Canadian Plastics
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INSIGHT

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INSIGHT INTO CIRCULARITY OF PLASTICS

CIRCULAR PLASTICS CASE STUDIES

DESIGN RULES YOU NEED TO KNOW

FLEXIBLE PACKAGING STEPS UP

SUSTAINABLE PACKAGING FOR FRESH PRODUCE

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INSIGHT INTO CIRCULARITY OF PLASTICS

Plastics are the building blocks of many value chains, including packaging, health care, construction, aviation, logistics, clothing, and increasingly, the recycling industry. They play a vital role in driving industrial development, creating jobs, expanding opportunities, and generating wealth to improve people's lives.

The world recognizes that plastics also contribute to a growing problem of waste in our environment. As governments around the world are setting sustainability goals, there are increasing demands being placed on the industry to develop new materials and other technologies, establish partnerships, explore plastic alternatives, and change the way they operate to develop solutions that improve recycling and reduce waste. The Circularity of Plastics digital eBook takes an in-depth look at how companies are addressing the challenges facing the plastics and packaging sectors and provides information on advancements and potential solutions associated with sustainability and circularity in plastics.

INSIGHT
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CANADIAN PLASTICS
Stephen Kranabetter | Associate Publisher | 416-561-5362 | skranabetter@canplastics.com
Mark Stephen | Editor | 416-510-5110 | mstephen@canplastics.com

CANADIAN PACKAGING
Stephen Dean | Senior Publisher | 416-510-5198 | sdean@canadianpackaging.com
George Guidoni | Editor | 416-510-5227 | gguidoni@annexbusinessmedia.com

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CREATING A CIRCULAR ECONOMY FOR PLASTICS: CASE STUDIES

In the new plastics economy that industry is striving for, plastic never becomes waste or pollution, but functions instead as a renewable resource: the materials constantly flow around a "closed loop" system, rather than being used once and then discarded. We failed at this for a long time because the structures for plastic recycling, and the economics of it, were weak. But there's now an overwhelming consensus, and a better apparatus in place, to fix the problem – to simultaneously keep the value of plastics in the economy, without leakage into the natural environment. Are there still challenges ahead? Definitely, but progress is being made, and here are just a few examples in North America.

How2Recycle is a standardized labelling system for Canada and the U.S. that defines and interprets recyclability and communicates recycling instructions for hundreds of products to the public through harmonized labels that are in accordance with Competition Bureau Canada and the U.S. Federal Trade Commission guidelines. How2Recycle began in 2008 with 12 pilot companies as a project of the Sustainable Packaging Coalition, and has now surpassed 400 members.

The Biodegradable Products Institute (BPI) has been offering its BPI Certification Mark program across the value chain for over 20 years. The program is a third-party verification of ASTM standards for compostable products in North America, a widely required metric that has regulatory language around the definition of compostability, and a method for meeting requirements that all claims of compostability are supported by scientific evidence.

R-Cycle is a cross-company initiative to develop an open and globally applicable tracing standard for sustainable plastic packaging. R-Cyle has developed a digital product passport that automatically records recycling-relevant packaging properties during production, speeding up production; and then passing this information on through the value chain, which represents an added value for customers in the downstream process. The end goal is to allow waste-sorting lines to identify recyclable products and form recycling-friendly and pure fractions, helping to form a genuine circular economy and an efficient value chain.

Walmart Inc.'s Circular Connector online tool gives packaging companies a forum for submitting packaging solutions online, where they then will be screened against Walmart's sustainable packaging goals. Those that meet the criteria are made available to Walmart's private brand suppliers and associates. The retailer is aiming to more quickly find and implement sustainable packaging solutions across its operations, which include about 400 stores in Canada. Walmart also asks packaging companies to avoid several types of materials that are difficult to recycle in their solutions, including metallized films, colored PET, multilayer materials and biodegradable additives in petroleum-based plastics, among others.

This year, the Canada Plastics Pact (CPP), the Chemistry Industry Association of Canada (CIAC), Circular Materials, the Circular Plastics Taskforce (CPT), Éco Entreprises Québec (ÉEQ) and The Film and Flexibles Recycling Coalition of the The Recycling Partnership joined forces to launch PRFLEX, an initiative aimed at improving the recovery and recycling rates of flexible plastics collected from Canadian households. The collaboration will work in four phases: understanding baseline data to determine the percentage of flexible plastic packaging currently being collected and recycled, according to format and type, in each province; identifying infrastructure gaps in material recovery facilities (MRFs) and at recyclers; proposing new technologies and optimizing processes to increase capture rates, improve sorting and produce higher quality post-consumer recycled resins; and applying learnings by installing and measuring the performance of the better-suited equipment in select partner facilities. Learnings from this initiative will also be shared to support recycling in the U.S.

