



Optimizing Recycling

Making Sense of Recycled Content Feedstocks in the Era of Product Transparency

Wes Sullens

StopWaste

May 20, 2015

Alameda County Green Purchasing Roundtable, Oakland



A public agency in Alameda County, California that promotes the wiser use of materials, energy and water resources

My role:

- Advocate to strengthen green building standards statewide & nationally
- Promote the sale of recycled content building materials locally
- Participate in technical committees that affect recycling
 - CALGreen, LEED, Cradle to Cradle, ASHRAE, ULe, etc.

www.stopwaste.org

To consumers...



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But Is Recycling Really Good?



ENVIRONMENT

Is Your Athletic Field a Killer? Investigation Reignites Artificial Turf Controversy

A college soccer coach may have unearthed a cancer cluster among soccer goalies, according to NBC News.

By **Cliff Weathers** / **AlterNet**

October 9, 2014



 40 COMMENTS

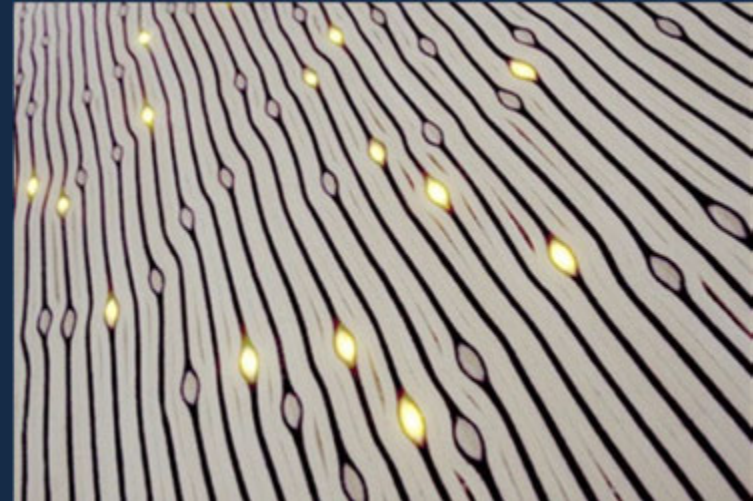
Balance?



4.6 billion pounds of discarded carpet per year and growing.




Eco green new carpet (w/LEDs)



Trends Towards Transparency & Validation

- Automotive
- Raw materials/mining sectors
- Green building rating systems
- Electronics/IT
- Sustainability Reports
- Circular Economy/EPR



Environmental Status Report 

iPad is designed with the following features to reduce environmental impact:

- Arsenic-free display glass
- Brominated flame retardant-free
- Mercury-free LED backlit display
- PVC-free
- Recyclable aluminum and glass enclosure



