APR Rigid Plastics Recycling Program

Liz Bedard, Director
APR Rigid Plastics Recycling Program

Association of Postconsumer Plastic Recyclers (APR)

• National trade association -

“The Voice of Plastic Recycling”

• Representing companies with over 90% of the post-consumer plastic processing capacity in North America.
The voice of plastics recycling

APR Rigid Plastics Recycling Program

APR goals include:

• Increasing supply of recycled plastics
• Reducing contamination for plastic recyclers
• Developing plastic “Design for Recyclability” protocols
• Recognizing packages designed for recycling
• Highlighting products made from recycled plastic material
• Increasing plastic recycling beyond bottles

The Association of Postconsumer Plastic Recyclers
The voice of plastics recycling
APR Rigid Plastics Recycling Program

APR Rigid Plastics Recycling Program -
membership committee representing rigid plastic stakeholders –

- generators, collectors
- recyclers, reclaimers
- brand names companies
- resin producers
- public policy makers

Goal – increase plastic recycling beyond bottles
APR Rigid Plastics Recycling Program

- American Chemistry Council
- Avangard
- Berry Plastics
- Blue Ridge Plastics
- Clean Tech Inc.
- ConAgra Foods
- Custom Polymers Inc
- Dart Container
- Denton Plastics
- Dow Chemical Company
- Entropex
- Envision Plastics
- Estee Lauder Companies, Inc.
- Graham Recycling Company
- Haycore Canada Inc.
- IntegriCo Composites
- Kimberly-Clark
- KW Plastics Recycling

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- Lyondell Basell Industries
- Merlin Plastics Supply Inc.
- Milliken & Company
- Moore Recycling
- MRC Polymers
- NAPCOR
- NatureWorks LLC
- New York City – Department of Sanitation
- North Carolina - Division of Pollution Prevention
- Oregon Department Of Environmental Quality
- Perpetual Recycling Solutions
- Procter & Gamble Company
- ReCommunity
- Recyc RPM
- Rehrig Logistics
- Starbucks Coffee Company
- Talco Plastics, Inc.
- Waste Management – Recycle America
APR Rigid Plastics Recycling Program

Rigids Committee has three focus areas:

1. *Up-to-date information*

2. *Supply Issues*

3. *Demand Issues*
**APR Rigid Plastics Recycling Program**

**Municipal Plastic Recycling National Survey**

- Conducted the last 4 years to get a “sense” of how and what plastics are being collected nationwide
- Each state’s largest city’s plastic collection resident education
- Completed in August/September
- Four trends are clear....
  - Single stream recycling increasing
  - Moving away from #1 and #2 only
  - Switching form “bottles only” to all containers
  - Moving towards collecting #1-7 plastic containers
# Municipal Plastic Recycling National Survey

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Stream</td>
<td>31</td>
<td>34</td>
<td>35</td>
<td>39</td>
</tr>
<tr>
<td>Dual Stream</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Source Separated</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Pilot Program(s)</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Drop Off Only</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Subscription</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>51</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>
## Municipal Plastic Recycling National Survey

<table>
<thead>
<tr>
<th>#1-2 Collection</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>All #1 &amp; 2 Containers</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>#1 &amp; 2 Bottles Only</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

**TOTALS**

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
<td>15</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>
# APR Rigid Plastics Recycling Program

## Municipal Plastic Recycling National Survey

<table>
<thead>
<tr>
<th>#1-7 COLLECTION</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>All #1-7 Containers</td>
<td>16</td>
<td>24</td>
<td>27</td>
<td>32</td>
</tr>
<tr>
<td>#1-7 Bottles Only</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>#1-7 Containers (w/ some exceptions)</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>TOTALS</td>
<td>30</td>
<td>35</td>
<td>38</td>
<td>44</td>
</tr>
</tbody>
</table>
APR Rigid Plastics Recycling Program

Rigid Plastics – Model Bale Specifications

- Purpose:
  1. Ease communication between generators and marketplace
  2. Industry wide accepted and used

- Two model bale specifications already published –
  “Tubs & Lids” and “Bulky Rigidss”

- Two model bale specifications in final stages

- APR/ISRI Task Force
## APR Rigid Plastics Recycling Program

### Rigid Plastics – Model Bale Specifications

**Four Types of Rigid Plastics Bales**

<table>
<thead>
<tr>
<th>Type</th>
<th>PET/HDPE Bottles</th>
<th>#3-7 Bottles</th>
<th>Non-bottle Containers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All Rigid Plastics</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2. Pre-picked Rigids</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3. Olefin /Tubs &amp; Lids</td>
<td>HDPE only</td>
<td>PE and PP only</td>
<td>PE and PP only</td>
</tr>
<tr>
<td>4. Bulky Rigids</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
National Bale Audit, Market Destination & Supply Analysis for Rigid Plastics

The Issue........