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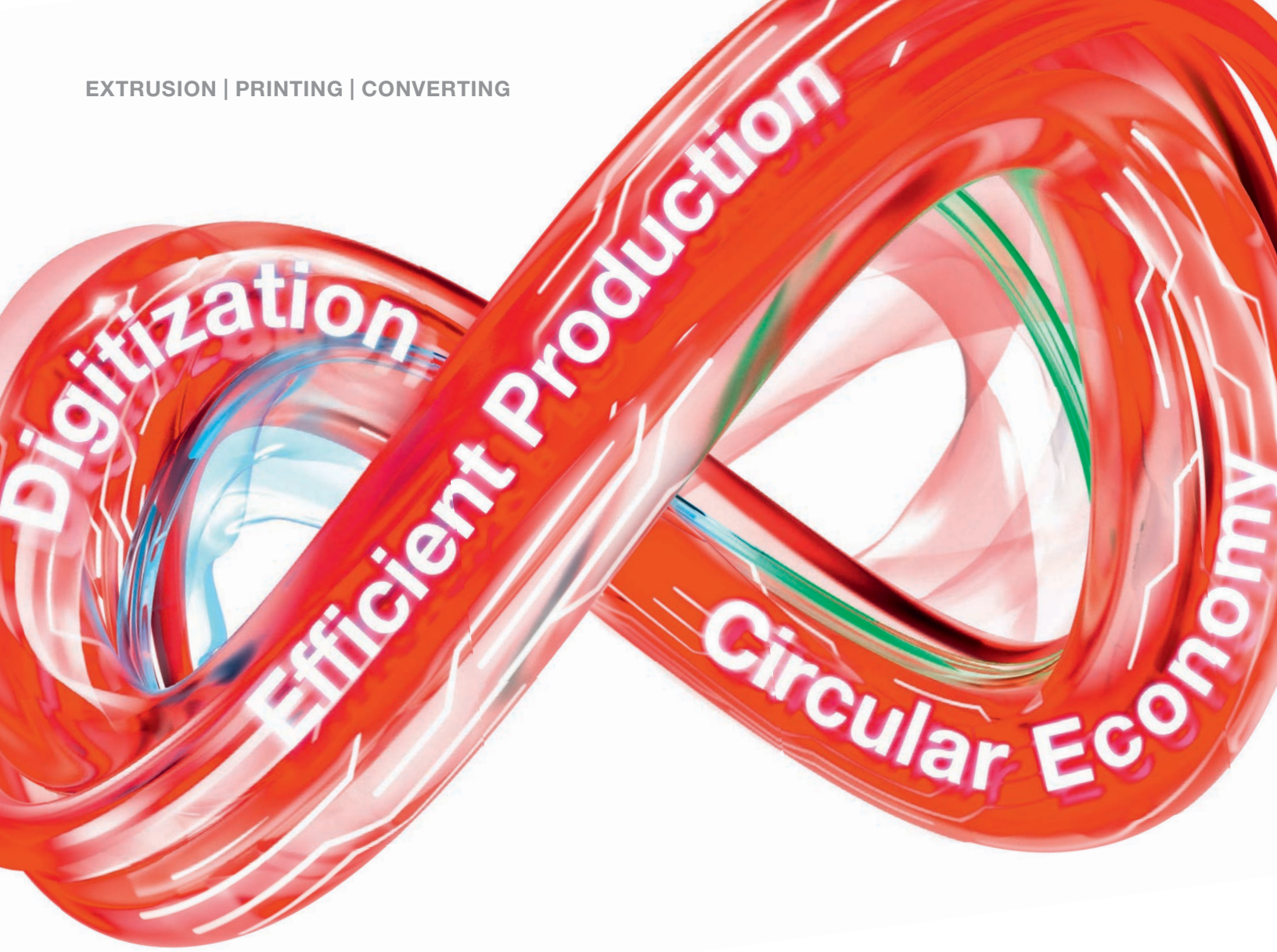

Pursuing Sustainable Packaging Solutions with machinery designed for:

- **Efficient Production:** Technology engineered to minimizie energy consumption and waste
- **Circular Economy:** Machinery made to run PCR and recyclable substrates
- **Digitization:** Data to monitor, automate, and improve your production

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PASSION FOR INNOVATION

PLASTICS PACKAGING INNOVATION: NINE DESIGN RULES TRANSFORMING THE INDUSTRY TODAY

The demand to improve supply chain efficiency, reduce expenses, enhance product safety, and sustain product quality is driving the demand for single-use and, too often than not, hard-to-recycle packaging. However, this linear approach to packaging is contributing to the millions of tonnes of plastic waste ending up in our landfills and the environment each year.

Poor packaging design, problematic materials, and excess packaging are disrupting the plastics recycling industry – but it doesn't have to be this way. On a global scale, we've identified design interventions and innovative approaches that are more in line with circular economy[1] principles and evolving recycling systems.

HOW IS THE CANADA PLASTICS PACT (CPP) LEADING THE PLASTICS VALUE CHAIN TOWARDS INNOVATION?

The Golden Design Rules (GDR) for Plastics Packaging, launched by the Consumer Goods Forum Coalition of Action on Plastic Waste, were developed collaboratively with 41 global companies in response to the New Plastics Economy Global Commitment led by the Ellen

[1] An economy that is restorative and regenerative by design. It is focused on economic activity that builds and rebuilds overall system health. The concept recognizes the importance of the economy needing to work effectively at all scales — for big and small businesses, for organizations, and individuals, globally and locally. It is based on three principles: design out waste and pollution; keep products and materials in use; and regenerate natural systems. (Ellen MacArthur Foundation Definition)

PHOTO: BOY WIRAT / ISTOCK / GETTY IMAGES

THE GOLDEN DESIGN RULES

CANADA PLASTICS PACT

Increase Value in PET Recycling

Remove Problematic Elements from Packaging

Eliminate Excess Headspace

Reduce Plastic Overwraps

Increase Recycling Value for PET Thermoformed Trays and Other PET Thermoformed Packaging

Increase Recycling Value in Flexible Consumer Packaging

Increase Recycling Value in Rigid HDPE and PP

Reduce Virgin Plastic Use in Business-to-Business Plastic Packaging

Use On-Pack Recycling Instructions

MacArthur Foundation and the UN Environment Programme.

Since April 2022, the CPP with the support of its partner PAC Global and its Redesign Working Group has been leading consultations around these nine packaging rules in Canada, following the development of some Canadian-specific guidance. Key actors across the plastics value chain are working collaboratively to drive innovation and scale action to ensure unnecessary and problematic plastics are eliminated by 2025, while also improving the way packaging is designed for reuse and recyclability.

