Environmental Innovations in Packaging and Freight

CTS Presentation
December 1, 2006

3M’s Packaging Environmental Sustainability Initiative
Sustainable Package System Vision

Packaging Designed & Sourced Responsibly

Talking Points -

A. Processes for Reviewing New & Existing Packaging

B. General Transportation Sustainability Opportunities
   1) Densification – pack more into less
   2) Re-usable Systems
   3) Light weighting, minimizing or NO packaging materials
   4) Other Thoughts

A whole lot of small stuff!
A. Processes for Reviewing New & Existing Packaging
Sustainability Focus on all levels of New & Existing Packaging through it’s entire lifecycle….. With some prodding from Wal-Mart

<table>
<thead>
<tr>
<th>Stages</th>
<th>Material Acquisition</th>
<th>Packaging Processes</th>
<th>Warehouse, Distribution, Transport</th>
<th>Product Use, Reuse</th>
<th>Final Disposal or Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pack Level 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pack Level 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pack Level 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ø Primary Product
Ø Intermediate Cartons
Ø Shipping Containers
Ø Customer Packaging

PPD – Physical Pack Data
NEW YORK (AFX) - Wal-Mart Stores Inc., the world's largest retailer, said Friday it will launch a program to help cut overall packaging use by 5 percent worldwide, in an effort to keep trash out of landfills and global-warming gases out of the atmosphere.

The Bentonville, Ark.-based company said it will begin the initiative in 2008, and forecasts savings of $3.4 billion. Under the five-year plan, Wal-Mart will push its global suppliers to find more efficient packaging methods. "Packaging is where consumers and suppliers come together and can have a real impact both on business efficiency and environmental stewardship," Wal-Mart Chief Executive H. Lee Scott said in a statement. 'Even small changes to packaging have a significant ripple effect. Improved packaging means less waste, fewer materials used, and savings on transportation, manufacturing, shipping and storage.'

Beginning Nov. 1, Wal-Mart said it will begin using a packaging scorecard, to measure how its more than 2,000 private-label suppliers use packaging alternatives or more sustainable materials. Beginning in 2008, Wal-Mart will measure its worldwide supply base on their packaging reductions. Wal-Mart shares fell 27 cents to $48.19 in afternoon
“Packaging Structural Design Process”

New Products

PE receives and reviews the requested graphics/structure information 5.12

PE returns the information to the applicable resources 5.13

PE completes the EDD and files 5.14

PE requests and finalizes blue lines and drawings 5.10

PE provides structure and project information to the necessary resources 5.11

PE designs and evaluates package 5.3

PE reviews preliminary design with BU 5.4

PE determines if qualification steps are required 5.6

Approved

Not Approved

5.7

PE facilitates needed qualification activities 5.8

PE assembles and considers package requirements 5.2

PE evaluates package requirements 5.5

PE receives request to develop/implement a package 5.1

Example: Environmental sustainability.

BU = Business Unit
EDD = Essential Decision Data
PE = Package Engineer

PE = Package Engineer
“Green Idea Process” for Existing Products

PE notified - Top Pkg. Supply to WM

PE reviews and validates data (specs/standards)

- Don’t Agree
  - PE reviews with project team
    - Discontinue Effort
- Agree
  - PE orders product sample
    - PE conducts brainstorming session and records options in prioritization tool
    - PE works with stakeholders on top options
      - PE tests to failure & increases to min. passing grade
        - PE communicates changes to BU
          - PE implements new design
"Encouraging Proactive Idea Generation" through the Packaging Opportunity Matrix used to Prioritize Environmental Opportunities...because resources are limited!

<table>
<thead>
<tr>
<th>Engineer/Analyst</th>
<th>3M ID</th>
<th>Description</th>
<th>Benefit Potential (Cost or Growth OR - Mat Costs)</th>
<th>Product Risk Assessment (capital investment &amp; impact)</th>
<th>Other Benefit (Cost or Source Reduction, Environmental, Other)</th>
<th>Divisional Priority</th>
<th>Ease of Implementation</th>
<th>Total Score</th>
<th>Brief Explanation of the Opportunity or (ton reduction estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joy Harper</td>
<td>70-0712-1897-5</td>
<td>810K4 Magic Tape</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>297</td>
<td>5.1 Ton</td>
</tr>
<tr>
<td>Joel Vickaty</td>
<td>70-0711-6020-7</td>
<td>1103 DC-6 Allergen Reduction Filter</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>297</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Joel Vickaty</td>
<td>70-0711-6010-1</td>
<td>1101 DC-6 Allergen Reduction Filter</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>279</td>
<td>0.8 Ton</td>
</tr>
<tr>
<td>Brian Stromgren</td>
<td>70-0707-9299-5</td>
<td>Super 33+ Electrical Tape</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>231</td>
<td>0.19 Ton</td>
</tr>
<tr>
<td>Joel Vickaty</td>
<td>70-0711-6020-7</td>
<td>1103 DC-6 Allergen Reduction Filter</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>297</td>
<td>Pallets saved</td>
</tr>
<tr>
<td>Joel Vickaty</td>
<td>70-0711-6010-1</td>
<td>1101 DC-6 Allergen Reduction Filter</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>297</td>
<td>Pallets saved</td>
</tr>
<tr>
<td>Travis Strom</td>
<td>70-0711-9990-9</td>
<td>2110-30-CS (duct tape)</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>221</td>
<td>Chemicals to bleach @ supplier</td>
</tr>
<tr>
<td>Travis Strom</td>
<td>70-0711-5714-8</td>
<td>2120C Transp. Duct Tape</td>
<td>1</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>206</td>
<td></td>
</tr>
</tbody>
</table>

Assumptions/General Ideas:
- Structure Spec changes would be across all products that use the structure.
- Savings is based upon previous 12 months sales data volume.

