



The power of packaging in balance.™

March 22, 2022

David Allaway  
Senior Policy Analyst  
Oregon Department of Environmental Quality  
Materials Management Program  
700 NE Multnomah Avenue, Suite 600  
Portland, Oregon 97232

**RE: Oregon Statewide Recycling Collection List and Producer-Collected Materials (For Recycling)**

Dear Mr. Allaway,

AMERIPEN – the American Institute for Packaging and the Environment – is pleased to submit these comments in response to the Oregon Department of Environmental Quality Request for Information on the implementation of Section 22 of Oregon’s Plastic Pollution and Recycling Modernization Act.

AMERIPEN is a coalition of stakeholders dedicated to improving packaging and the environment. We are the only material neutral packaging association in the United States. Our membership represents the entire packaging supply chain, including materials suppliers, packaging producers, consumer packaged goods companies and end-of-life materials managers. We focus on science and data to define and support our public policy positions and our comments are based on this rigorous research rooted in our commitment to achieve sustainable packaging, and effective and efficient recycling policies. We have several member companies with a significant presence in Oregon, and many more who import packaging materials and products into the state. The packaging industry supports more than 18,000 jobs and accounts for \$5.45 billion in total economic output in Oregon.

Section 22 of Oregon’s Plastic Pollution and Recycling Modernization Act requires the Oregon Environmental Quality Commission to identify two lists of materials by administrative rule – the Statewide Collection Recycling List and the and Producer-Collected Materials List. Our comments will be broken down into recommendations for both.

**Additional materials to be considered for the Statewide Collection Recycling List**

Oregon defines the Statewide Collection Recycling List as “materials collected to provide the opportunity to recycle”. This refers to on-route and drop-off recycling collection opportunities provided by all local governments in the state with populations over 4,000, and requirements for solid waste disposal sites to collect materials for recycling. Using this definition, and access data from the 2020-21 Sustainable Packaging Coalition (SPC) Centralized Study on Availability of Recycling, AMERIPEN

believes that all the following materials (products) can be easily collected and recycled into Oregon’s statewide collection recycling system.<sup>1</sup>

Package Type	Access Rate
Aluminum Beverages	89%
Corrugated Boxes	88%
PET Beverage Bottles, Jugs and Jars	87%
HDPE Bottles, Jugs and Jars	87%
Steel Food Cans	87%
Paperboard Boxes	84%
Glass Beverage Bottles and Containers	76%
Aluminum Food Cans	75%
PP Bottles, Jugs and Jars	72%
LDPE Bottles, Jugs and Jars	70%

We note that U.S. Federal Trade Commission (FTC) Green Guides defines recyclable, in part, as material where 60% of the public has access to recycling. As the only quantitative metric defined in the Green Guides, access is believed to be indicative of the recycling systems ability to collect, sort and reprocess materials. While these numbers are related to federal access and not specific to Oregon, all the materials we have listed here exceed the 60% access rate thereby permitting for some flexibility to state specific differences.

While the FTC declares access as the primary means through which companies can make recyclable claims, AMERIPEN recognizes that there is increasing interest in other parameters to ensure that materials that are collected are actually used in end markets. We recognize Section 22 of Oregon’s Plastic Pollution and Recycling Modernization Act requests information on additional parameters such as stable and mature end markets, compatibility with existing infrastructure, and practicalities of sorting and storing. Oregon’s interest aligns with industry desires to better define recycling as a system of independent but interconnected actions. For that reason, we have identified and offer materials (products) below the 70% national access rate as materials for additional consideration and we provide data on additional parameters to help outline the systemic nature of recyclability and the promise of these materials.

