



WHITE PAPER

Strengthening your supply chain amid evolving regulations



AT A GLANCE:

Thriving in a complex regulatory landscape

Food safety and sustainability are no longer just buzzwords; they are business imperatives. Consumers are increasingly demanding transparency and accountability from the brands they trust, while governments are implementing stricter regulations to protect public health and the environment.

This paper examines how regulations are driving significant changes across the food supply chain, from farm to fork. Businesses can navigate these challenges by implementing robust traceability systems, leveraging technology to track products in real-time, and enhancing data sharing to improve food safety and minimize the impact of foodborne illness outbreaks.

This paper also explores the key regulatory trends shaping the future of packaging. It analyzes the implications of these regulations, such as increased costs, operational disruptions, and the risk of non-compliance.

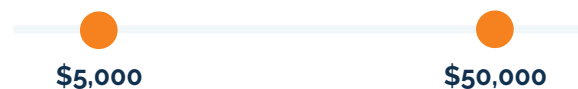
What will become clear is the need for a holistic approach to packaging that considers the entire lifecycle, from design and production to distribution and end-of-life management. By embracing sustainability and prioritizing food safety, businesses can enhance brand reputation and provide a competitive edge in the marketplace.

Operational efficiency with reusable packaging

Reusable plastic containers (RPCs) streamline logistics, reducing labor for assembling and disassembling by eliminating repackaging needs.

6% of eggs break during transit due to inefficient packaging. Switching to RPCs improves airflow and structural integrity, reducing this loss by >50%.

Extended Producer Responsibility (EPR):



Under EPR, a fee is paid for each piece of packaging used. When an RPC replaces >100 boxes, the fees paid are significantly reduced. In addition, EPR non-compliance **finest range from \$5,000 to \$50,000 daily** for violations. These costs incentivize sustainable packaging solutions.

Unveiling the gaps in food supply chain

Kevin Kowalczyk was 2 years, 8 months, and 1 day old when he died in 2001 following 10 agonizing days of decline. His death came less than a month after what his mother, Barbara, described as “the best family vacation we ever had taken.”¹

During that vacation, Kevin unknowingly consumed meat contaminated with *E.coli* O157:H7. It took two years for the various governmental oversight organizations and businesses – none of which was forthcoming with information – to turn over documents that showed the pattern of *E.Coli* identical to what was found inside Kevin matched that from a meat recall originating in one of the nation’s largest agribusinesses. That recall was issued the month the boy died.

Kevin Kowalczyk’s case is just one that highlights the growing public awareness of the lack of transparency in our nation’s food supply chain, a murkiness that has increasingly caught regulators’ attention. This burgeoning awareness is leading to more stringent requirements on food producers to report how what they supply to the American public gets from where it is sourced to the dinner table.

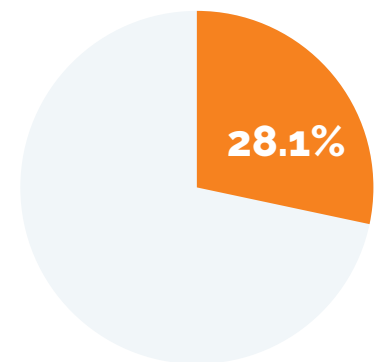
Alongside this effort, there’s a parallel push to examine the food supply chain’s impact on the environment. One area that’s increasingly in the spotlight is **packaging**. As a whole, containers and packaging make up a major portion of household solid waste – 82.2 million tons, or 28.1% of all household solid waste, according to a report from the Environmental Protection Agency.² That **total tonnage is a more than 200% increase from what was generated in 1960.**³

1 Kowalczyk, Barbara. “Remembering Kevin: There was no accountability.” Food Safety News, 12 August 2022, <https://www.foodsafetynews.com/2022/08/remembering-kevin-there-was-no-accountability/>. Accessed 10 November 2024.

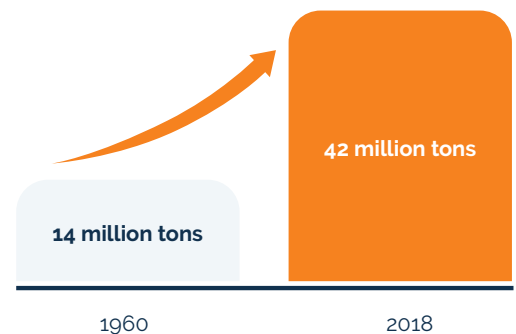
2 “Containers and Packaging: Product-Specific Data | US EPA.” Environmental Protection Agency, <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/containers-and-packaging-product-specific>. Accessed 10 November 2024.

