Collections 101

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Agenda

- Comparison to other recycling
- Carpet Basics
- Collection/Recycling Center
- General Issues
Comparisons

• **Traditional**
  - Paper
  - Glass
  - Metal
  - Plastic

• **Non-traditional**
  - Carpet
  - Electronic
  - Many others
Recycle Industries

2003 Recycle Rates

<table>
<thead>
<tr>
<th>Material</th>
<th>% Recycle Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>87</td>
</tr>
<tr>
<td>Plastic</td>
<td>61</td>
</tr>
<tr>
<td>Paper</td>
<td>56</td>
</tr>
<tr>
<td>Tires</td>
<td>44</td>
</tr>
<tr>
<td>Glass</td>
<td>25</td>
</tr>
<tr>
<td>Steel</td>
<td>22</td>
</tr>
</tbody>
</table>

Source: EPA (www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm)
Recycle Industries

2003 Recycle Rates

- Tire: 87%
- Steel (total): 61%
- Aluminum: 56%
- Plastic (bottles): 44%
- Glass: 25%
- Paper: 22%
Figure 1: U.S. Scrap Tire Management Trends, 1990 - 2005.
Figure 7. Metals generation and recovery, 1960 to 2003
Figure 3. Paper generation and recovery, 1960 to 2003
Figure 5. Glass generation and recovery, 1960 to 2003

Glass Recycling
Plastic Recycling

Figure 9. Plastics generation and recovery, 1960 to 2003

Generation

Recovery
Agenda

• Comparison to other recycling
• Carpet Basics
• Collection/Recycling Center
• Issues
Carpet Basics

• Polymers
Polymers

Polyamide 6.6

Polyamide 6
Polymers

- N6: 33%
- N66: 40%
- PP: 15%
- PET: 8%
- Other: 4%
Carpet Basics

- Polymers
- Construction
Construction

Source: CRI - The Carpet Primer, used with permission
Construction

Overall approximate averages by weight

- Latex: 47%
- Face Fiber: 44%
- PP Backing: 9%
Carpet Basics

- Polymers
- Construction
- Processes
Processes

- Polymer Production
- Fiber Product
- Carpet Production
- Yarn Production
Carpet Basics

- Polymers
- Construction
- Processes
- Styles
Styles

Cut Pile

Loop Pile
Styles

Patterned Loop

Cut & Loop
Carpet Basics

- Polymers
- Construction
- Processes
- Styles
- Markets
Markets

- Carpet
  - Residential
    - Cut-pile
    - Level-loop
  - Commercial
    - Tile
    - PVC backing
    - Other backings
    - Specialty backings
  - Broadloom
    - Standard backing
    - Specialty Backing

Stretched-in or glued-down
Carpet Basics

- Polymers
- Construction
- Processes
- Styles
- Markets
- Other items to know
  - SDN vs. Continuous Dye
Recycling Center

- Know YOUR market
  - Tipping fees
  - Recycling laws
  - How is carpet disposed of locally
    - Cost to haul/ tip
- Visit landfill/ local recyclers
- Get to know local large accounts...then constantly grow your knowledge of all retailers
- Determine types of containers & methods of hauling
  - Trailers, open top, sea-containers, specialty
Recycle Center

- **Facility**
  - 8,000-10,000 sf
  - 2-4 dock doors
  - Tipping height (30 ft) a plus
  - Location-location-location: Location matters

- **Equipment**
  - Bob-cat with grapple (both sides)
  - Carpet ID devices (2 or more)
  - Baler (vertical or horizontal)
    - Verticals to 400k/ mo, horizontals 300k - 500k/ mo
    - Vertical = 1 bale per 45-60 minutes per person: 800# bales
    - Horizontal = 8-12 bales / hr: 1000-1400 # bales
  - PET Strapping device
  - Bale scale
  - Propane fork truck(s) (w/ solid tires)
Issues

• Costs:
  • Business is labor rate driven
• Bale Quality
  • Calibration/verification of device
  • Trash in bales
• PET Strapping
  • Strapping strength
Rules of Thumb

Carpet weight: 4 lbs/ yd²
Commercial carpet: 30%
New construction: 40%
Dumpster size/ weight: 40 yd³ = 8,000 lbs
Trailer weight: 48 ft = 20-30k lbs (loose)
An example for Nylon 6

CARE estimate:
5B lbs => 17 lbs/ person/ yr

Assumes:
- 33% N6 fiber type
- 70% residential market
- 60% refurb vs. new home
- 40% capture rate

\[
17 \times 0.33 \times 0.7 \times 0.6 \times 0.4 = 0.95 \text{ lbs of N6/ person/ yr}
\]
An example for Nylon 6

N6 Carpet Collection per Capita

Lbs of N6 PCC per person

City / Region

A  B  C  D  E  F  G  H  I  J  K  L  M  N  O