PET Recycling Report
Long-Term Trends and New Initiatives

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NERC’s Fall 2014 Conference: The New Era of Recycling
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Summary

• Introduction to NAPCORG
• The Supply Problem
• Exploring New Feedstocks
  – Non-clear PET containers
  – PET Thermoforms
Introduction to NAPCOR

• NAPCOR is the trade association for the PET packaging industry in the United States and Canada
• 53 members encompass all parts of the PET value chain from resin production to end of life/recycling
• NAPCOR’s priorities are to:
  – Promote the introduction and use of PET packaging
  – Facilitate PET recycling
  – Communicate the attributes of the PET container as an environmentally sustainable package
NAPCOR Membership 2014

**PET Container Manufacturers**
- Amcor Rigid Plastics
- Plastipak Packaging, Inc.
- Yoshino America Corporation

**PET Sheet / Thermoformers**
- Dart Container Corp.
- Direct Pack, Inc.
- Earthbound Farm
- Genpak LLC
- Global PET
- Nu-B, Inc.
- Octal Extrusion Corporation
- Par-Pak, Ltd.
- Peninsula Packaging Company
- Plastic Ingenuity, Inc.

**PET Resin Manufacturers**
- DAK Americas LLC
- Indorama Ventures USA Inc
- Nan Ya Plastics Corporation

**PET Industry Suppliers**
- AMUT N.A.
- Blue Mountain Plastics
- BP
- Buhler
- CarbonLite Industries
- Clear Path Recycling
- ColorMatrix
- Custom Polymers PET
- Erema North America
- Evergreen Plastics
- Husky Injection Molding
- Krones
- MHT USA
- Marglen Industries
- MicroGREEN
- Midwest Exchange
- Mohawk Industries
- Muehlstein
- National Recovery Technology
- Nissei ASB Company
- Parallel Products
- Penn Color
- Peninsula Plastics Recycling
- Perpetual Recycling Solutions
- Plastic Technologies, Inc.
- Plastrec
- Polyquest, Inc
- REPI
- Reterra
- Sidel
- Signode
- Sorema Plastic Recycling Systems
- Starlinger and Co. GmbH
- TABB Packaging Solutions
- TOMRA North America
- UltrePet LLC
- Uniform Color Company
THE SUPPLY PROBLEM
The Problem: Demand for rPET Content & Reclamation Capacity Exceeds Supply

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Plants in the US</th>
<th>Reclamation Capacity (Billion Lbs)</th>
<th>US PET Bottles Collected* (Billion Lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>18</td>
<td>1.247</td>
<td>1.444</td>
</tr>
<tr>
<td>2010</td>
<td>19</td>
<td>1.465</td>
<td>1.557</td>
</tr>
<tr>
<td>2011</td>
<td>23</td>
<td>1.755</td>
<td>1.604</td>
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<tr>
<td>2012</td>
<td>27</td>
<td>2.025</td>
<td>1.718</td>
</tr>
<tr>
<td>2013</td>
<td>27</td>
<td>2.200</td>
<td>1.798</td>
</tr>
</tbody>
</table>

*Includes bottles currently exported
Reclalmation Capacity 2013 – Major Assets USA

- **Number of Plants**
- **Reclamation Capacity (MMlbs.)**
- **US PET Bottles Collected* (MMlbs.)**

*Includes bottles currently exported

- Dec. '04
- Dec. '05
- Dec. '06
- Dec. '07
- Dec. '08
- Dec. '09
- Dec. '10
- Dec. '11
- Dec. '12
- Dec. '13

Number of Plants

Reclamation Capacity (MMlbs.)

US PET Bottles Collected*

(MMlbs.)
The Problem: PET Recycling & Utilization Rates Illustrate Declining Quality

- Recycling Rate
- Utilization Rate

Promoting and Protecting the PET Package
The Problem: Material Loss

- Not all the PET in the curbside mix gets to the PET Bale
  - Flat or light weight containers in single stream systems can travel with paper stream (not containers)
- Not all the material in the bale is PET
  - Increasing levels of contamination, particularly in curbside bales, adds costs and loss to the system

Source: Mid-Atlantic Waste Systems
EXPLORING NEW FEEDSTOCKS
Non-clear PET Packaging Recycling Initiative

- What are non-clear PET packages?
Non-clear PET Packaging Recycling Initiative

- **Goal:** Increase recycling and develop additional sustainable markets for non-clear PET containers

- **Objectives:**
  - Identify existing and potential end-markets for “non clear” PET
  - Identify and overcome obstacles to sustainable markets
Non-clear PET Packaging Recycling Initiative

- Gather data on current presence in the marketplace and future projections
- Evaluate markets that may be able to absorb non-clear PET containers
  - Identify appropriate color spectrum for each end use
- Develop “best practices” for collection and sorting, based on priority end-use markets
What are thermoformed packages?
PET Thermoforms in Bottle Bales are Increasing

% Thermoforms by Weight, Curbside/Drop-off Bales

Source: NAPCOR commissioned bale analyses, conducted by Moore Recycling Associates
PET Thermoform Recycling

- **Goal:** To make recycling PET thermoforms as easy as recycling PET bottles, without harming bottle recycling infrastructure

- **Objectives**
  - Achieve broad acceptance of PET thermoforms by PET reclaimers
  - Broadcast consistent pro-PET recycling message to communities and MRF operators
PET Thermoform Recycling Workplan

- Perform trials to address key reclaimer concerns
- Undertake trials with converter and end users, as necessary and appropriate
- Implement Design for Recyclability initiatives, as warranted and depending on trial results
- Develop best practices for collection & sorting
Thermoform Recovery in U.S. & Canada (MMlbs)

- **2011**
  - Exported: 30
  - Reclaimed Domestically: 20

- **2012**
  - Exported: 30
  - Reclaimed Domestically: 20

- **2013**
  - Exported: 30
  - Reclaimed Domestically: 40
Thank you!

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