Choices about materials, colors, labels and adhesives, shape and size of packaging all affect the circularity of packaging. They impact whether packaging will be rejected and end up in a landfill, or if it will contaminate recycling systems, hindering the recyclability of even well-designed packaging. The Golden Design Rules are timely, enabling businesses to take immediate action to address some of the most pressing concerns.

CPP Partners that have innovated their product designs to become more sustainable have noticed how big of an impact a small

change can have to reduce plastic waste and pollution. A few examples include:

- Club Coffee, one of the largest coffee roasters and sustainable packaging innovators in North America, has set new benchmarks for coffee packaging by implementing the GDRs. Design changes to its roast & ground coffee packaging have reduced plastic use by 48% compared to a similar foil quad seal bag, 83% compared to a similar plastic canister, and reduced carbon emissions by 78% compared to plastic canisters.
- Bimbo Canada, the nation's leading bakery, has also reduced its use of single-use plastic by approximately 200 metric tonnes annually when it transitioned to compostable cardboard bread tag clips.
- General Mills' Liberté Yogurt brand changed their packaging from black lids with white writing to clear, transparent lids to improve the recyclability of their packaging.

While we still have a long road ahead to address all challenges around packaging design, the GDRs serve as a tool to enable innovation and evolution of plastic packaging while providing common design guidelines to simplify and align the market. As countries around the world implement policies and measures to reduce or eliminate plastic waste, the GDRs will be reviewed and iterated to incorporate learning and respond to a changing context.

There is no doubt that plastics serve many practical purposes in our daily lives, but with an unprecedented amount of plastic pollution flowing into our natural environment, the scale of the challenge to ensure plastics are reused, recycled or composted will not only require new ways of thinking, but also require businesses to unite and take bold risks to transform a broken system into one that is able to scale impact.

All in all, moving the entire system forward within a collaborative ecosystem will be essential to ensuring success.

CREATING THE PATHWAYS FOR A CIRCULAR ECONOMY FOR PLASTICS

The UN Global Plastics Treaty is proof that the global movement towards circularity requires a collaborative approach, with more than 175 countries working together to tackle this challenge. It's clear that we cannot address this issue in siloes, and we must work together to accelerate progress towards a circular future for plastics by embracing innovation and experimentation.

The CPP is a unique collaborative platform that aims to create a circular economy for plastics in Canada by bringing together businesses, government, NGOs, and other key stakeholders from across the plastics value chain. Together, more than 90 CPP Partners are working towards clear, actionable targets as part of CPP's Roadmap to 2025, which outlines its vision and strategy for keeping plastics in the economy and out of the environment.

CPP Partners that have innovated their product designs to become more sustainable have noticed how big of an impact a small change can have to reduce plastic waste and pollution.

The CPP's guidance documents, driven by the collective expertise of its working groups, are a critical tool in supporting stakeholders to implement circular economy principles in their operations, by sharing knowledge and innovative solutions.

- In 2023, CPP will be releasing several publications to further support the industry towards this transition:
- The Unnecessary and Problematic Plastics List aims to determine whether various plastic packaging is necessary in the first place, and if it is, what packaging is likely to have a place in the circular plastics packaging economy;
- The Recycled Content Guide will provide guidance on increasing the use of recycled materials in packaging;
- The Compostable Packaging Guide will help the industry understand the current context of certified compostable packaging and make informed choices about where to consider its use in Canada;
- The Pathways to Mono-material Flexible Packaging Guide provides solutions to improve the recyclability of flexible plastic packaging and films in Canada; and
- The Flexibles 5-year Roadmap sets out a clear vision and strategy for transitioning to circular flexible packaging.

In addition to these publications, the CPP has also conducted several studies to date, such as:

- The British Columbia Industrial, Commercial and Institutional Packaging and Paper Products Baseline Report, which helps to better understand the quantity and composition of packaging and paper products disposal and diversion from the industrial, commercial and institutional sector.
- The Reuse and Refill Plastic Packaging study to evaluate and highlight the opportunities to implement reuse and refill systems as a way to reduce the amount of single-use plastic waste and move towards a more circular economy for plastic packaging in Canada.

These studies and guidance documents have been instrumental in shaping Canada's understanding of the current landscape and guiding the industry towards collective and effective action to meet the demands of the circular plastics economy of the future.

CALLING ALL STAKEHOLDERS IN THE PLASTICS VALUE CHAIN TO JOIN THE MOVEMENT

The Canada Plastics Pact works closely with its Partners to promote knowledge sharing, foster collaboration, and develop and accelerate innovative solutions that advance the circular plastics economy.

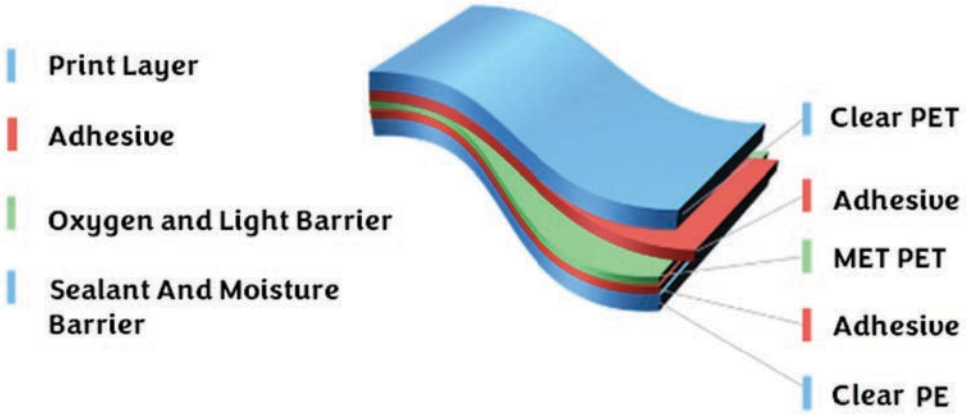
To advance our collective effort, the CPP is encouraging stakeholders from across the plastics value chain to join the CPP and sign on to the Golden Design Rules to demonstrate their commitment to circular plastics packaging. Stakeholders will gain access to a network of experts who can provide guidance and support towards keeping plastics in the economy and out of the environment.