Verifiable data on rigid plastic bales composition and what plastic material is still available in the waste stream to be recycled.

The lack of this data could stymie expansion of non-bottle rigid plastics recycling.
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National Bale Audit, Market Destination & Supply Analysis for Rigid Plastics

The Project.............

Sorted 50 bales from 3 US and 2 Canadian locations into 17 different categories and, using a wide range of data sources –

1. What are the types, volumes & destination of rigid plastics currently being recycling?

2. What is the type & tonnage of rigid plastics available for recycling?

Results available for purchase from the APR

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The voice of plastics recycling
APR Rigid Plastics Recycling Program

National Bale Audit, Market Destination & Supply Analysis for Rigid Plastics

Sort Results......Pre-Picked Rigid Bales

Non-PET/HDPE Bottles, all household non-bottle containers (includes thermoform packaging, cups, trays, clamshells, food tubs) and all bulky rigid plastic

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National Bale Audit, Market Destination & Supply Analysis for Rigid Plastics

Sort Results..............Bulky Rigid Bales

All bulky rigid plastic
(includes carts, crates, buckets, baskets, toys, lawn furniture)
Residential Bulky Rigid Plastic Collection Project

PROJECT FOCUS – Increase the collection of PP and HDPE

- Municipalities and MRFs throughout North America – increased interest in residential bulky rigid plastics recycling.

- Rigids Committee’s Bale Audit – “Bulky Rigid Bales” Composition
  - Approximately 50% HDPE and 25% PP

- Researched lessons learned by those currently recycling residential bulky rigid plastics.
## Plastic Waste Study - Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Thermoforms PET</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 PET Bottles EBB</td>
<td></td>
</tr>
<tr>
<td>#1 PET Bottles BB</td>
<td></td>
</tr>
<tr>
<td>#1 PET Food and Dairy Bottles and Jars</td>
<td></td>
</tr>
<tr>
<td>#2 HDPE Beverage Bottles EBB</td>
<td></td>
</tr>
<tr>
<td>#2 HDPE Beverage Bottles BB</td>
<td></td>
</tr>
<tr>
<td>HDPE Food and Dairy and Detergent</td>
<td></td>
</tr>
<tr>
<td># 3 - 7 Bottles EBB</td>
<td></td>
</tr>
<tr>
<td># 3 - 7 Bottles BB</td>
<td></td>
</tr>
<tr>
<td># 3 - 7 Bottles Non</td>
<td></td>
</tr>
<tr>
<td># 3 - 7 Bottles PP</td>
<td></td>
</tr>
<tr>
<td>Plastic Cups PET</td>
<td></td>
</tr>
<tr>
<td>Plastic Cups PP</td>
<td></td>
</tr>
<tr>
<td>Plastic Cups PS</td>
<td></td>
</tr>
<tr>
<td>Plastic Cups Keurig</td>
<td></td>
</tr>
<tr>
<td>Plastic Cups Other</td>
<td></td>
</tr>
<tr>
<td>Tubs and Lids PE</td>
<td></td>
</tr>
<tr>
<td>Tubs and Lids PP</td>
<td></td>
</tr>
<tr>
<td>Tubs and Lids PS</td>
<td></td>
</tr>
<tr>
<td>Tubs and Lids Other</td>
<td></td>
</tr>
<tr>
<td>Bulky Rigid &gt;1 Gallons PE</td>
<td></td>
</tr>
<tr>
<td>Bulky Rigid &gt;1 Gallons PP</td>
<td></td>
</tr>
<tr>
<td>Bulky Rigid &gt;1 Gallons Other</td>
<td></td>
</tr>
<tr>
<td>Bulky Rigid &gt;1 Gallons PE Buckets</td>
<td></td>
</tr>
<tr>
<td>Bulky Rigid &gt;1 Gallons PE Buckets</td>
<td></td>
</tr>
<tr>
<td>Bulky Rigid &gt;1 Gallons PP Buckets</td>
<td></td>
</tr>
<tr>
<td>Thermoforms PLA</td>
<td></td>
</tr>
<tr>
<td>Film, Retail Bags</td>
<td></td>
</tr>
<tr>
<td>Film, Other Bags</td>
<td></td>
</tr>
<tr>
<td>Film, Wrap</td>
<td></td>
</tr>
<tr>
<td>Film, Garbage</td>
<td></td>
</tr>
<tr>
<td>Film, Other</td>
<td></td>
</tr>
<tr>
<td>Film, Other Metalized</td>
<td></td>
</tr>
<tr>
<td>Ag Pots PE</td>
<td></td>
</tr>
<tr>
<td>Ag Pots PP</td>
<td></td>
</tr>
<tr>
<td>Ag Pots PS</td>
<td></td>
</tr>
<tr>
<td>Ag Pots Other</td>
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</tr>
<tr>
<td>Pouches New</td>
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</tr>
<tr>
<td>Pouches Old</td>
<td></td>
</tr>
<tr>
<td>Pouches Other</td>
<td></td>
</tr>
<tr>
<td>Other Plastic Blister</td>
<td></td>
</tr>
<tr>
<td>Other Plastic All Other</td>
<td></td>
</tr>
<tr>
<td>Bottles PLA</td>
<td></td>
</tr>
<tr>
<td>Tubs and Lids PLA</td>
<td></td>
</tr>
<tr>
<td>Thermoforms PLA</td>
<td></td>
</tr>
</tbody>
</table>

