Waste Carpet Opportunities in Nova Scotia?

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Research and Development Project Presented to the Resource Recovery Fund Board

Master of Resource and Environmental Management Project Report
Dalhousie University

Construction/Composition/Durability

(CRI, 2010)

(CRI, n.d.)
Why recover and recycle carpet?

- RRFB
  - Mission & mandate
- Province
  - EGSPA and solid waste target
- Entrepreneur
  - New opportunities
- Current Interest
  - CARE/CCRE, Bill 2398/ Ontario legislation

Objectives

1. What can be done with carpet?

1. Decision framework for three recovery and recycling options

1. Critical data/information gaps
Objective 1: What can be done with carpet?

- Collection and Sorting

Objective 1: What can be done with carpet?

- Baling and shipping

(Cassell, 2010)
Objective 1: What can be done with carpet?

- Reuse
- Refurbishment

Wool as fertilizer

Objective #1
What can be done with carpet?

- Chemical Recycling

Shaw Evergreen Nylon Recycling Plant, Georgia
(DeLozier, 2006)
Objective #1
What can be done with carpet?

- Mechanical Dry (latex backing)
- Mechanical Dry/Wet (latex backing)
- Mechanical Dry (carpet tile)

(Randus, n.d.)

Objective #1
What can be done with carpet?

- Mechanical - skiving or shearing

(Ragiell, 2010)
Objective #1
What can be done with carpet?

- Fuel for cement plants
- Carpet as alternate fuel
- Waste to Energy

(Shaw, 2008)

Objective #1
What can be done with carpet?

- Alternate products

(Shaw, 2008)
Constraints to carpet recycling

- Quantity
  - 2.7 billions kg by 2010
- Quality
- Economics
- Technology
Objective 2: Decision framework

Should carpet be collected in NS?
   YES  NO
   Should carpet be sorted & baled in NS?
       NO END
       YES Should carpet be processed in NS?
            NO Ship outside NS
            YES Canada United States

*Can also happen at sorting location

Objective 3: Critical data and information gaps

Should carpet be collected in NS?
   YES  NO
   Should carpet be sorted & baled in NS?
       NO END
       YES Should carpet be processed in NS?
            NO Ship outside NS
            YES Canada United States

Skiving in NS Alternate products in NS
*Can also happen at sorting location
*Currently, only N6 fiber is accepted
Objective 3: Critical data and information gaps

- Quantity
- HRM studies
  - <4 - 4.2 %
  - 8-9 kg/person

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>Total carpet waste</th>
<th>Total carpet waste / person</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003/2004</td>
<td>HRM</td>
<td>2,748.291 tons or 2,748.291 kg</td>
<td>0.007653 ton or 7.7 kg</td>
</tr>
<tr>
<td></td>
<td>NS</td>
<td>6,870.725 tons or 6,870.725 kg</td>
<td>---</td>
</tr>
<tr>
<td>2008/2009</td>
<td>HRM</td>
<td>3,244.155 tons or 3,244.155 kg</td>
<td>0.008705 ton or 8.7 kg</td>
</tr>
<tr>
<td></td>
<td>NS</td>
<td>7,912.573 tons or 7,912.573 kg</td>
<td>---</td>
</tr>
</tbody>
</table>

Objective 3: Critical data and information gaps

- Quality
  - No Canadian data
  - Condition (Wet vs. Dry)
  - Commercial vs. Residential
Objective 3: Critical data and information gaps

- Economics
  - Cheaper than solid waste
  - Cheaper than virgin material
  - Market outlets

- Law & regulation
  - Landfill ban?
  - Border crossing?

Conclusion

- Data and information on waste carpet in Nova Scotia and Canada is very limited

- Based on limited information, some aspects of carpet recovery and recycling may be possible

- Nova Scotia could increase its carpet waste inventory with nearby provinces
Recommendations

1. Landfill facilities should complete waste audits to quantify the carpet waste and the types of carpet in Nova Scotia

2. Evaluate if using already existing facilities for carpet baling is feasible

3. Join the carpet recycling network and create relationships

4. Evaluate if manufacturers would adopt a stewardship program and determine a reasonable stewardship fee

5. Develop carpet regulations consistent with leading jurisdictions

6. Encourages research and development projects to assess feasibility of alternate products

Thank you!
Network of resources

- Carpet & Rug Institute (USA) 1945
- Canadian Carpet Institute (Canada) 1963
- Georgia Institute of Technology (USA) 1990
- Annual Carpet Conference (USA) 1996
- Carpet American Recovery Effort (USA) 2002
- Annual Entrepreneur Conferences (USA) 2004
- Canadian Carpet Recovery Effort (Canada) 2010