Additional materials not yet widely recycled that we believe should be considered include:

- Aseptic cartons
- Aerosol containers (aluminum and steel)
- Paper-padded mailers
- Pizza boxes and other food contaminated paperboard packaging

<sup>1</sup> Sustainable Packaging Coalition. [2020-21 Centralized Study on Availability of Recycling](#) (2022)

- Polyethylene terephthalate (PET) cups and thermoforms
- Polycoated paperboard
  - o Ice cream containers
  - o Cups
  - o Foodservice containers
  - o Other
- Polypropylene (PP) tubs and other containers

## **Aseptic Cartons**

### *Curbside and Drop-off Recycling Access*

Data from the Carton Council indicates the following access rates for cartons within Oregon.<sup>2</sup>

Package Type	Access Rate
Aseptic Cartons	37% (curbside) 10% (drop off)

### *Responsible End Markets*

Cartons have three different end markets for their products. Cartons can be sold as part of a mixed bale of paperboard, part of polycoated paperboard only bale or sold as Grade #52—a carton-only bale. There are currently five North American mills that accept Grade #52 bales and all still have excess capacity to absorb more. Additionally, West Coast markets are successfully selling grade #52 bales to three international locations in India, South Korea and Thailand. Almost all domestic mills purchase either mixed paper or polycoated paperboard grades.

### *Collection, Sortation and/or Anticipated Yield Data*

With slightly less than half of Oregon consumers having access to carton recycling, we are confident that the process to collect and sort cartons is viable within the state. As the Carton Council continues to work with communities to help invest in technologies and education to help improve the sortation of cartons, we believe volume can continue to increase.

Material yields are dependent upon the final end market, but data from the Carton Council indicates that Grade #52 bales used for building materials can achieve 100% usage. A Grade 52 bale for tissue and toweling captures an estimated 67-70% of the total package with 80-95% of the fiber used. Similar numbers are reflected in Grade 52 bales used for de-inked pulp. Mixed bales sold to tissue and toweling have the smallest yield outcome with 50-60% of the total package used in reprocessing.

If Grade #52 bales can be processed by Oregon material recovery facilities (MRFs), Carton Council data indicates there is still room to increase capacity of these end markets by 50% or more.

---

<sup>2</sup> Per email from Carton Council 03-19-2022

### *Ongoing Activity to Support Recycling of these Materials by Industry*

The Carton Council offers education and grants to help increase aseptic recycling across the U.S. Aseptic cartons can either be hand sorted or through automatic by utilizing either optical or robotic sortation. Material recovery facilities (MRFs) that are interested in recycling these materials are offered support both in identifying the best approach for sortation but then also with grants and training to help purchase and implement these new processes with success. Additionally, the Carton Council works with MRFs who have low carton volumes and cannot make an LTL (less than truckload).

### **Polycoated Paperboard**

#### *Curbside and Drop-off Recycling Access*

Data from the American Forest and Paper Association (AF&PA) indicate the following access rates for polycoated paper materials within the State or Oregon.<sup>3</sup>

<b>Package Type</b>	<b>Access Rate</b>
Polycoated paperboard	49% (curbside) 36% (drop off)

#### *Responsible End Markets*

End markets for paper-based products are expected to continue to grow. Paper-based materials that have not historically been part of the bulk of fiber yields are advancing as mills seek new sources of inputs. AF&PA reports that between 2019 and 2021 U.S. paper, packaging and pulp producers have committed more than \$5 billion in new manufacturing capacity specifically designed to use recovered paper. This increased manufacturing capacity is expected to consume an additional 8 million tons of recovered paper per year.

The Food Service Packaging Institute (FPI) notes that currently 33 different mills between the U.S. and Canada accept post-consumer polycoated board. Mills will purchase it either as a unique polycoated board grade or as part of a mixed paper bales. There is a mill in nearby Washington State that sources mixed paper from Oregon. The mill successfully repulps and recycles cups, foodservice packaging, polycoated paper, and liquid packaging cartons found in mixed paper into new products every day. Its proximity to Oregon indicates less environmental impact in terms of transit

#### *Collection, Sortation and/or Anticipated Yield Data*

Polycoated paperboard can be flat or shaped into a 3-dimensional container format such as cups or ice-cream cartons. MRF flow studies undertaken by FPI indicate that on average one quarter of cups will flow to the fiber line as they are crushed during collection and sortation with the reminder three quarters flowing towards container lines where they can either be hand sorted or redirected as a result