We welcome companies of all sizes and sectors. Don't hesitate to reach out at info@plasticspact.ca to learn more about how CPP can support your sustainability and ESG efforts.

Cher Mereweather
Managing Director, Canada Plastics Pact
cmereweather@plasticspact.ca
Plasticspact.ca
@CanadaPact

THE FUTURE IS FLEXIBLE

Over the last decade, there has been a growing demand for boosted sustainability and environmental responsibility within the packaging industry. A major outcome of this trend is a sharpened focus for flexible packaging that is developed with a mono-material construction.



This transition marks a crucial step towards creating a circular plastics economy, reducing plastics waste, and minimizing the potential environmental impact of packaging. However, before this packaging construction transition and its benefits are outlined, it is important to review the advantages of flexible packaging itself.

WHAT ARE THE ADVANTAGES OF FLEXIBLE PACKAGING?

In contrast to other forms of packaging, such as rigid containers and folding cartons, there are many advantages to using flexible packaging, which typically come in three main formats – pouches, roll stock, and poly bags.

From a production perspective, flexible packaging is extremely cost-effective to generate. Moreover, this packaging format offers a massive degree of customization across numerous dimensions such as printing, size, shape, design, textures, and finishes. More importantly, it can address performance requirements, such as barrier properties and UV protection, helps to extend product shelf life and reduces product spoilage.

Flexible packaging also offers a collection of downstream advantages. To start, flexible packaging is significantly lighter than alternative packaging formats. With this, transportation considerations such as fuel consumption and palletization are optimized – favoring flexible packaging with transportation ratios potentially up to 26:1.

As flexible packages are delivered to retailers for final purchase, even more advantages are brought to the forefront. As an extension to the palletization efficiency offered during transportation, the filled flexible package is more efficient to display on shelves - more units can be displayed than with other packaging formats. The end consumer also sees the advantage of flexible packaging and seeks out the many ease-of-use features including resealable zippers, pour spouts, and handles. Moreover, packaging portability allows consumers to easily use the product on the go.

Flexible packaging unlocks marketing advantages and the opportunity to stand out from the competition. A wide variety of aesthetic options are possible, such as product view windows, additional advertising panels, and eye-catching graphics.

Of course, these advantages may be overshadowed by negative end of life disposal options if flexible packages aren't designed and produced with recyclability and the larger circular economy in mind – a concern addressed by mono-material flexible packaging construction.

WHAT IS MONO-MATERIAL CONSTRUCTION?

Mono-material construction refers to the use of a single material throughout the

entire packaging structure. In the past, flexible packaging delivered performance requirements and properties by combining various layers of different materials, such as polymers, metals, and laminates. However, flexible packaging that has multiple components within its construction poses a variety of challenges for the recycling component of the value chain once the package has served its primary purpose.

Specifically, flexible packaging with multiple layers of different materials results in packaging most often destined for the landfill. This is indicative of packaging that is designed with a linear economy in mind, rather than a circular one. As stated within the Golden Design Rules generated by the Consumer Goods Forum, the best practice for flexible packing moving forward is through increasing the recycling value of the flexible packaging from the outset. This is where mono-material flexible packaging construction can bridge the gap from the limits of legacy practices.

By switching from multi-material flexible packages to mono-material flexible packaging alternatives, many benefits are unlocked:

1. **Enhanced Recyclability:** One of the key advantages of mono-material packaging is the enhanced level of recyclability it enables. Multi-layered packaging typically requires the separation and sorting of different materials and substrates during the recycling process, which can be time-consuming, costly, and downright impossible. Alternatively, mono-material packaging significantly reduces the need for such processes, thereby simplifying efforts required during the recycling process and reducing the amount of packaging that ends up in linear economy destinations, such as landfills or incinerators. By embracing the mono-material construction of flexible packages, a closed-loop system that keeps valuable resources in circulation while reducing the environmental burden the package can be progressed towards.

2. **Improved Resource Efficiency:** The transition to mono-material construction also brings significant benefits in terms of resource efficiency. As mentioned previously, multi-layered packaging often requires the use of different materials to achieve a plethora of desired functionalities – leading to the consumption of a variety of resources. With mono-material flexible packaging, material usage is optimized – allowing for a reduction in the overall consumption of resources and a minimization in the waste that is generated during production.

3. **Innovation and Design Flexibility:** Another outcome of transitioning to mono-material flexible packaging construction is that it also fosters innovation and greater design adaptability within the packaging industry. With a mono-material structure, flexible packaging designers can focus on optimizing the package's functionality and aesthetics without being restricted by the limiting constraints of multi-material packaging systems. This permits new possibilities for creating visually appealing and sustainable packaging – meeting the evolving needs, values, and expectations of consumers. Mono-material packaging encourages designers to explore alternative materials that are more environmentally friendly and supports the development of innovative solutions for modern packaging performance and aesthetic challenges.

4. **Consumer-Friendly Packaging:** Along with the shift towards addressing the convenience needs and preferences for modern consumers with features such as built-in handles, resealable zippers, and tear notches, mono-material packaging offers convenient disposal advantages to them as well. It simplifies the recycling process for end-users, making it easier for them to participate in recycling initiatives. Definitive labeling and standardized recycling symbols on mono-material packages can provide consumers with clear instructions on how to dispose of the packaging responsibly. This increased transparency

empowers consumers to make more sustainable choices and contributes to a more environmentally conscious society.