**Framework for Responsible Mining:
A Guide to Evolving Standards**

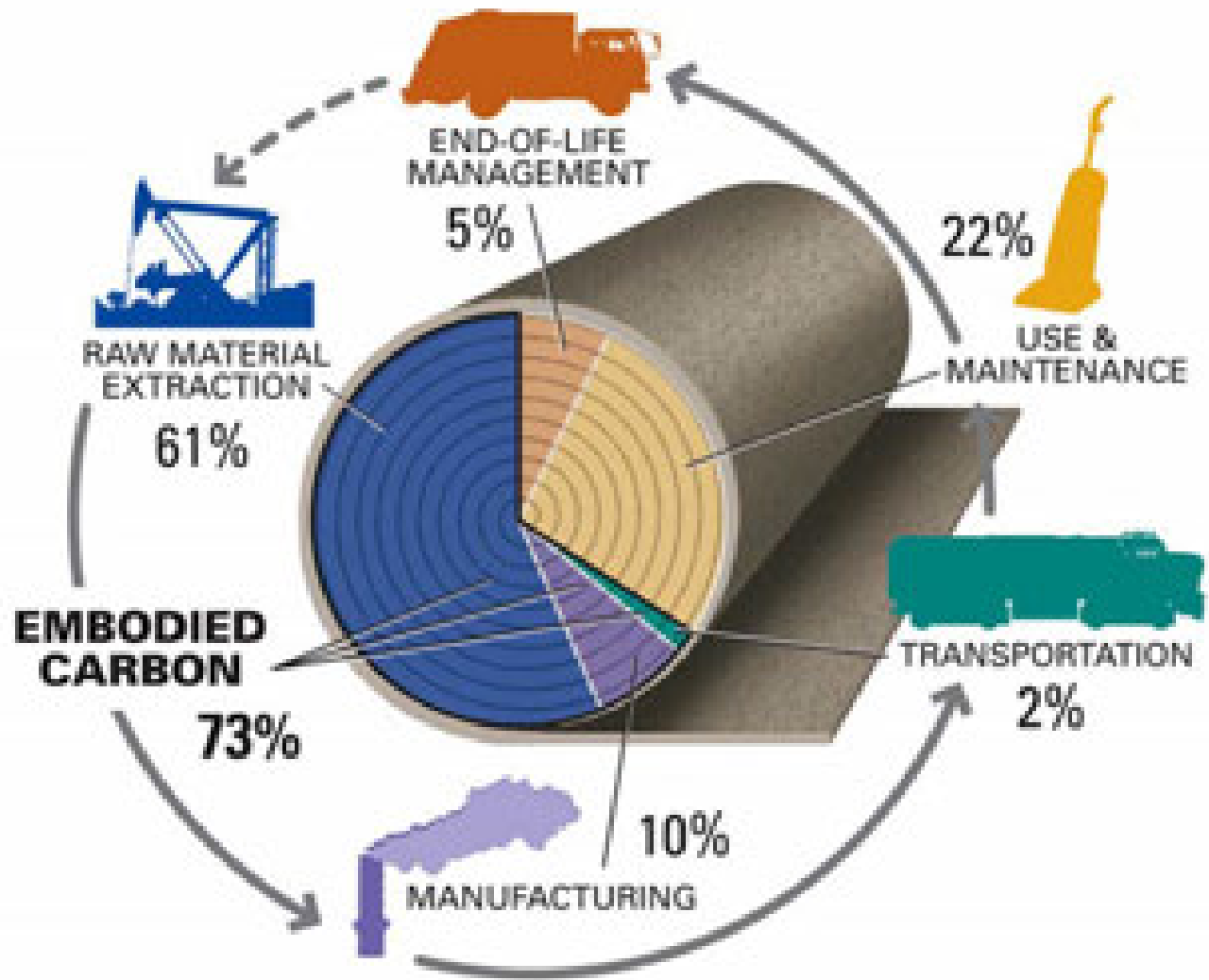
INFORMATION = IMPACT



What is Transparency in Products?

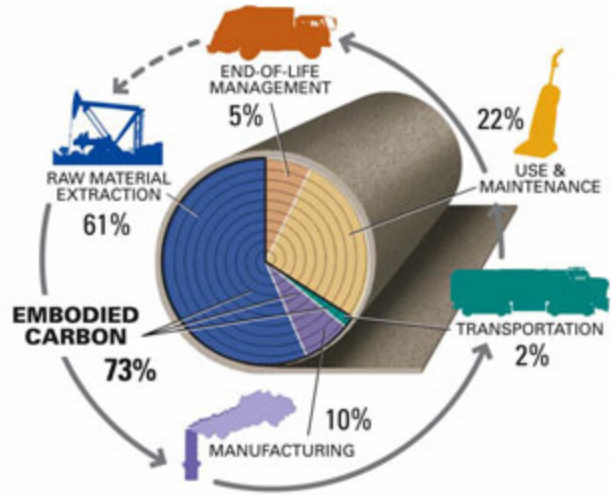
- Product-specific Life Cycle Analysis (LCA)
 - aka “Environmental Product Declarations”(EPDs)
- Supply chain best practices
 - Worker/environmental rights, safety & health
 - Extraction best practices
 - Chain of custody
- Disclosure and optimization of product ingredients

Carbon footprint of nylon carpet



Source: Interface Global

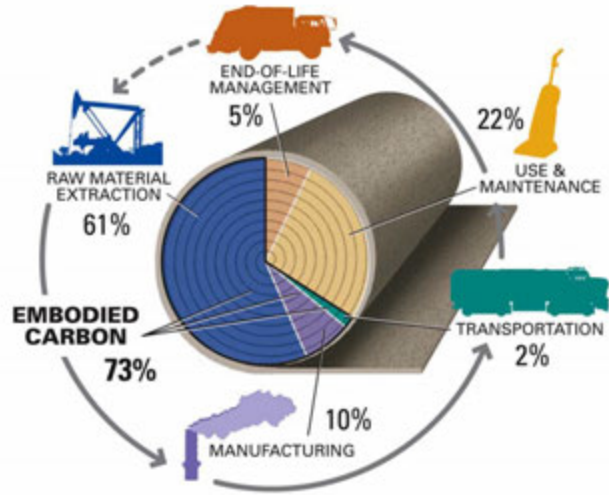
What's missing?