<sup>3</sup> AF&PA. [2021 AF&PA Access to Recycling Study](#) (2022)

of optical or robotic sortation.<sup>4</sup> Since there are two different bale specs for this paperboard (polycoated only) or mixed, direction to either line does not tend to create challenges. Yield varies widely amongst mills based upon their processes and technologies. Based upon information reported by FPI's mill task force yield from polycoated containers is within 70% to 90%.<sup>5</sup>

### *Ongoing Activity to Support Recycling of these Materials by Industry*

Both AF&PA and FPI perform regular studies with mills and communities to assess the recyclability of their paper-based products. Most commonly what they have found is that recyclability relies more on the technical equipment and skills of the specific mills rather than as a material specific issue. As the industry continues to support research and best practices, we expect access and recyclability to continue to advance.

Several FPI members have supported curbside recovery efforts by offering MRF equipment grants and market development support. Some of their efforts overlap and further support initiatives with the Carton Council to help ensure increased polycoated carton recovery.

## **Paper-Padded Mailers**

### *Curbside and Drop-off Recycling Access*

Paper-padded mailers are a relatively new innovation within the packaging space. As a result, data on access and inclusion into curbside programs has not yet aligned with the adoption of this new packaging format. 2020 and 2021 studies on access rate did not measure paper-based mailers.

### *Responsible End Markets*

To assess the potential for paperboard mailers to be included in curbside programs, in 2021, AF&PA surveyed its members on the recyclability of paper-padded mailers<sup>6</sup>. Mills overwhelmingly agreed that the mailers can be recycled. Per the Institute of Scrap Recycling Industries (ISRI), paper-based mailers are considered acceptable input for either old corrugated cardboard (OCC) or mixed paper bales. These are two widely purchased bales in mills across the US. The AF&PA study concludes: "*We encourage communities to include paper padded mailers among the paper-based packaging items accepted in their residential recycling programs.*"<sup>7</sup>

As more curbside programs begin to recognize the benefits and pulpability of this format, we believe access will quickly grow.

---

<sup>4</sup> RRS, [MRF Material Flow Study](#) (2015)

<sup>5</sup> Email from FPI 3-21-2022

<sup>6</sup> [AF&PA On Padded Paper Mailers](#) (2022)

<sup>7</sup> Ibid

### *Collection, Sortation and/or Anticipated Yield Data*

Although, to the best of our knowledge, no yield study has been undertaken on paper-based mailers per se, interpreting from the AF&PA Mill study, we assume mailers can flow through the system and be directed accordingly to OCC or mixed paper bales, and therefore yield rates for these materials are likely to be high.

### *Ongoing Activity to Support Recycling of these Materials by Industry*

AF&PA performs regular studies with mills and communities to assess the recyclability of their paper-based products. Most commonly what they have found is that recyclability relies more on the technical equipment and skills of the specific mills rather than as a material specific issue. As the industry continues to support research and best practices, we expect access and recyclability to continue to advance.

## **Pizza Boxes and Other Food Contaminated Paperboard Packaging**

### *Curbside and Drop-off Recycling Access*

Data from the American Forest and Paper Association (AF&PA) indicate the following access rates for pizza boxes within the state.<sup>8</sup>

Package Type	Access Rate
Pizza Boxes	29% (curbside) 66% (drop off)

### *Responsible End Markets*

Pizza boxes can be sold in either OCC or mixed paper bales.