3 IBID

Packaging waste and environmental impact:



28.1% of household solid waste in the U.S. comes from containers and packaging, equaling 82.2 million tons annually—a 200% increase since 1960.



Corrugated box waste has grown **from 14 million tons in 1960 to 42 million tons** in 2018, making it the largest contributor to food supply chain waste.

Inside that total exists an ugly truth for food producers: there is no greater contributor to the food supply chain industry's waste issue than corrugated boxes. **Total paper and paperboard container waste increased nearly 200% from 1960 to 2018, from 14 million tons to nearly 42 million tons.**⁴

One central question rises to the surface: In an industry where packaging regulations are in constant flux, how can you ensure your products remain protected while meeting new sustainability standards that demand increased transparency?

The global packaging industry is at a crossroads, driven by increasing consumer demand for sustainability, tightening regulatory standards, and a growing emphasis on circular economy principles. For companies involved anywhere along the food supply chain, packaging now is not just about protecting products; it's about demonstrating a commitment to safety, transparency, sustainability, and compliance.

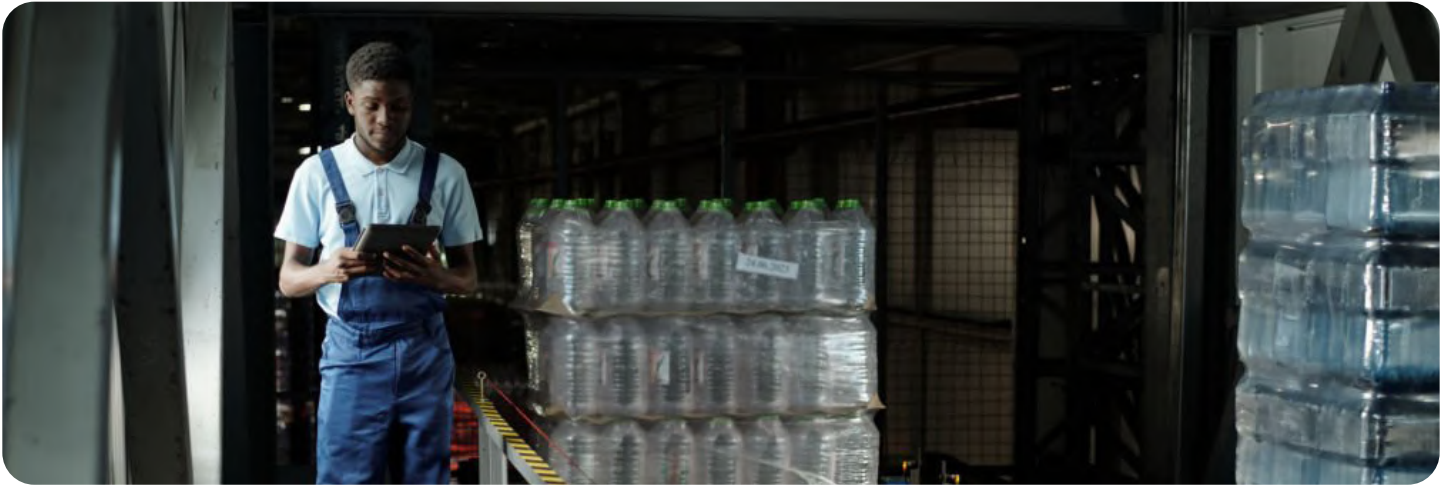


Economic costs of food safety failures:

Chipotle faced a **\$25 million criminal fine** after foodborne illness outbreaks from 2015-2018, with over 1,100 people affected.

By 2018, Chipotle's stock price had **fallen by over 60%**, highlighting the financial risks of inadequate traceability and food safety.

⁴ IBID



The evolving landscape of packaging regulations

The regulatory landscape surrounding packaging is constantly changing, driven by a confluence of factors.

1. **Growing public awareness** of environmental issues, particularly plastics pollution, has fueled a surge in government action.
2. **Consumers are increasingly demanding transparency** and accountability from businesses regarding their environmental impact, and this pressure is translating into stricter regulations.
3. **High-profile outbreaks** of foodborne illnesses have proven difficult to trace, leading to increasing calls to improve the speed with which the source of such health dangers can be found.