**The Association of Postconsumer Plastic Recyclers**  
**The voice of plastics recycling**
What is the demand and physical properties for recycled resins?

- “Fit for Use” Survey for Polypropylene
- Brand Owners queried on their future polypropylene post consumer recycled resin (PP PCR) needs
- Resulting data provides “demand side” information to potential PP PCR suppliers specifying
# APR Rigid Plastics Recycling Program

## APR Recycled Resin Subcommittee

### Polypropylene PCR “Fit for Use” Survey

<table>
<thead>
<tr>
<th>Typical applications</th>
<th>Melt Flow Index</th>
<th>Enter your application</th>
<th>Tonnage</th>
<th>Odor</th>
<th>Color</th>
<th>FDA Approved</th>
<th>Unique Criteria</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential PCR usage Pounds / Year</td>
<td>1) Yes 2) No more than typical</td>
<td>1) Light color 2) Gray (Blend for darker colors) 3) Dark</td>
<td>1) Yes 2) No</td>
<td>Open response</td>
<td>1) &lt; 1 year 2) 1-3 years 3) 3-5 years</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is your application 'extremely' sensitive to malodor? | Which PCR color might you use? | Is FDA approval required? | What other performance criteria or concerns are applicable? | When might you use this PCR? |
APR Rigid Plastics Recycling Program

APR Recycled Resin Subcommittee

Polypropylene PCR “Fit for Use” Survey

• 65 Brand Owners & Converters were surveyed - 22 responses

• Total identified demand ~ 1 billion pounds per year!
  – All identified demand will occur within the next 3 years, with 100MM lbs. to occur in less than 1 year
  – At maturity, annual demand will be the equivalent to the capacity of two world scale PP plants and > 5% of total PP industry capacity
Phase 1:

1. Estimated annual volume & resin type of recyclable rigid plastics
   a. 354 million pounds annually
   b. Approximately 50% PP and 50% HDPE

2. Identified obstacles preventing future rigid plastics recycling

*Data gathered from five grocery chains, representing stores from throughout US*
Phase 2: Pilot Programs

- “Best Operational Practices”
- Two national grocery store chains
  (Representing approximately 8% of US stores)
- Pilots in one district for 12 - 16 weeks
- Model educational material
- Various handling and processing methods tested
- Some pharmaceutical material collected
Grocery Store Rigid Plastic Recycling

Phase 2: Pilot Programs Results

1. Maximizing Volume –
   - Stacking like size rigids is feasible, baling preferred

2. Minimizing costs –
   - No additional employee time is needed to recycle rigids

3. Maximizing revenue –
   Multiple markets are available for clean material

4. Addressing obstacles–
   a. Washing rigids is simple & quickly done
   b. No additional labor is needed to recycle rigids
   c. Sorting rigids by resin type is easily accomplished

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Grocery Store Rigid Plastic Recycling

Phase 2: Pilot Programs Results

What are grocery rigid plastics?

Where are they?

Why recycle them?

How to recycle them?
Grocery Store Rigid Plastic Recycling

WHAT are grocery rigid plastics?
Grocery Store Rigid Plastic Recycling

WHAT are rigid plastics?
Grocery Store Rigid Plastic Recycling

WHERE are rigid plastics?

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**Grocery Store Rigid Plastic Recycling**

**WHY recycle rigid plastics?**

*US supermarkets (with annual sales of $2 million or more) generate huge quantities of rigid plastics **very marketable** rigid plastics

*Over 90% of grocery rigid plastics is #5 PP and #2 HDPE

**Reduce Costs.......**

*Less waste in compactor = less costs!

*Reduced compactor hauls & disposal costs

*Reduced compactor odor

*Possibly less compactor maintenance
Grocery Store Rigid Plastic Recycling

WHY recycle rigid plastics?

Recycling revenue.....

* Supermarkets (with pharmacies) – up to 6,000 # annually

* Stacked rigid plastics, with bagged lids placed on top = 1 to 2 cents/#, shipped with other baled recyclables

* Baled rigid plastics have strong market value – 14 to 18 cents/#

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The voice of plastics recycling
WHY recycle rigid plastics?

Sustainability goals.....

