NRC Markets Quarterly Webinar, Part 2: Latest Developments

Robin Wiener, President
June 28, 2018
Roadmap

Quick Background on ISRI
Roles of the U.S. & China in the Global Recycling Market
Market Shifts Resulting from Chinese Import Restrictions
Supply Chain in the U.S. for Scrap & Other Factors Affecting Health of Recycling
Latest Chinese Actions & Compounding Challenges
Short & Long Term Responses to Strengthen Recycling
Our mission is to promote safe, economically sustainable &
environmentally responsible recycling through networking,
advocacy & education.

1,300+
Members

41
Countries

4,000+
Locations
U.S. Recycling Industry: A Snapshot

130,000,000+ Tons processed annually

<table>
<thead>
<tr>
<th>Material</th>
<th>Tons (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron/Steel</td>
<td>67.0</td>
</tr>
<tr>
<td>Copper</td>
<td>1.8</td>
</tr>
<tr>
<td>Plastics</td>
<td>3.5</td>
</tr>
<tr>
<td>Paper</td>
<td>47.2</td>
</tr>
<tr>
<td>Lead</td>
<td>1.2</td>
</tr>
<tr>
<td>Electronics</td>
<td>5.0</td>
</tr>
<tr>
<td>Aluminum</td>
<td>5.0</td>
</tr>
<tr>
<td>Zinc</td>
<td>0.12</td>
</tr>
<tr>
<td>Tire (#)</td>
<td>122</td>
</tr>
</tbody>
</table>

In millions of tons (or other unit shown)

$117B Economic activity

$13.2B federal, state & local tax revenue
Part of the Larger Global Industry Feeding a Global Manufacturing Supply Chain

**800 million metric tons**  
Total Global Consumption of Scrap Commodities

**180 million metric tons**  
Total Global trade in Scrap

The U.S. - and China - are key players in the global scrap market

**37 million metric tons**  
Total scrap exports from U.S. to 155 countries

**43 million metric tons**  
Total imports into China from the World
25 Year Snapshot of U.S.-China Scrap Trade Relationship

U.S. Exports of All Scrap Commodities to China (incl. Hong Kong) 1993-2017 (metric tons)

- 1993 - 1997: 6 million mt
- 1998 - 2002: 21 million mt
- 2003 - 2007: 64 million mt
- 2008 - 2012: 102 million mt
- 2013 - 2017: 85 million mt

Sources: Census Bureau/USITC
Impact of Chinese Actions Taken in 2017

YTD U.S. Scrap Exports to Mainland China, Jan-Apr 2018 vs. Jan-Apr 2017
(Metric tons and % CHG)

Sources: U.S. Census Bureau/U.S. International Trade Commission

Recoverd Paper and Fiber
Ferrous Scrap (ex-stainless and alloy scrap)
Plastic Scrap
Aluminum Scrap
Copper Scrap
Ni, Stainless & Alloy Steel Scrap
ALL SCRAP

Jan-Apr 2017
Jan-Apr 2018
YTD % CHG

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U.S. Supply Chain for Scrap: Sources

60-70% of recyclables come from commercial & industrial sources.

Generally “source separated” therefore …
• no cross contamination
Although only 30-40% of supply, residential recycling is the biggest challenge.

Why?
- Confusion as to what can be put in the bin
- Wishcycling
- Multiple residential collection systems: dual stream, single stream & one-bin
- Residential recycling infrastructure put in place over last 20 yrs designed to produce grades demanded by China (largest customer)
Factors that Influence the Health of the Recycling Supply Chain

Quality is key
- Recycling is demand driven -- the product of the recycling process must meet grade requirements of the manufacturer or recycling will not occur regardless of the “volume success” at collection
- ISRI’s Scrap Specifications play a key role

The health of the recycling industry is also closely related to the health of the Global Economy, and thus sensitive to ...
- U.S. personal consumption spending and scrap generation
- Industrial production and manufacturing output
- Volatility in commodity prices
- Transportation and energy costs
  - backhauling contributed to the attractiveness of China as a market
- Policy developments
- Artificial manipulation of the market triggered by tariffs & other protectionist measures
What is Driving the Changes Coming out of China?

