



DEFINING A NATIONAL RESEARCH AND DEVELOPMENT STRATEGY FOR CIRCULAR PACKAGING

Insights from a cross-sector salon conversation



The 2019 AMERIPEN Salon Series is designed to bring together stakeholders from across the value chain to address current and emerging challenges to the continued success of the packaging industry. By bringing together leading experts on every aspect of packaging production and recovery, AMERIPEN members can come together to solve persistent problems and create new, promising opportunities.

WHY IS RESEARCH & DEVELOPMENT NECESSARY?

As an increasing number of companies and states support the vision of a circular packaging system where all materials and formats are 100% recyclable, reusable or compostable, there is a need to understand to what degree can minor shifts in packaging design result in achievement and where will we need to direct and target resources towards innovative new solutions. Looking at plastics only, the New Plastics Economy suggests that “design is essential to move ahead” and “without fundamental redesign and innovation about 30% of plastic packaging will never be reused or recycled.”¹ We need to extrapolate from this considering that this estimate is focused on existing technology, and only one material substrate. It does not consider projected changes to packaging as whole in the future. AMERIPEN would argue that with the rise ecommerce, an aging and more mobile demographic and other aspects yet unforeseen, packaging appears to be shifting towards more flexible and more multi-material formats. Therefore the need to make innovation a central focus in the push for a circular packaging system becomes increasingly important.

HOW DO WE FOSTER RESEARCH & DEVELOPMENT?

The process of stepping up much-needed research and development (R&D) will require cooperation, collaboration and common understanding of the factors that impact packaging along every point of that hypothetical circle. Questions packaging industry colleagues need to ask include:

- What types of programs and public policies are needed to help advance design in both packaging materials and doormats and end of life recovery options?
- What obstacles do packaging stakeholders face?
- Where do we need to direct R&D resources to drive U.S. leadership in circular packaging systems?

Industry professionals at the R&D salon—including some competitors outside the salon setting—represented various aspects of the packaging field:

- Retailers
- Federal, state and municipal governments
- Packaging producers
- Professional associations
- Technology companies
- Environmental groups
- Sustainability consultants
- Waste processors

BEST PRACTICES FOR ENCOURAGING R&D

“WHY ARE SOME COUNTRIES BETTER AT SCIENCE AND TECHNOLOGY THAN OTHERS?”

Dr. Mark Zachary Taylor of the Georgia Institute of Technology’s School of Public Policy shared with participants, that while there are five ‘pillars’ for successful innovation, most countries have to be more strategic.² Success seems to come from two main social and political drivers: 1. A significant external threat which provides a catalyst for action and 2. The creation of a multi-disciplinary and diverse leaning environment. He further noted the current challenges facing plastics packaging for example, can work toward building a strong case for political consensus, and government support.

“ACCELERATING THE TRANSITION TO A CIRCULAR ECONOMY”

Further Dr. Taylor’s argument for diverse and collaborative networks, David Refkin of the ReMADE Institute discussed how materials firms, packaging producers, brand owners, researchers, trade groups and other entities are partnering to eliminate and/or mitigate the technical and economic barriers that prevent greater material recycling, recovery, remanufacturing and reuse. Funding for ReMADE is provided by a joint public/private partnership with the U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy, and private companies.

According to Refkin, to build up support for R&D, the smartest and most effective strategy for packaging leaders likely will be to focus on efficiency, reducing contamination and conserving costs where possible. As Taylor pointed out, building support for R&D into circular packaging requires flexibility. The ReMADE Institute began its mission with a focus on early applied

¹ New Plastics Economy “Catalysing Action”

² Intellectual property rights, research subsidies, public education, research universities, and trade policy.

research. Now, the organization is focusing on determining the next phase in innovation and working toward it.

Additionally, the industry must tackle workforce development issues. Progress in any field depends on leaders and workers who are experienced in and knowledgeable about that field. Packaging sustainability is no exception.

KEY CHALLENGE AREAS

Industry stakeholders attending the salon tackled questions relating to:

- Where to focus R&D efforts to develop circular packaging strategy
- How to create social networks that drive innovation
- Whether efforts to foster R&D for circular packaging systems can be state by state, or must they be national
- How often-competitive entities can collaborate on R&D while still maintaining market advantage
- Should the US consider national strategies like the UK Plastics Pact and China's 5-year packaging plan
- What the ideal vision of an R&D strategy for circular packaging would look like.

INCREASING DIALOGUE ACROSS THE VALUE CHAIN

Several participants agreed the key to working toward a circular packaging system is to avoid falling prey to tunnel vision. As one remarked, "If we focus on a single challenge, we narrow how we look for solutions."