5. **Regulatory and Consumer Demand:** The transition towards mono-material flexible packaging construction is not only driven by environmental concerns and consumer demand for sustainable packaging solutions, but also by regulatory requirements. Governments worldwide are implementing stricter regulations to promote eco-friendly packaging practices and encourage the use of recycle-ready materials. For companies like Tempo Flexible Packaging, proactively adopting mono-material packaging can ensure compliance with these regulations and demonstrate an organizational commitment to the pursuit of sustainability. By proactively adopting mono-material flexible packaging construction, companies can meet consumer expectations, strengthen their brand reputation, and position themselves to gain a competitive advantage in the market.

Tempo has been a trailblazer in the sustainable flexible packaging space for nearly a decade. In 2015, Tempo won an award for their sustainable flexible packaging design through the PAC Global Leadership Awards. While the award-winning design was a preliminary exploration of what sustainable flexible packaging could look like, Tempo Flexible Packaging has refined their mono-material packaging solutions, known as the Harmony line of products, to be more sustainable than ever before. In fact, they have recently won another award through PAC Global for sustainable packaging design featuring the Harmony packaging materials for Simply the Goodz.

Along with the Harmony product line, there are other proactive players in a wide variety of industries, including those in the private label, snack food, and frozen good spaces, that have already made the transition towards sustainably minded mono-material packaging in advance of the 2025 targets.

The transition towards mono-material construction in flexible packaging is a crucial step towards achieving a more sustainable future. By simplifying the recycling process, reducing resource consumption, and empowering consumers, mono-material flexible packaging offers a range of environmental, economic, and social benefits. This disruptive change in packaging production practices not only aligns with global efforts to combat plastic pollution and waste, but also presents opportunities for innovation and differentiation within the packaging industry. As businesses and consumers continue to prioritize sustainability in their production and purchases, respectively, the importance of mono-material flexible packaging construction will only continue to grow, paving the way for a more responsible packaging ecosystem – a circular plastics economy.

Tony Corsillo - VP Growth & Client Happiness
Tempo Flexible Packaging
647-545-7991
tcorsillo@tempoflexiblepackaging.com
www.tempoflexiblepackaging.com

RECOVER
RECYCLE
REIMAGINE

SAVE PLASTIC

Find out how industry leaders in Canada are building a circular economy where plastic is recovered, recycled, and reimagined for use in innovative ways that benefit society — both in the present and the future.

SAVEPLASTIC.CA

choosing reusables

to be friendlier to our planet

Started by two chemical engineers in 2019, Jacquie Hutchings & Kayli Dale pioneered Friendlier, a clean tech reusable packaging company, to become the leading reusable company in Canada. Friendlier is simplifying the world's transition from single-use to reusable packaging. Friendlier puts a modern spin on the traditional deposit-based borrowing models through the use of digitized deposits, and an easy to use consumer interface. By replacing single-use packaging with their innovative reusable alternatives, Friendlier not only reduces waste but also minimizes the entire environmental impact. This data can be clearly quantified and shared with businesses, to understand exactly how much waste, water, and GHG emissions are avoided. Their reusable packaging solutions are designed to be durable, practical, and hygienic, ensuring that food remains fresh and secure during transportation or storage. By partnering with Friendlier, businesses can significantly reduce their carbon footprint and contribute to a greener future. With their expertise and commitment to sustainable practices, Friendlier empowers food establishments to embrace eco-friendlier alternatives without compromising on quality or convenience. Together, they are reshaping the industry, by promoting a culture of sustainability and responsible consumption for generations to come.

info@friendlier.ca

Friendlier has gained and maintained their success in the reuse space due to their commitment to the environment, and the accessibility of their reuse program. As reuse experts, they have learned the key drivers of a successful program.

First, is product design. It is key that the reusable product that is chosen is functional in the use it is intended for. The container must be durable enough to withstand many uses, but lightweight and stackable so that it is easily stored and transported.

Next comes logistics and sanitation. To be successful, the highest level of sanitation must be achieved with each wash. The logistics need to be seamless in that there is no added work for the brands.

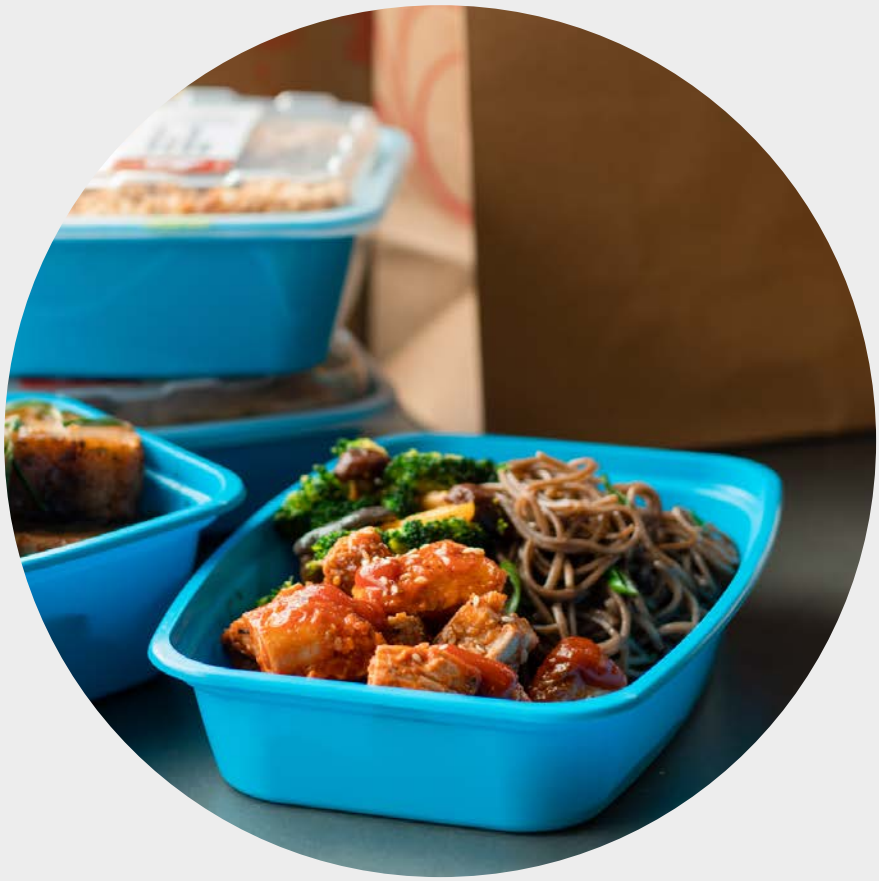
Communication and education is the next pillar, which is pivotal to building habits and changing consumer behaviour.