A 2020 study by WestRock found neither cheese or grease negatively impacted repulpability, performance on the paper machine or finished product quality at their mills.<sup>9</sup> In 2013 and 2014, FPI conducted studies to determine whether food service packaging (e.g., pizza boxes, coffee cups, paper clamshells) and food contact packaging (e.g., cereal boxes, noodle boxes, ice cream packages) set out for recycling was more contaminated with food residue than food contact packaging that has traditionally been accepted at single stream MRFs.<sup>10</sup> The studies identified that: *“there is no appreciable difference in the amount of contamination between foodservice packaging and broader types of food packaging typically accepted in residential curbside programs...an initial indication that food contamination is a perceived rather than real barrier to residential recycling of foodservice packaging.”*

<sup>8</sup> AF&PA [2021 AF&PA Access to Recycling Study](#) (2022)

<sup>9</sup> WestRock, [Incorporation of Post-Consumer Pizza Boxes in the Recovered Fiber Stream](#) (2020)

<sup>10</sup> Per email from AF&PA 03-18-22

### *Collection, Sortation and/or Anticipated Yield Data*

To the best of our knowledge, no yield study has been undertaken on pizza boxes per se, but if we interpret the WestRock and FPI studies to indicate no appreciable challenge in recycling this material, we assume that food contaminated boxes can flow through the recycling system and be directed accordingly to OCC or mixed paper bales, the yield rates for these materials must be relatively high.

### *Ongoing Activity to Support Recycling of these Materials by Industry*

Both AF&PA and FPI perform regular studies with mills and communities to assess the recyclability of their paper-based products. Most commonly what they have found is that recyclability relies more on the technical equipment and skills of the specific mills rather than as a material specific issue. As the industry continues to support research and best practices, we expect access and recyclability to continue to advance.

## **Aerosol Containers – Aluminum and Steel**

### *Curbside and Drop-off Recycling Access*

Data from the 2020-21 SPC Centralized Study on Availability of Recycling, indicate the following access rates for the aerosol containers.<sup>11</sup> Aerosol containers meet the FTC Green Guides threshold for recyclable claims.

<b>Package Type</b>	<b>Access Rate</b>
Aerosol Containers	61% (Steel); 62% (Aluminum)

### *Responsible End Markets*

#### *i. Aerosol Containers--Aluminum*

Demand exceeds supply for mixed aluminum. Research for the aerosol container industry by RRS indicates “most secondary end-markets are eager for material and willing to work with potential suppliers to unlock new sources.”<sup>12</sup>

Although there is not an ISRI bale specification, mixed aluminum is often collected in open-top containers and then sold to either directly to one of two end markets: 1) Deox – a critical additive to steel making which helps to replace virgin material) or 2) RSI – melted into an ingot and then mixed with other materials to make a new product. Both end markets are stable and well-established.

<sup>11</sup> Ibid

<sup>12</sup> Resource Recycling Systems. [Surveying State of MRFs and End Market Barriers to Recycling Steel and Aluminum Aerosols and Pet Food Cans and Identification of Solutions](#). 2021

*ii. Aerosol Containers – Steel*

Steel aerosol containers also have stable and established end-markets. They can be readily added to steel bales at MRFs without any sortation concerns. Steel end-markets have national reach since 40 of 50 states (including Oregon) have electric arc furnaces capable of melting down steel cans, including aerosols. RRS research states, “There is ample capacity for steel mills to absorb higher volumes of steel from scrap managers across the country.”<sup>13</sup>

*Collection, Sortation and/or Anticipated Yield Data*

Aerosol containers are widely collected and sorted within the majority of U.S. based MRF’s based upon widely adopted and long-established technology. Eddy stream currents and magnets, in addition to their solid 3-dimensional shape result in an estimated 95% effective sortation rate for both aluminum and steel aerosol containers.

*Ongoing Activity to Support Recycling of these Materials by Industry*

In response to some concern that unemptied aerosol containers may pose safety concerns, the industry studied the potential risks that aerosol containers may pose in the recycling stream.<sup>14</sup> The study found that the likelihood of an accident was very low. This study led to development of additional guidelines and educational resources to capitalize on the opportunity to recycle these containers safely.

The aerosol industry has invested heavily in developing and promoting resources to educate the public that they can recycle empty aerosol containers and to increase overall recycling rates.

