually to build over 50,000 homes.

Our commitment to the responsible use of natural resources influences the entire gypsum wallboard. We manufacture synthetic gypsum from the Flue Gas Desulphurization (FGD). Our energy-efficient plants convert process waste heat into useable energy.
Mercury Residues in Coal Ash

Both fly ash and flue gas desulfurization residues have been identified . . . With potential to increase mercury and/or other pollutant concentrations.
Source: US EPA 2009

Gypsum wallboard plants reported 472.8 pounds of mercury releases to the environment in 2008.
SVOCs & Endocrine Disrupting Chemicals

- Phthalates
- Harmful chemical
- 90% used in Vinyl
- Present in household dust

An SVOC
Not a VOC

Not subject to IAQ testing even in certified Products
70 household dust samples - 10 states

**Phthalate** plasticizers ubiquitous

Reproductive toxicant

asthma trigger

obesity
"...decision-makers...consider phasing out the use and purchase of flexible PVC in building materials...in schools, daycare centers, medical care facilities, nursing homes, public housing, facilities for special needs and the disabled, and other facilities with vulnerable populations when cost-effective alternatives are available."


November, 2011
New Trends In Green Building Product Evaluation

1. Chemical Avoidance “Red Lists”:

2. Transparency & Disclosure
LEED-NC – Formaldehyde

LEED-EB – Mercury

LEED-HC – more formaldehyde & mercury, plus lead, cadmium, hexavalent chromium & PFCs

LEED Pilot Library – Phthalates, halogenated flame retardants, chlorinated plastics

LEED 2012 – More Red Lists / Disclosure Required
HEALTHY LIVING ENVIRONMENT (CONTINUED)

7.2 Environmentally Preferable Flooring
Do not install carpets in entryways, laundry rooms, bathrooms, kitchens/kitchenettes, utility rooms, and all rooms of ground-connected floors. Any carpet products used must meet the Carpet and Rug Institute’s Green Label or Green Label Plus certification for carpet, pad, and carpet adhesives. Any hard surface flooring products used must be either ceramic tile, unfinished hardwood floors, OR in compliance with the Scientific Certification System’s FloorScore program criteria.

7.3 Environmentally Preferable Flooring: Alternative Sources
Use non-vinyl, non-carpet floor coverings in all rooms of building.
Halons
Polystyrene
Lead
Mercury
Cadmium
Hexavalent Chromium
CFCHCFC
VOCs
Urea
Formaldehyde
Arsenic, penta & creosote
HFR
PVC & other chlorinated plastics
Copper
Short PFCs
Polyurethane
Tins
Chlorinated paraffins
BPA
Phthalates
PBDE
Long PFC
Short PFCs
Polyurethane
Tins
PAHs, Phenol, PU, more metals & other REACH chems
Halon Polystyrene
More carcinogens
More mutagens, reproductive, developmental & neurotoxicants
More PBTs, asthmagens & endocrine disruptors
& More!!
CPA-HBN Red List
Perkins+ Will
LBC
GGHC
LEED-HC
LEED Pilot
EPA
Phenol formaldehyde
More!!
Next Steps

• An Open Standard Format, non-proprietary standard format for Reporting Chemical Ingredients and Associated Health Hazards.

• Health Impact Assessment specifically studying impacts on building occupants from chemical emissions from building products.
The Health Product Declaration (HPD) Forum is the home of the HPD Open Standard Working Group, a voluntary association of expert participants from the community of building designers, specifiers, owners and users. The HPD Open Standard Working Group was convened in July 2011 by the Materials Research Collaborative, a joint initiative of Healthy Building Network and Building Green, Inc.

The HPD Open Standard is a format for the reporting of product content and associated health information for individual building products and materials.

An “Open Standard” is one that is held in the public domain, with its use intended to be freely licensed to all. It is a standard that is intended to be developed, maintained and evolved in an open process, encouraging widespread industry participation and adoption.

The significance of the HPD Open Standard is to enable transparent disclosure and use of information regarding building product content and associated health information, by defining the critical information that is needed by building designers, specifiers, owners and users.
New Approaches:
A Health Product Declaration

<table>
<thead>
<tr>
<th>Name &amp; IDs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuff Stuff X42, product SKU SB4353</td>
<td>High performance coating designed for painting bath stall walls and other wet surfaces.</td>
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</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Ajax Manufacturing</th>
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<tbody>
<tr>
<td>Declaration date</td>
<td>June 9, 2011</td>
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### 2) Product Contents Disclosure

<table>
<thead>
<tr>
<th>Disclosure level</th>
<th>94</th>
<th>percent of intentionally added content is fully disclosed (100 percent is ideal)</th>
<th>Name</th>
<th>CAS RN</th>
<th>%</th>
<th>Health Hazard Warnings</th>
<th>RC</th>
<th>Nano</th>
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<tbody>
<tr>
<td>1</td>
<td>Phenyl Glycol Ether</td>
<td>122-60-1</td>
<td>55%</td>
<td>Cancer and male reproductive toxicity (CA Prop 65) R37 irritating to respiratory system and R53 May cause long-term adverse effects in the aquatic environment (EC Risk)</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Alkyl (C12, C14) Glycol Ether</td>
<td>68809-97-2</td>
<td>21%</td>
<td>Irritating to skin and may cause sensitization by skin contact. (EC Risk) Full Green Screen assessed at Benchmark 2 by ChemService on 6/6/2011. Report is at <a href="http://www.ChemService.com/G354345">www.ChemService.com/G354345</a></td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bis(2-aminoethyl)ether</td>
<td>9002-88-4</td>
<td>7%</td>
<td>No warnings found</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Polyethylene</td>
<td>9002-88-4</td>
<td>7%</td>
<td>No warnings found</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Trade secret</td>
<td>Not disclosed</td>
<td>3%</td>
<td>Category 1 evidence of endocrine disruption activity (EC Endocrine) Very toxic to aquatic organisms and possible risk of impaired fertility (EC Risk)</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Acme Zap II Antimicrobial</td>
<td>Content not disclosed</td>
<td>3%</td>
<td>Not available</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Silver</td>
<td>7440-27-4</td>
<td>2%</td>
<td>No warnings found</td>
<td>N</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Distillate Fuels, Light</td>
<td>34643-41-7</td>
<td>1%</td>
<td>No warnings found</td>
<td>N</td>
<td>N</td>
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</table>

All known residuals disclosed to | Lowest requirements (ideal) | X | 100 ppm | 1000 ppm | As required on MSDS | Not disclosed |
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<tbody>
<tr>
<td>9</td>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>500 ppm</td>
<td>100 ppm</td>
<td>Group 1, agent is carcinogenic to humans (IARC) and other cancer warnings (see notes) Generally accepted as a hormone (APEC) R23 Toxic by inhalation and R24 Toxic in contact with skin and R25 Toxic if swallowed and R34 Causes burns and R43 May cause sensitization by skin contact (EC Risk)</td>
<td>N</td>
</tr>
</tbody>
</table>

The manufacturer affirms that all known material contents were screened for chemicals of concern and health warning listings using Pharos Chemical and Material Library from the Healthy Building Network. Screening date | June 6, 2011 | www.hpdworkinggroup.org
Endorsed by nearly 50 Green Building Leaders
Still Needed:
Health Impact Assessments Of The Relationship Between Chemicals In Our Home & Chemicals In Our Bodies

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