Finally, most importantly, comes the environmental impact. It is critical that all parts of the program contribute to creating a positive environmental impact.

The success of Friendlier's innovative reuse program has been nothing short of remarkable, seamlessly integrating each of these pillars. The program, which promotes the use of reusable packaging alternatives, has garnered widespread adoption and support from businesses and consumers alike. With its proven track record of reducing waste and environmental impact, the reuse program has not only gained the trust of partners but has also caught the attention of new potential collaborators.

"Doing the right thing for the environment has never been so easy"

-Craig Lockhart,
Executive Chef, Compass



"Our goal is to make reusable packaging as easy, and as accessible as single-use packaging"

- Jacquie Hutchings, COO, Friendlier

With their now expansion across Canada, Friendlier is preparing to become a household name across the nation. This June, Friendlier will be launching its operations in Montreal, bringing its innovative reusable packaging system to the vibrant food scene of Quebec. Additionally, Friendlier has plans to extend its reach further west, with Vancouver slated as the next destination for expansion later this year. This strategic move aligns with the company's vision of making sustainable packaging accessible nationwide, and Vancouver's eco-conscious community makes it an ideal fit. By introducing its reusable packaging system to these major Canadian cities, Friendlier is taking a significant step towards revolutionizing the food industry and promoting a more sustainable future across the country.

Friendlier recognizes that true change begins with transforming consumer behaviour. By offering reusable packaging alternatives, Friendlier aims to shift the mindset of individuals and empower them to make sustainable choices in their daily lives.

Friendlier believes that small changes in consumer behaviour can have a profound impact on the planet, and by providing accessible and practical alternatives, they inspire individuals to make more sustainable choices.

The success of the reuse program serves as a testament to the growing demand for sustainable packaging solutions and underscores the company's commitment to making a lasting difference. As Friendlier expands its reach to new cities and regions, it will continue to build upon the success of its reuse program, further solidifying its position as a leader in the clean tech reusable packaging industry.

To learn more, visit www.friendlier.ca or contact their team at info@friendlier.ca

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REDEFINING HOW WE USE PLASTICS TO ACHIEVE TRUE CIRCULARITY

From new materials and packaging designs to increased consumer awareness, the shift from a linear to a circular plastics economy has a solid foundation upon which to build through innovation, communication and collaboration across the value chain.

Hurdles remain to ensure plastics are recycled and stay out of the world's landfills, waterways and other natural environments, and we have a line of sight to solutions for these solvable challenges. Because of all the benefits plastics bring to society, we must not ignore the issue of packaging in the environment but embrace the opportunity to change our mindset to circular models and view today's waste as a valuable resource. This will keep the plastics industry strong, viable and growing to ship and protect food and other products in an increasingly complex and global supply chain.

PILLARS OF SUSTAINABILITY

The attributes that make plastic a material of choice – durability and light weight – provide for plastics to be viewed negatively when not disposed of in an environmentally sound manner. Unlike glass and metal, lightweight plastic floats and becomes a very visible, long-lasting issue. For many people, waste in the environment equals plastic waste.

Industry-backed initiatives, such as the Alliance to End Plastic Waste and the Canadian Plastics Pact, are working to end plastic waste. By thinking of plastic waste as a resource to be used again and again, we also address climate care by providing a low-emission solution for plastic packaging – plastic that has been through the circle more than once. We need to further support this transition at all levels in the value chain by making packaging that truly participates in and enables the plastics circular economy.

At NOVA Chemicals, we've set an industry-leading ambition to have recycled content be a 30% share of our total polyethylene (PE) sales by 2030. We also support the North American plastic industry's commitment to 100% of plastic packaging being recyclable or recoverable by 2030 and 100% being reused, recycled or recovered by 2040.

Achieving our goals and those of the industry rests on three pillars:

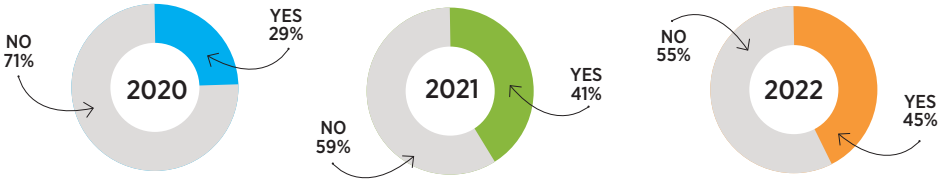
- Source reduction and lightweighting;
- Design for recyclability; and
- Post-consumer recycled (PCR) content incorporation.

As an industry, we've made substantial progress against the first pillar over the past 20 years. Many rigid formats have been lightweighted, packages have transitioned from rigid to flexible, and flexible packaging has

become increasingly thinner while improving performance.