**Polyethylene Terephthalate (PET) Cups and Thermoforms**

*Curbside and Drop-off Recycling Access*

Data from the 2020-21 SPC Centralized Study on Availability of Recycling, indicate polyethylene terephthalate (PET) cups and thermoforms (clamshells, trays etc.) have a national access rate around 54% – just slightly below the 60% FTC threshold rate.<sup>15</sup>

Package Type	Access Rate
PET Clamshells, Tubs, Trays, and Cups	54%

<sup>13</sup> Resource Recycling Systems. [Surveying State of MRFs and End Market Barriers to Recycling Steel and Aluminum Aerosols and Pet Food Cans and Identification of Solutions](#). (2021).

<sup>14</sup> Kumar R. Bhimavarapu and Dimitrios M. Karydas. Recycling Aerosol Cans: A Risk Assessment. Factory Mutual Research Corporation. (April 1996).

<sup>15</sup> Sustainable Packaging Coalition. [2020-21 Centralized Study on Availability of Recycling](#) (2022)



### *Responsible End Markets*

As demand for post-consumer PET grows<sup>16</sup>, there is increased interest in capturing thermoforms and cups to help supplement volume. Currently PET thermoforms and cups can be sold as part of mixed PET bottle and thermoform bale or as a thermoform only bale. Over 14 different reprocessors across Canada and the U.S. will accept PET thermoforms in one or both formats. Additionally, Republic Service’s recent announcement of a new plastics recycling facility in Las Vegas will further increase demand for this material as they offer the capacity of 65 million lbs. per year of PET.<sup>17</sup>

Chemical recycling is also an emerging market, with Eastman’s facility in Kingsport, Tennessee expressing interest in taking all formats and colors of PET for their 2023 launch.

PET has one of the more diverse end markets of the plastics resins, with demand for this material existing in the textiles, packaging and building material sectors.

### *Collection, Sortation and/or Anticipated Yield Data*

According to a 2015 MRF study commissioned by FPI, 61% of PET clamshells and 77% of PET cups made it to a target PET bale. Losses tend to occur when these three-dimensional shapes are flattened during the collection and sortation process and then redirected to paper lines. As an increasing number of MRFs have upgraded equipment since 2015 and additional; funding for increase optical or robotic sortation becomes available, this yield is expected to increase.

### *Ongoing Activity to Support Recycling of these Materials by Industry*

FPI’s Community Partnership Program and industry specific research works directly with residential recycling programs to evaluate and increase access to recycling for many foodservice items.

Additionally, The Recycling Partnership (TRP) launches a PET recovery working group in March 2022 to help identify best practices to increase PET recovery of all formats.

## **Polypropylene (PP) Tubs and Other Containers**

### *Curbside and Drop-off Recycling Access*

Data from the 2020-21 SPC Centralized Study on Availability of Recycling indicate the following access rates for polypropylene (PP) tubs, cups and containers.

Package Type	Access Rate
Polypropylene Tubs and other containers	59%

<sup>16</sup> Both from voluntary goals but also increasing state recycled content mandates

<sup>17</sup> Resource Recycling [Republic Services Move to Vertically Integrate in Plastics](#) (March 2022)

We note that national access is just slightly below the FTC 60% threshold and given the increase demand for this material by end markets, it is likely to exceed 60% in the very near future.

### *Responsible End Markets*

With the rise of voluntary goals, state recycled content mandates and growing chemical recycling capacity, demand for recycled polypropylene markets is poised to grow. PP tends to be sold in one of two different bales type – either as a polypropylene only bale or as a mixed plastics bale. There is no distinction within these markets between tubs or cups and containers. At the current time there are 17 different re-processors who will put polypropylene in either bale format.

While the majority of these PP reprocessors are based in the East Coast, it should be noted that there are two emerging reprocessors in Oregon looking to source PP Bales: Denton Plastics and Green Rhino.

Polypropylene is also an emerging feedstock for chemical recycling and agreements between companies like Berry Plastics, Wendy's and Lyondell Basel who are establishing upfront commitments to use and process specific volumes of post-consumer polypropylene plastics.