Full Supply
Chain
Impacts

Human &
Environmental
Health

Multi-Attribute Assessment



Product Specific
LCA (EPDs)

Raw Materials
Extraction
Practices

Additives &
Ingredient
Optimization

Recycled Content in Multi-Attribute assessments

- Recycled content is often favorable for embodied energy (using LCA)
- Recycled content is often preferable to virgin resource extraction impacts
- What about feedstocks and potential hazardous ingredients/additives?

Healthy Building Network Research & Report

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HEALTHY BUILDING news

An inside look at **EMERGING MARKET AND POLITICAL TRENDS**

Materials Optimization Starts at the Intersection of Human Health and Recycling

Wes Sullens - April 29, 2015



On Earth Day my organization (StopWaste) and the Healthy Building Network published the first in a series of in-depth studies of common feedstocks found in many recycled content building products: Post-Consumer Polyvinyl Chloride in Building Products. These reports are part of a new initiative we have undertaken along with the San Francisco Department of the Environment to identify options for enhancing recycled content value, fostering longer material reuse cycles, and improving environmental and human health. It can be a challenge to square two important goals: 1) increase recycling, and 2) protect human health and the environment, given the amount of toxic chemicals currently in some recycled feedstocks. However, it also presents a great opportunity as evidence shows that cleaning up recycled feedstocks increases industry interest in those feedstocks and ultimately increases their diversion from landfills and incinerators. Our case study of recycled polyvinyl chloride (PVC, or... [Read More](#))

Research Scope: Phase 1

1. Analyze 10 common recycled content feedstocks
2. Identify & recommend best practices, things to avoid, and areas for further research
3. Audiences: manufacturers, regulators, policymakers, major consumers

**Partners: StopWaste, Healthy Building Network, San Francisco Dept. of Env.*

Research Criteria

1. Room to Grow
2. Close to Home / Green Jobs
3. Feedstock Healthfulness
4. Supply Chain Quality Controls /
Transparency

Outcomes

- Whitepaper that summarizes recommendations & findings
- Ten feedstock evaluations with findings and recommendations for optimizing recycled content quality & quantity

Reclaimed feedstocks evaluated:

Glass cullet, asphalt pavement, asphalt roofing shingles, wood fiber waste, aluminum, gypsum wallboard, cellulose, PVC, polyurethane foam (furniture foams), tires (crumb or shredded), nylon 6 & 6,6

Major Findings

1. Recycling remains a preferred option for many feedstock materials and represents significant benefit to the environment and local economies.

Recommendations:

- *Industry should expand domestic recycling infrastructure. Invest in screening technologies.*
- *Don't avoid recycled content; instead request transparency reports from manufacturers and suppliers in order to make informed decisions*

Major Findings

2. Product designers of new materials have the ability to eliminate or minimize problematic ingredients that can affect the quality of future recycled content feedstocks

Recommendation:

- *Manufacturers of new materials can adopt circular economy principles*

Major Findings

3. In many cases, the origin and chain of custody of recycled feedstocks used in building products are not disclosed to consumers and frequently are not even known by the product manufacturer

Recommendations:

- *Regulators and manufacturers can request transparency reports from supply chain actors*
- *Consumers can prioritize purchases from known and documented sources*

Major Findings

4. Recycled feedstocks can contain legacy pollutants in quantities that exceed allowable limits for new products.

Recommendations:

- *Where there's a risk of exposure to people or the environment, prefer products that have verified sources or contamination levels*
- *If threshold levels are not established for recycled content products, industry and/or regulators should set thresholds*