Pricing/Technical Marketing:
- Brian Johnson - GMA - lightweight pallet
- Sourcing to look into renewable energy suppliers for any of the changes. Exp: Change blister material to biodegradable
B. General Transportation Sustainability Opportunities

1) Densification – pack more into less
2) Re-usable Systems
3) Lightweighting, minimizing or NO packaging materials
4) Other Thoughts
Densification
Transport Packaging - Densification

Ø Shipping Container Design – Orient dimensions to optimize material requirements

Ø Shipping Container Orientation on a Pallet – software aided design to densify the load footprint.

Ø Replacing traditional support/dunnage packaging materials with high performance, light weight, design constructions.

Ø Whole Intent is to Optimize Cube within the Transportation Weight Limits......
Transport Packaging – Densification Shipper Level (Same Footprint, Less Material)

Ø Shipping Container Design – Orient dimensions to optimize material usage – example

Ø 20 x 14 x 12 Regular Slotted Container (Top Loading)
   Ø **12.3 Sq Ft.** Board Material to make the box

Ø 14 x 12 x 20 Regular Slotted Container (Side Loading)
   Ø **11.5 Sq Ft.** Board Material to make the box.

Ø Both Boxes have the same internal dimensional size
Shipping Container Orientation on a Pallet

Computer Aided Design

Discussion points:

- Optimizing the pallet load footprint reduces total annual pallet & slip sheet material usage
- Optimizing the pallet load footprint enables more product per container

Boxes/layer: 51
Layers/pallet: 10
Boxes/Unit Load: 510

Boxes/layer: 50
Layers/pallet: 10
Boxes/Unit Load: 500
Replacing traditional support/dunnage packaging materials with high performance, lightweight, design constructions.

- Replace Wood with Corrugated
Re-usability
Re-Usability

Ø High Volume Packaging Supplies in Re-Usable Containers
   Ø Industrial & Retail Tape Products
   Ø Folding Cartons
     Ø (Scotch brand Magic, Transparent, Double Stick tapes), uses minimum 30% post-consumer material in all folding cartons
     Ø Supplies to the tape mfg plant are all provided in re-usable plastic totes instead of corrugated cartons
     Ø All waste products are recycled or fuel burned: paperboard, ink and press wash chemicals
     Ø All coatings and glues used for 3M products are water based

Ø Re-Turnable / Re-usable Containers with End-Users
   Ø Automotive & Personal Care Customers

Ø Look for Closed Loop Supply Chain Opportunities…….
Product Packaging
Lightweighting / Test to Failure
### Key Account: Box Design Change

Ø 16x25 Filter Box redesign – design change reduced total material usage.

<table>
<thead>
<tr>
<th>Part</th>
<th>Gram Wt Diff.</th>
<th>12 mo case units</th>
<th>Kg’s saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>34-7054-6694-3 to 34-7059-8151-1</td>
<td>225 grams each</td>
<td>42,925 cases</td>
<td>10,388 kg</td>
</tr>
</tbody>
</table>

22,900 lbs or about 10 tons!
Key Account: Component Removal Example - 2005

Ø Oxy Clean – 2 corrugated pads from case

<table>
<thead>
<tr>
<th>Part</th>
<th>Gram Wt Diff.</th>
<th>12 mo case units</th>
<th>Kg’s saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>34-7057-0572-0A</td>
<td>31.52 ea. x (2)</td>
<td>46,000</td>
<td>2,899.8</td>
</tr>
</tbody>
</table>

6393 lbs or 3.19 tons!
Other Sustainability Thoughts
Other Contributions to Environmental Sustainability…

Ø Wood Packaging
- The sustainable resource
- Uses the lower grades of the log grading process, reserving higher grades for furniture, paper, etc.
- 3M has a pallet recycling program to refurbish and reuse damaged pallets. When a pallet reaches the end of its useful life, it is ground up and made into other desirable products such as garden mulch, animal bedding, and boiler fuel.

Ø Corrugated Packaging
- Abrasives and Sponge packaging suppliers both own 100% recycled paper mills and the majority of 3M corrugated boxes purchased from those suppliers are made with paper from these mills.
Other Contributions to Environmental Sustainability...

Ø **Flexible Packaging**

Ø Down-gauging material
Ø Continually exploring new flexible packaging materials as they become available to determine if they will meet 3M performance and cost requirements

Ø **Sourcing Proximity to Manufacturing Sites**

Ø Key Sources of Supply in Close Proximity to 3M Manufacturing Sites

Ø Displays
Ø Corrugated, Paperboard
Ø Local Sources of Supply Globally
3M Suppliers contributions to Environmental Sustainability…

• Carton supplier has installed a motion sensing lighting system in their warehouse as well as added fluorescent fixtures with long-life lamps to conserve energy

• Most 3M suppliers have waste reduction programs and either recycle waste back into their product (reuse) or provide waste to various facilities as an energy producing fuel (inks and paper products.)

• Pallet and Label suppliers are FSC (Forest Stewardship Council) certified

   – www.rainforest-alliance.org/programs/forestry/smartwood
Thank You for the Opportunity to address this important initiative!

Summary – A Whole Lot of Small Stuff Adds Up