* Key component of growing commitment of “Zero Waste” strategy

* Pivotal change from long standing habit of giving away valuable recyclable material to employees, customers, others

* Help provide more **recycled feedstock** to packaging industry (much returning to the grocery shelves)

* More sustainable practice – sends **consistent message** to employees, customers, community
Grocery Store Rigid Plastic Recycling

HOW TO recycle rigid plastics?

Grocery store associates take the product out of the containers
Grocery Store Rigid Plastic Recycling

HOW TO recycle rigid plastics?

Rigid containers are quickly cleaned.
Grocery Store Rigid Plastic Recycling

HOW TO recycle rigid plastics?

Rigid containers, now cleaned, are temporarily stored in each department.
HOW TO recycle rigid plastics?

Rigid containers are stacked in a watermelon bin
Grocery Store Rigid Plastic Recycling

HOW TO recycle rigid plastics?

Watermelon bin of properly stacked rigid plastics are back hauled to Distribution/Recycling Center.
Phase 3: National Promotional Campaign

1. Website – [www.recyclegroceryplastics.org](http://www.recyclegroceryplastics.org)
2. Interactive, on-line “Best Practices” Guide
3. “How To” Videos
4. Market Lists
5. Worksheets
6. Off-site Technical Assistance
7. On-Site Technical Assistance
*Grocery Store Rigid Plastic Recycling*

Website - www.recyclegroceryplastics.org
# Phase 3: National Promotion Campaign

## “Market List”

**AVAILABLE MARKETS** for Grocery Rigid Plastics

Below is a listing of companies interested in purchasing grocery store rigid plastics. Please note, that those markets interested in truckloads of rigid plastics stacked in bins may be geographically sensitive.

In addition to those listed below, also consider other alternatives, such as those companies who are currently taking your other recyclables, and your local MRF – especially if you are creating bins of stacked rigid plastics.

<table>
<thead>
<tr>
<th>Company Information</th>
<th>Truckloads of Rigid Plastics stacked in bins, #2 HDPE and #5 PP resins <strong>mixed together</strong></th>
<th>Truckloads of Rigid Plastics stacked in bins, #2 HDPE and #5 PP resins <strong>sorted by resin type</strong></th>
<th>Baled Rigid Plastics #2 HDPE and #5 PP resins <strong>mixed together</strong></th>
<th>Baled #2 HDPE Rigid Plastics</th>
<th>Baled #5 PP Rigid Plastics</th>
</tr>
</thead>
</table>

The Association of Postconsumer Plastic Recyclers

The voice of plastics recycling
Grocery Store Rigid Plastic Recycling

Phase 3: National Promotion Campaign

“How To” Worksheets

Calculate The Financial Benefit

Example: A group of 20 supermarkets collectively generating 4,800 lbs/month for a total of 57,000 lbs (29 tons)/year.

RIGIDS RECYCLING REVENUE

<table>
<thead>
<tr>
<th>Pounds rigid plastics recycled</th>
<th>57,000 lbs/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market value per pound of recycled rigid plastics</td>
<td>100 lb*</td>
</tr>
<tr>
<td>Recycled Rigid Plastics Revenue</td>
<td>$5,700.00</td>
</tr>
</tbody>
</table>

* Net Revenue assumes some capital and operating costs for baling materials. The pilot studies indicated no cost for watermelon bins or labor for segregating rigid. As a result no additional costs are included in calculations.

WASTE DISPOSAL COST SAVINGS

- Grocery Store’s Disposal Cost/ton: $150.00/ton
- Tons rigid plastics recycled: 20/tons
- Waste Disposal Cost Savings: $4,350.00

Note: Discuss reduced hauls with your waste company.

FINANCIAL BENEFIT OF GROCERY RIGID PLASTIC RECYCLING

<table>
<thead>
<tr>
<th>Recycled Rigid Plastics Revenue</th>
<th>$5,700.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Disposal Cost Savings</td>
<td>+ $4,350.00</td>
</tr>
<tr>
<td>Financial Benefit Total</td>
<td>$10,050.00</td>
</tr>
</tbody>
</table>

Note: Including pharmacy stock bottles in a grocery rigid recycling program, can significantly increase the $ benefit.
Phase 3: National Promotion Campaign

FREE Offsite Technical Assistance
• An introductory, exploratory call with supermarket leadership,
• A follow up development call,
• Training design and development assistance, and
• Up to three “progress assessment and troubleshooting” conference calls.

FREE Onsite Technical Assistance
• In partnership with Grocery Store chains
• APR underwrites Brown Sustainability Solutions
• Grocery store chain underwrites travel costs
The APR Rigids Program

In conclusion -

The APR Rigids Program is.......  

• A very active stakeholders committee  
• Working as a team to expand plastic recycling  
• Addressing supply and demand issues for non-bottle rigid plastics.
APR Rigid Plastics Recycling Program

Thank you

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