### *Collection, Sortation and/or Anticipated Yield Data*

FPI's 2015 MRF Flow study indicates that PP cups and containers have a high rate of capture. PP products appear to hold their 3-dimensional shape rather well, increasing their direction to the correct container lines. Depending on technology, MRFs were losing between 3-10% of PP containers to paper lines. As noted with PET, any investments in improving paper lines to better captured crushed plastics that are misdirected will further increase yield.

### *Ongoing Activity to Support Recycling of these Materials by Industry*

FPI's Community Partnership Program and industry specific research works directly with residential recycling programs to evaluate and increase access to recycling for many foodservice items, including polypropylene.

Additionally, the Recycling Partnership has launched an established PP recovery working group to help identify best practices to increase PP recovery of all formats.

### **Additional Materials to be Considered for Producer-Collected Materials lists**

Oregon defines materials to be considered for the producer-collected materials list as materials that are largely incompatible with commingled processing systems, thereby requiring separate collection and handling in *“which a producer responsibility organization must provide for the collection through recycling depot or mobile collection events as provided in section 15 of the Act.”*

We believe the following should be considered for the producer collected materials list

- Polystyrene

*Curbside and Drop-off Recycling Access*

Data from the 2020-21 SPC Centralized Study on Availability of Recycling<sup>18</sup> indicates rigid polystyrene materials (EPS) are generally collected 45% rate curbside.

Package Type	Access Rate
Rigid Polystyrene <sup>19</sup>	45%

The EPS Industry Alliance (EPSIA) notes that 55 communities in the U.S. offer curbside recycling access for expanded polystyrene (EPS), with an additional 214 drop off locations. In Oregon alone there are five drop off locations in Tigard, Salem, and Eugene.

Given the high demand for EPS in commercial sales, measuring recycling based on consumer curbside access may be misleading in this case.

*Responsible End Markets*

Tigard, Oregon is home to Agilyx, the first U.S. chemical recycling facility for EPS. As of July 2021, Agilyx has converted more than 4,400 tons of mixed waste plastic and polystyrene waste and plans to continue growth. Demand is there if we can gather EPS.

*Collection, Sortation and/or Anticipated Yield Data*

The low weight, high bulk of EPS tends to discourage many residential communities from collecting this materials. But where drop off programs exist, or commercial collection is possible, the use of densifiers has significantly improved the economics and interest in collecting and recycling this material.

By collecting via drop-off or through commercial partners, EPS does not face challenges other materials have in running through a MRF sortation line.

We are not aware of any data on yield.

*Industry Support for Recycling of these Materials*

There are several industry-supported efforts to increase EPS recycling. There are six MRFs in the U.S. that have recently adopted a turnkey EPS recycling system that minimizes sortation problems and

---

<sup>18</sup> Ibid

<sup>19</sup> Please note that Carton Council data on aseptic cartons access is specific to Oregon access. Federal access is slightly higher.

significantly reduces storage space. The system consistent of a refurbished freight container that houses a low volume densifier and handling materials.

To help maintain feedstock, Agylix has developed the Cyclyx consortium to build off their insights from drop off and collection programs to help gather increased feedstock for both their facilities as well as other emerging chemical recyclers. They also host several collection programs with communities and corporations

EPSIA as well as DART Container also offer grant programs to help place densifiers within community spaces, or corporations.

End markets and access to EPS recycling continues to grow. We believe Oregon DEQ should recognize this material as a promising market with a state-based recycler within.

### **Conclusion**

AMERIPEN appreciates the opportunity to submit this letter. In trying to address all the various materials our members produce, we refer you as well to our peer trade associations who we understand have also submitted information and are able provide much greater detail the recyclability parameters associated with their specific material.

AMERIPEN welcomes any inquiries regarding this submission, and we would be happy to help facilitate further dialogues with our material specific peers.

With appreciation,



Dan Felton  
Executive Director