- China is facing a Severe Environmental Crisis
  - “Beautiful China”
  - “Blue Skies”

- We cannot underestimate the role of Chinese protectionism (i.e., the desire of Chinese leadership to eliminate their dependence on imported resources)
  - Significant investment occurring by Chinese Govt in their domestic recycling infrastructure with an emphasis on urban collection systems
  - Driven by Government policy
Chinese Actions

July 2017 - March 2018

- WTO Notifications: G/TBT/N/CHN/1211 ("the ban") and G/TBT/N/CHN/1211 (identification standard)
- Revised GB Standards Proposed (0.3% "carried waste" standard)
- "Implementation Plan to Enhance Solid Waste Import Management System by Prohibiting the Entry of Foreign Waste"
- Jan 1: Ban on 24 categories of materials, including post-consumer plastics and mixed-paper
- March 1: Carried Waste Standard went into effect (0.5% for all commodities except non-ferrous – 1%)

Since:

- April 19th: Announcement of additional bans
  - By end-2018: post-industrial plastics, compressed auto pieces, small electric motors, insulated wires, steel slag, vessels
  - By end-2019: stainless steel scrap, nonferrous scrap excluding Al & Cu, wood pallets
- May 3rd: Suspension of CCICNA for one month
  - No inspections for U.S. or Mexican shipments
  - Rationale: manner by which CCICNA was issuing certificates (centralization of control with Chinese Customs, but a warning of vulnerability)
Latest Chinese Actions

CCICNA resumed operations in North America on June 4\textsuperscript{th}

- Significant backlog
- May 28: China Customs issued new pre-inspection requirements: logistical & cost nightmare

Clarity (?): Manufacture-ready, mill-ready, melt-ready scrap can move into China

- May 18\textsuperscript{th}: Announcement that China will accept imports of recycled PET in flake form
  \(\rightarrow\) “any material that does not need to be restored and processed for its original purpose shall not be managed as solid waste.”
  \(\rightarrow\) Pellet can be imported because not covered by solid waste import regime … but nowhere in writing, just “understood”

What’s In & What’s Out? is the single most important question for recyclers today vis a vis the Chinese market
Future Chinese Actions??

June 16th: Statement of Chinese intention to eliminate “solid waste” imports by 2020

What’s In & What’s Out of “solid waste” definition? is the single most important question for recyclers today vis a vis the Chinese market
• Tariffs being imposed on key imports from each country, introducing further uncertainty & volatility into the scrap markets

• US imposed tariffs announced earlier this month
  • ISRI able to get several products related to recycling machinery that were on the proposed list removed in the final document
  • But, 25% Tariff Placed on Shredder Castings Imported from China

• Chinese retaliatory actions
  • Effective April 2nd -- 25% tariff on US Al scrap exports imposed by China in retaliation for the tariffs imposed by the US on steel and aluminum as part of the US Government’s 232 investigation
    • 2017: US recyclers supplied 50% of China’s total imports of Al scrap
    • Translates to a $300 million price burden in a trade relationship that represents nearly 25% of the entire world’s trade in Al

• Increased tension makes dialogue very difficult
### Southeast Asia

Trade diversion keeps materials moving...

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>FAS Value / Metric Tonnage</th>
<th>% CHG 2016-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
<td>2017</td>
</tr>
<tr>
<td>India</td>
<td>$292,660,728</td>
<td>$378,265,202</td>
</tr>
<tr>
<td></td>
<td>1,561,837</td>
<td>1,930,720</td>
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<tr>
<td>Indonesia</td>
<td>$58,871,160</td>
<td>$76,848,556</td>
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<tr>
<td></td>
<td>381,358</td>
<td>440,585</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$18,858,932</td>
<td>$57,738,701</td>
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<tr>
<td></td>
<td>120,673</td>
<td>397,162</td>
</tr>
<tr>
<td>Thailand</td>
<td>$39,591,315</td>
<td>$42,010,097</td>
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<tr>
<td></td>
<td>293,769</td>
<td>283,019</td>
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</tbody>
</table>