True progress toward a circular packaging economy requires communication and collaboration across the entire value chain. Designing platforms for cross-stakeholder dialogue is essential for innovation. Understanding impacts and opportunities across the supply chain challenges us to see our role, our biases and/or strategies in new lights. Participants promoted efforts to connect new-material producers to recyclers, to combine research efforts and collaborate. It is possible for stakeholders to fruitfully collaborate on material R&D with competitors, while avoiding discussion about design and other potentially competitive spaces. Dialogue and sharing ideas across different sectors will save effort and bring up new ideas. This harkens back to Dr. Taylor's research that innovation breakthroughs most often occur when exposed to diversity of thought.

RECYCLING TO RECOVERY

End markets play a key role in establishing a circular system for packaging. It was argued that if we started our design process with an understanding of what available end uses exist

for specific packaging materials, we could then better inform design specifications. The concept of design for recycling is not new, but this concept of end market uses, opens more focus on quality assurance for remanufacturing needs.

One table suggested putting together a portfolio of end markets. Markets would be ranked as having low, medium or high impact, and opportunity. Then, industry stakeholders could work toward analyzing the economic value of each. Theoretically, that information would help guide prioritization of recycling and recovery efforts.

Participants also mulled over ways to leverage reverse logistics to collect more recyclable material, and to yield better quality in the content collected. Design should be key in the conversation, but cost, efficiency and purpose need to be taken into consideration for all players across the value chain. Again, they concluded: focusing on end markets for recycled material as a top priority, then designing backwards; could guide toward improving anticipated sortation, collection, reprocessing, and other areas.

INCREASING INCENTIVES

Participants offered ways to make it more desirable for packaging producers to incorporate post-consumer recycled (PCR) materials at a greater rate. If firms are to use PCR, which tends to offer decreased quality and higher costs, they need solid motivations. A suggestion was made for tax deductions for producers that use more PCR materials. Another suggestion involved using tax incentives to increase diversion from landfills and increase recycling rates, in order to support R&D for new materials. The industry also should look at ways for governments to support recycling as they do certain industries. For example, one U.S. state gives \$18B to the petroleum sector but offers up no funding for recycling; if possible, that should be balanced. While it might not be pragmatic to have programs at the federal level, state strategies might prove effective.

ALL ACROSS THE VALUE CHAIN

As one person pointed out, when a package is recycled, the whole package is recycled—i.e. not just the body of a bottle, but the cap, label (including the adhesive) and other components, yet too often these are all created by different organizations and with different materials. There is a need to coordinate the future recoverability of the full package at the design stage. The Association of Plastics Recyclers has started this process with their design guidelines. The How2Recycle standardized labels help inform recycling practices for all the various components within a package. Perhaps more could be done at the design stage or to help advance communication between all of the suppliers involved in the development of the package.

Echoing discussions from previous AMERIPEN salons, there was a call to ensure alignment between new material development and end-of-life. Collaborative discussions among those involved in developing packaging could help anticipate the broader implications that packaging design will have on end of life infrastructure. To that end, R&D is needed not just in design but also in recovery.

REUSE BEYOND RECYCLING

As one participant pointed out, chemical recycling likely has strong potential in the US. However, while the technology appears solid, and there is no market demand urging new innovation in the area. The biggest challenge exists in achieving an economy of scale, which requires a different focus for R&D toward business model development rather than innovation. Also, interest in compost is strong but it was felt its potential is limited to specific applications versus a widespread solution. For example, compostable packaging seems to make the most sense in closed-loop settings (stadiums, universities, cafeterias, etc.) than in restaurant delivery services. This should be taken into consideration in any future discussion on how systems should be designed for composting.

CONCLUSION

AMERIPEN believes R&D is essential to the successful development of a circular packaging system. While there is increasing interest, more work needs to be done to understand R&D needs for the packaging sector as a whole in order to explore the best ways to align calls to finance packaging systems with a vision towards the future.

ABOUT THE ORGANIZERS

EARTH X

EarthX is an international nonprofit environmental organization dedicated to educating and inspiring actions for a more sustainable future worldwide. We connect the global community in ways that help create positive change and ensure the future for our children and grandchildren. www.EarthX.org

AMERIPEN

AMERIPEN advocates for the role packaging plays in a more sustainable society and environment. The group leads the packaging industry through advocacy based on science and enhance understanding of the role packaging plays in a more sustainable society, economy, and environment.

APPENDIX: SALON ATTENDEES

- 3M
- 4Ocean, LLC
- 7-11
- Actus Logistics
- Amcor
- American Chemistry Council
- AMERIPEN
- City of Dallas
- Commodity Recycling Solutions
- Dow
- EarthX
- Future 500
- Georgia Tech, School of Public Policy
- Glass Packaging Institute
- Grocery Manufacturers Association
- Intertape Polymers
- Mars
- Nestlé
- Plastic Oceans
- ReMADE Institute
- Scholle IPN
- State of Texas Alliance for Recycling
- Target Corporation
- Tetra Pak
- US EPA—Federal
- US EPA—State of Texas
- Waste Management