Turning Up the Heat on Foam Recycling

Grande Prairie & Cochrane, AB

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Do YOU Have a Waste Polystyrene Problem?
Program Development Considerations

1. Why recycle foam?
2. Packaging diversity
3. Collection Methods
4. Operating & Storage Space
5. Processing Technology
6. Transportation & Markets
7. Case Studies: Cochrane & Grande Prairie
Why recycle foam?
Controlling Disposal Costs

- Hauling: $250 Lift
- Disposal: $95-113/MT

= Opportunity!
What are we talking about when we talk about “Styrofoam”? 

- Take out containers
- Meat Trays/Egg Cartons
- Packing foam
- Packing peanuts
- Styrofoam insulation
- EPS, EPP, EPE
Packaging Diversity
Collection Methods

- Eco Centres
- Landfills
- Curbside Collection
MMBC Depot Collection & Meaford, ON

Campbell Mountain Landfill mega bag depot
Operating Space & Storage
Processing Technology

[Images of processing technology equipment and materials]
Transportation & Markets

EPS Pricing 2016

- Thermal $0.06-$0.10/lb
- Cold Compacted $0.02-$0.05/lb
- Full loads preferred
- EPP and EPE similar rates
- Overseas & Domestic
Case Studies
Town of Cochrane Program 1 2009 – 2014

- Launched July 2009
- Resident drop off at Eco Centre
- Cold Compaction
- Acceptable Material: Clean White Packing Foam Only
- 30 MT July 2009 – January 2015
Greenmax Cold Compactor
# Operating Costs

<table>
<thead>
<tr>
<th>CAPITAL COSTS</th>
<th>OPERATING COSTS (ANNUAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACHINE PURCHASE</td>
<td>MAINTENANCE</td>
</tr>
<tr>
<td>$35,000 USD</td>
<td>$2,500</td>
</tr>
<tr>
<td>INSTALLATION &amp; RENO</td>
<td>ELECTRICITY</td>
</tr>
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<td>$10,000 CND</td>
<td>$500</td>
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<td>STAFF EXPENSE</td>
<td>$12,600</td>
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<tr>
<td>TRANSPORTATION</td>
<td>$1,200</td>
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<td>TOTAL</td>
<td>$16,800</td>
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</table>
Operating/Storage Space

- Loose material processed immediately (no storage)
- Pallets could not be stacked in yard
- Limited yard space
Transportation

- Expensive to haul
- Too light
- Awkward & Unstable
- Terrible Payload
Program 2 2015 - Present

- FD-25
- Thermal densification
- Expanded acceptable materials
- Capital $33 380 US
Challenges:

• Machine arrived with ONLY Japanese labelling!

• Discovered packing peanuts are not styrofoam: they melted and fused to heater in the machine.

• Contamination in the form of screws and nails, if not caught, feed into the machine and cause downtime and expensive repairs/parts replacement.

• Coloured Styrofoam – is now comingled (as long as #6 PS)

• Other contamination – all material must be sorted by staff before processing
Yamamoto Styrofoam Compactor High Melter RE-ES01X

- Capable of densifying EPS, PSP, XPS, EPP & EPE
- Processes 50 kg/hour
- Produces compacted (melted & moulded at 170C) 15 x 5 x 50 cm blocks of approx. 2.5 kg each
- Machine weighs 1160 kg
- Machine dimensions are 292 x 150 x 188 cm (as purchased, plywood hopper not included in measurements)
One full Transit Bag = One ingot
• Bins provided at Eco Centre and Landfill for residents to place their clean styrofoam (#6 PS only).
• Staff sort transit bags to ensure no contamination.
• Styro fed into machine hopper and ingots are extruded.
• Ingots are palletized (each palette is approx. 1 metric ton) and stored outside
Machine purchased and arrived on-site in July 2011.

<table>
<thead>
<tr>
<th>Year</th>
<th>EPS Tonnage Diverted</th>
<th>EPS Kgs</th>
<th>(50-100kg/m³)</th>
<th>Volume of EPS (cubic)</th>
<th>Revenue if disposed</th>
<th>Typical Waste in Place</th>
<th>Tonnes of Waste in place of EPS</th>
<th>Revenue from Waste in place of diverted EPS</th>
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<tbody>
<tr>
<td>2011</td>
<td>2</td>
<td>2000</td>
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<td>2012</td>
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<td>9560.36</td>
<td>50</td>
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This calculation is based on the volume of landfill space made available for regular waste to be compacted by the diversion of EPS.
Other Foam Recycling Initiatives

- Vernon, BC
- Nanaimo, BC
- Gibsons, BC
- Emterra (MMBC)
- Airdrie, AB
- Plasti-Fab

- PEL Recycling
- SEARS Western Canada Distribution Centre
Would we recommend it?

Yes……but.

- Pick the right technology and right size it.
- Ensure you have lots of operating & storage space.
- Recognize from the get go that you are not going to get rich.