To make the thinner even lighter, we need resins and processes that do the heavy lifting in lightweighting and performance. Both exist today. NOVA Chemicals' Advanced SCLAIRTECH™ Technology and our SURPASS®, SCLAIR® and ASTUTETM product lines further structure optimization and lightweighting in applications that include food packaging, heavy-duty sacks and rotomolded parts.

Have you deliverately purchased products specifically because the plastic packaging was labeled "made from recycled materials"?



QUALITY IN = QUALITY OUT

Whether replacing existing packaging or creating new formats, it's critical to design for recyclability upfront. Can consumers accept packages with a new aesthetic if they're recyclable and/or contain recycled content? Perhaps it's not so glossy, there's not as much ink or color, or the recycled content can even be seen in the imperfect clarity or gels within the package. To design with recycling in mind, these changes may be required. Letting the aesthetics tell the story of sustainability is a useful approach to engage the consumer.

What is without question is that the quality of a recycling stream's input must equal the quality of its output to reach true plastics circularity. The preferred way to achieve this is the like-to-like recycling offered by mono-material packaging.

Fortunately, new innovations to replace multi-material packages with mono-material versions are commercially available today. For instance, the industry recently achieved a significant milestone when NOVA Chemicals worked with manufacturers around the world to successfully produce biaxially oriented high-density polyethylene (BOPE-HD) film on commercial tenter frame lines. This PE film enables mono-material package design and is a fully recyclable alternative to traditional non-recyclable, mixed-material films for flexible packaging.

To be successful in mitigating uncertainty and risk when upgrading equipment to handle recyclable packaging, suppliers must prioritize collaboration across the value chain. This includes partnerships between material suppliers, equipment manufacturers, film producers, converters and brand owners to accelerate the development of more sustainable packaging and enable a true circular economy.

An additional layer of collaboration needs to be considered when working with local, state and provincial governments. Being aligned with these entities helps establish increased ownership in transitioning to more recyclable packaging and gives the industry a voice as initiatives like extended producer responsibility (EPR) emerge.

Consumer demand is also an impelling reason to embrace recyclable packaging. According to 2022 NOVA Chemicals consumer research, 51% of respondents ranked "ability to recycle the package" as the first or second most important sustainability feature of packaging. Almost half (45%) had deliberately purchased products specifically because the plastic packaging was labeled "made from recycled materials," up from 29% in 2020. Consumers aged 44 and under are especially willing to pay for this product attribute.

According to our research, consumers want to be part of the solution and are willing to learn. Their current focus is on recyclability because it's something they can act on immediately in their households to make a difference. Brand owners can create more opportunities for consumers to be actively involved in the recycling process by designing their packaging for recyclability and communicating with consumers on how to recycle it.

Consumers also must be informed about the changes that may be required in packaging to achieve circularity, such as eliminating windows or moving to a new packaging format. In addition, we need to improve access to recycling and keep it simple for consumers. People lead busy lives, and recycling needs to be easy inside and outside the home.

INFRASTRUCTURE FOR CHANGE

In addition to being recyclable, truly circular packaging must contain recycled content. Smart choices in packaging design and improvements to the recycling infrastructure are key enablers to achieving a high-quality

and consistently available supply of PCR material.

Mechanically recycled PE has a low carbon footprint and allows package designers and brands to achieve their sustainability goals with today's recycling infrastructure. Vital to success is having the quality of the recycled content aligned to the end market demand. Food packaging, for example, requires a stream of PCR with the highest level of cleanliness. Improvements in source control, digital watermarks and tracking technology combined with moving to mono-material designs will greatly boost the quality and quantity of like-to-like recycling streams.

At NOVA Chemicals, we're bringing the right recycled polyethylene (rPE) products to the right markets. With our SYNDIGO™ family of rPE resins, we're focused on delivering lower-emission, recycled solutions to converters and brand owners that have sustainability goals to achieve.

We have a broad portfolio of rPE grades that are diversely sourced from white PE agricultural film; back-of-store distribution center PE stretch film combined with front-of-store consumer drop off; and natural HDPE milk, juice and water jugs. Through best-in-class material science, quality assurance and product safety expertise, SYNDIGOTM rPE is designed to meet the most demanding performance and safety standards for food contact applications.

Incorporating recycled content into plastic packaging also requires collaboration throughout the value chain – from brand owner demand all the way back to supply. Recycling today is limited by how much plastic waste is being collected. Despite great strides, lack of access to recycling still exists, and flexible films are not widely recycled. More can be done by local governments and the plastics industry to expand consumer access to and engagement in recycling.

Mechanical recycling remains the most efficient and environmentally friendly recycling method for plastics. Its carbon footprint is the lowest of all recycling options and is even favorable to prime PE production. We plan to grow our footprint in mechanical recycling considerably over the next several years to support the industry's reuse, recycle and recover goals and our own environmental, social and governance goals.

Inroads are also being made in advanced recycling as companies like NOVA Chemicals investigate opportunities to leverage the technology. The ultimate benefit of advanced recycling is that it results in a resin that is indistinguishable from prime. However, we're still years away from full commercialization and when we can realize the same scale that exists for mechanical recycling today.

A SEAT AT THE CIRCULAR TABLE

Plastic remains a critical material in today's society because of its light weight and durable features. It has a lower carbon footprint than alternatives like glass and paper and offers a solution that can greatly reduce food waste and enable global supply chains.

Holistically, we must acknowledge the significant concerns about plastics in the environment to gain a full understanding of our challenges when working to increase the adoption of recycled solutions. As we navigate the issues of plastic waste and low recycling rates, we're learning where we can make the most positive impact. We also believe strongly in listening across the value chain to understand current perceptions and opportunities for change that help the plastics industry achieve a circular economy.