Major Findings

5. Best practices are readily available to optimize many recycled content feedstocks.

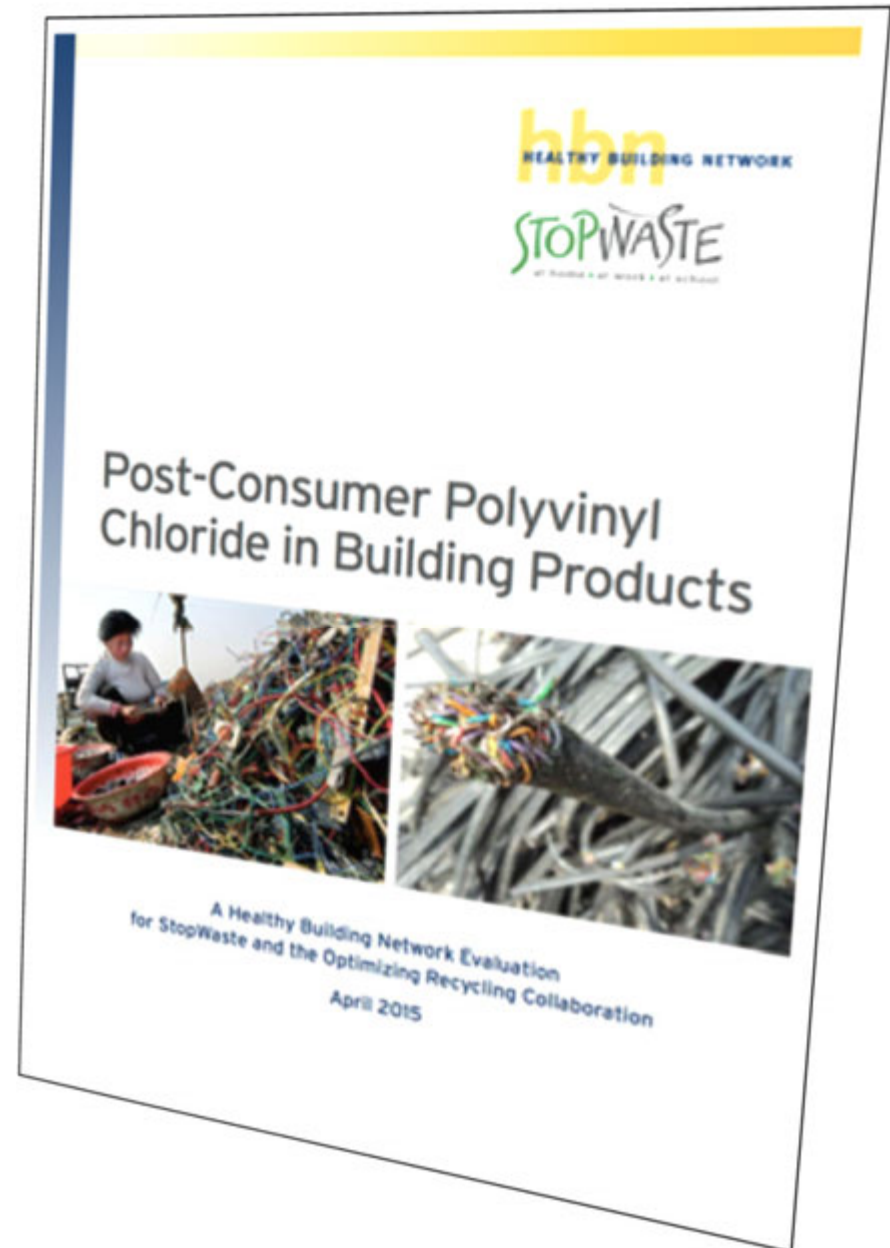
Recommendations:

- *Prioritize purchases from manufacturers that control their feedstock sources and/or screen for problematic contaminants in feedstocks*

Feedstock Evaluation #1: PVC

- Released in April
- Found that cable scrap is used as filler material in many new PVC flooring products, introducing exposure potential for lead & cadmium

Many manufacturers are moving away from lead and cadmium stabilizers and phthalate plasticizers in new products, and those should be preferred because they reduce exposure to toxicants, as well as provide a cleaner feedstock for future materials recycling.



“Over 6 million pounds of post consumer flooring has been recycled through the Armstrong Floor Recycling Program since 2009, representing 3,000 tons of diverted landfill material.”

- Armstrong brochure, 2015

“Interface’s approach is to develop screening and testing systems to avoid the most clearly problematic waste streams, especially where PBTs may be involved. This is not an easy task, but the alternative is switching back to virgin materials based on fracked natural gas or refined crude oil which virtually guarantees exposure to PBTs for local communities.”

- M. Davis, personal communication, April 2 and April 7, 2015

Tarkett’s Limits on Post-Consumer PVC

Tarkett, one of the world’s largest vinyl flooring companies, has the most restrictive policy on post-consumer PVC use in the industry. With one exception, Tarkett is not accepting any post-consumer PVC until phthalate-free floors reach the end of service life.

Leading Manufacturers: PVC

- Armstrong: Only using known sources of recovered PVC (mostly from their own flooring)
- Tarkett: Screens feedstocks and limits recycled content based on the exposure threshold for children's toys
- Interface: Sources from feedstocks with known sources & screens them

Phase 2 of Research

Beginning summer 2015

- Additional feedstock evaluations
- Expanded website to house reports/findings
- Formation of advisory group made up for manufacturers, consumers, regulators
- Formation of Steering Committee for additional funding partners
- Product-specific recommendations

Stay Tuned!

www.healthybuilding.net



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