Source: U.S. Census Bureau / U.S. International Trade Commission
Southeast Asia

...infrastructure/capacity shortfalls & risk of copycat restrictions

**Vietnam**
- Capacity constraints at one port leads to moratorium on plastics (6/25-10/15) and enforcement of import licenses on paper at that port

**Thailand**
- Potential ban on scraps; discrepancy in trade classification for insulated wire for tariff purposes

**Malaysia**
- Paperwork requirements and temporary stop to import permit issuance

**Indonesia**
- Strict import licenses and 100% Pre-shipment inspections
Currently Seeing in the U.S. ...

Some investment in processing capacity being made within the U.S. by recyclers
• Includes Chinese who want to process in the U.S. & ship mill-ready grades to China

Some Single stream MRFs slowing down sorting; adding optical sorters &/or additional people on the sorting lines

Exploration of New Markets

Material Stockpiling

Elimination of materials from municipal recycling programs; temporary suspensions

Relaxation of mandatory recycling goals (AB 3178 in CA)
Sustained Efforts Are Critical

Need to Address Quality of Recyclables Entering the Stream

- Zero Tolerance Guidelines for Recovered Fiber in ISRISpecs Announced
  - “Zero Tolerance”: any material that contains any amount of Medical, Organic, Food Waste, Hazardous, Poisonous, Radioactive or Toxic waste and other harmful substances or liquids
  - “Prohibitive Materials” clarified to include any materials which by their presence in a packing of paper stock, in excess of the amount allowed, will make the pack unusable as the grade specified; or any materials that may be damaging to equipment.
- “Guidelines for Inbound Curbside Recyclables for Material Recovery Facilities (MRFs)” [www.isri.org/specs]
- ISRI working with APR on sorting protocol to evaluate how 2D & 3D designed to items behave on a conveyor to help MRFs better capture inbound materials.
- Municipalities & recyclers need to work together, understanding the quality needs of the buyer, using the ISRISpecs as a guide but also factoring in local market factors
- Increased public education & awareness to improve household efforts to separate trash from recyclables, including clear guidance on what can be recycled, how to clean food containers, the importance of keeping paper dry and the need to avoid wishcycling.
Sustained Efforts Are Critical

Efforts Needed at Creating Greater Demand to Drive Recycling

- ISRI’s Design for Recycling™ program
- Partnership with DOE on REMADE™ Institute
  - Multi-year, $50 million effort formed to drive advanced manufacturing within the U.S., focused on sustainability & recyclability
  - Established in 2017
- Collaboration w/ Plastics Industry Association (begun in 2017) at creating markets for TPO plastic auto bumper covers
- APR’s Recycling Demand Champions Program – focused on mixed plastics

Need to Rethink Packaging and Product Design (Design for Recycling™)

- Requires a common definition of what is recyclable (vs what can be technically recycled but lacks markets or the economics are not viable)
- Engagement with recyclers and manufacturers
- REMADE
Unified Global Standards Needed

- ISRISpecs used for more than 80 yrs; Govt of India adopted, but China did not
- EN-643: EU-wide quality standard for recovered paper
- Others?

Communities must decide where they are going to pay for increased costs of sorting to achieve a quality recyclables:

- At collection through shifts away from one-bin and single stream, or
- In contracts with MRFs/recyclers to compensate for higher processing costs?
Most importantly, all of us – municipalities, recyclers, brand owners, industrial consumers and others – need to work together, to identify solutions to the ever changing stream of consumer products entering recycling, while also ensuring we meet the needs of the industrial consumer, at the end of the chain, to ensure a quality commodity product.
The Conversation Continues...

Please join us Aug. 22nd & 23rd in Nashville ...

Use Code ISRI2018 to save $200