There is no one solution to ending plastic waste. It's a collective endeavor that requires active and intentional participation. Working together on developing sustainable products, packaging and infrastructure, we can accelerate along the path toward circularity.

The good news is that circular solutions exist within the plastics industry today. At NOVA Chemicals, we offer prime and recycled resins with capabilities to meet virtually any product or packaging need. Our team collaborates with industry partners, customers and brand owners to develop innovative processes and applications that create more opportunities to incorporate circularity into existing operations without compromising quality or performance.

The key is to start now – even a small step forward demonstrates commitment to circularity. Given the multitude of applications that exist for plastics and PE, there are plenty of opportunities where rPE incorporation can be achieved or packages can be redesigned.

Contact our team today. We'll pull up a chair for you at the circular table.

Natalie Clarke
Marketing Communications Manager
Natalie.Clarke@novachem.com

AUTHORS
Anna Rajkovic – Market Manager, rPE
Brant Wunderlich – Market Manager, Plastomers and Oriented Films
Eric Vignola - Leader, Polyethylene Market Management

NOVA Chemicals®

Reshaping plastics for a better, more sustainable world

Trusted brands & consumer focused innovations that enable the circular economy.

ASTUTE™
Plastomers
Innovative plastomer sealants to ensure food freshness and safety

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Polyethylene
Best-in-class barrier HDPE solutions and superior LLDPE sealants

SCLAIR®
Polyethylene
Versatile and high processability polyethylene for cast and blown films

SYNDIGO™
Recycled Polyethylene
High quality rPE for food and non-food contact applications

Learn more at **novachem.com**

CANADA'S FRESH PRODUCE SECTOR

DRIVING THE DEVELOPMENT AND ADOPTION OF SUSTAINABLE PACKAGING

Packaging plays an integral role in ensuring the safe and efficient movement of fresh produce year-round. Canadians rely on a significant volume of imported produce – 4 out of 5$ is spent on imported produce – fresh produce which would not be available if not for the innovations that exist in produce packaging. Increasing the sustainability of produce packaging is a complex challenge requiring the balancing of key outcomes such as minimizing food waste and maintaining food affordability with reducing the environmental impacts of packaging.

Canada's fresh produce sector is responding to this challenge by identifying, validating and adopting sustainable forms of fresh produce packaging by promoting industry-wide information sharing, developing tools to support sustainable packaging decision making, while responding to risks and opportunities.

PROMOTING INFORMATION SHARING

Thru the efforts of the CPMA's Packaging Working Group, a range of information products have been developed over the past several years to drive adoption of sustainable forms of packaging. From Packaging Materials Selection and Preferred Plastics Guides to a Fresh Produce Plastics Packaging Design Guide, the CPMA and its members have been developing and sharing information products that help drive the produce industry forward.

SUPPORT PACKAGING DECISION MAKING

The fresh produce sector faces complex packaging decision making processes, due in large part to the growing array of sustainable packaging options needing to be assessed for their ability to meet a demanding set of packaging performance criteria. To help the fresh produce industry navigate this complexity, a produce packaging decision making framework has been developed to shape the creation of decision-making tools, providing key benefits to produce packaging decision makers, including:

- An interactive assessment tool guiding users to develop a packaging "heat map",
- Packaging guides which identify "what is possible" in terms of current and emerging sustainable packaging options, and
- Supporting resources and tools to help answer leading sustainable packaging-related questions

A Sustainable Packaging Guide for Food and Fresh Produce is scheduled for release by the end of 2023.

RESPOND TO PACKAGING RISKS & OPPORTUNITIES

Rapidly moving and ever evolving market, environmental and regulatory conditions means that the fresh produce industry is always seeking to stay ahead of emerging issues before they adversely impact critical produce supply chains. The CPMA's Packaging Working Group has been active in identify emerging risks and opportunities and respond by developing industry guidance in how best to respond. Recent efforts have included guidance on migrating to certified industrial compostable PLU stickers (Winter 2023) and examining the challenges of incorporating PCR content in produce packaging (est. Summer 2023).

CANADA'S FRESH PRODUCE SECTOR – A LEADER IN SUSTAINABILITY

Sustainability is central to the long-term viability and success of Canada's fresh produce sector. Alongside the industry's broader efforts to increase the sustainability of its operations, Canada's produce sector continues to work towards adopting packaging with reduced environmental impacts – including reducing waste and GHG emissions.

THE PRODUCE PACKAGING DECISION MAKING FRAMEWORK

Packaging Environmental and Effectiveness Criteria

- Consumer Choice, Availability, Accessibility & Convenience
- Ensuring Compliance with Food Safety Regulations
- Minimizing Food Waste
- Cost & Return on Investment
- Labelling, Branding and Marketing
- Minimizing Greenhouse Gas Emissions and Other Environmental Impacts
- Minimizing Plastic Waste
- Minimizing Plastic Pollution

Sustainable Packaging Option Categories

- Elimination and Reduction
- Reuse and Refill
- Recyclability and Actual Recycling
- Recycled Content
- Substitution

For more info on the CPMA and its members efforts to transition to sustainable forms of packaging and its efforts to advance sustainability overall,
please contact https://cpma.ca/industry/sustainability/packaging-working-group

CPMA
CANADIAN PRODUCE MARKETING ASSOCIATION

CPMA | CANADIAN PRODUCE MARKETING ASSOCIATION

CPMA Members benefit from:

- Discounted rates for the CPMA Convention and Trade Show
- Label review service
- Networking opportunities
- Guidance on trade in Canada
- Industry-leading research and innovation projects
- Marketing and education resources






Join the Canadian Produce Marketing Association today!

For more information contact :
Heather Urban, Director, Market Development
(+1) 613-218-3832
hurban@cpma.ca

@CPMA_ACDFL cpma.ca