Key Regulatory Trends:

- **Bans on Single-Use Plastics:** Many jurisdictions are implementing bans on single-use plastic items such as straws, bags, and food containers. These bans are driven by the recognition that many single-use plastics are difficult to recycle and contribute significantly to plastic pollution
- **Extended Producer Responsibility (EPR):** This policy framework shifts the responsibility for managing packaging waste from municipalities to producers. Under EPR programs, **producers are held financially accountable for the end-of-life management of their packaging**, incentivizing them to design more sustainable and recyclable packaging. EPR fees and non-compliance penalties vary by state. **They range from \$5,000 for the first day and \$1,500 for each additional day the violation occurs in Colorado, to penalties up to \$50,000 a day in California.**
- **Transparency and Labeling Requirements:** Regulations requiring clear labeling of materials, recyclability information, environmental claims, and traceability are emerging. The goal of the latter is to save lives by decreasing the time it takes to trace a foodborne illness outbreak to its source to minimize delays in removing the tainted product from the shelves.



The key message is that change is coming. That change is complicated by the fact that different states are implementing different regulations. For example, right now, seven states – California, Colorado, Maine, Minnesota, New Jersey, Oregon, and Washington – have EPR regulations with more added every month. Each of those EPR regulations is different. Dr. Karin Witton, Global Head of Sustainability at supply chain innovator Tosca, said these differences create business chaos.

“California wants one thing and Maine, for example, wants something different,” she said. “It’s so very variable, which drives everybody in the business community nuts.”

So nuts, in fact, that Witton said the one common refrain she heard at recent conferences is a call for the federal government to step in and create one set of EPR rules for the entire country.

“And that in and of itself is crazy because most of the people at these conferences are not typically pro-regulation,” Witton said. “But they recognize that if we had federal-level EPR regulations, there would be a level playing field. We would know what we were doing. We would know what was involved. We would know how much we are going to pay.”

She points to Europe, which has moved much further down the road toward widespread EPR, as an indicator of where changes in the United States are headed. Partially, this is because of the global interconnectedness of the food supply chain. Companies with international footprints have to adjust their packaging to the strictest standard or have different packaging for different regions. But it also is because European thought leadership is making its way across the pond and influencing the modern American zeitgeist.

And that leads to the Food Safety Modernization Act’s Section 204.

The FSMA itself was a significant reform of the United States' food safety regulations. The law's primary goal was to shift the focus of federal regulators from responding to contamination to preventing it.

One of the FSMA's key provisions is Section 204, which focuses on enhanced traceability for foods considered high-risk. The Final Rule for FSMA Section 204 was issued in November 2022, with an effective date of Jan. 6, 2025, and a penalty-enforcement date a year later.

This section aims to strengthen the ability of the FDA to trace the origins of contaminated foods quickly and accurately, reducing the time it takes to identify, isolate,

and remove potentially dangerous food products from the market.

When those penalties begin, they will be strong. Non-compliant companies will face, among other possible penalties:

- **Mandatory recalls.**
- **Facility registration suspensions, which would effectively halt operations.**
- **Import alerts for foreign facilities, effectively blocking the importation of the company's products.**
- **Monetary fines.**
- **Civil penalties.**
- **In severe cases that lead to illness and death, executives and other personnel would face criminal charges.**



Key components of Section 204 include:

Food Traceability List (FTL):

- The FDA developed a list of foods that are considered "high-risk" based on factors such as history of outbreaks, severity of illness, and likelihood of contamination. This includes foods like fresh-cut fruits and vegetables, leafy greens, soft cheeses, and certain seafood.
- Foods on the FTL require enhanced traceability procedures to be in place, ensuring that their journey through the supply chain can be tracked in detail.

Record-Keeping Requirements:

- Food manufacturers, processors, packers, and distributors of these high-risk foods are required to maintain more detailed records, including key data elements (KDEs) at critical tracking events (CTEs). This means tracking the food from its point of origin (farm) to its final destination (retail or consumer).
- These records must be kept for up to two years and be made available to the FDA within 24 hours of a request during a food safety investigation.

Key Data Elements (KDEs) and Critical Tracking Events (CTEs):

- **KDEs:** Information that needs to be recorded, such as the origin of the product, lot numbers, dates of production, and shipping details.
- **CTEs:** Points in the supply chain where traceability data must be captured, such as harvesting, initial packing, shipping, receiving, and transformation (processing into another product, for example).

Standardized Electronic Records:

- The FDA encourages the use of electronic systems for record-keeping to facilitate faster and more efficient data sharing.
- While not mandatory, using standardized electronic records can greatly enhance the speed of traceability during a foodborne illness outbreak investigation.

Rapid Traceability in Case of Outbreaks:

- By enhancing traceability, the FDA can quickly identify the source of contamination, limiting the spread of foodborne illnesses.
- The goal is to be able to trace foods throughout the entire supply chain within hours rather than days or weeks, thus reducing the impact on public health and minimizing economic losses.

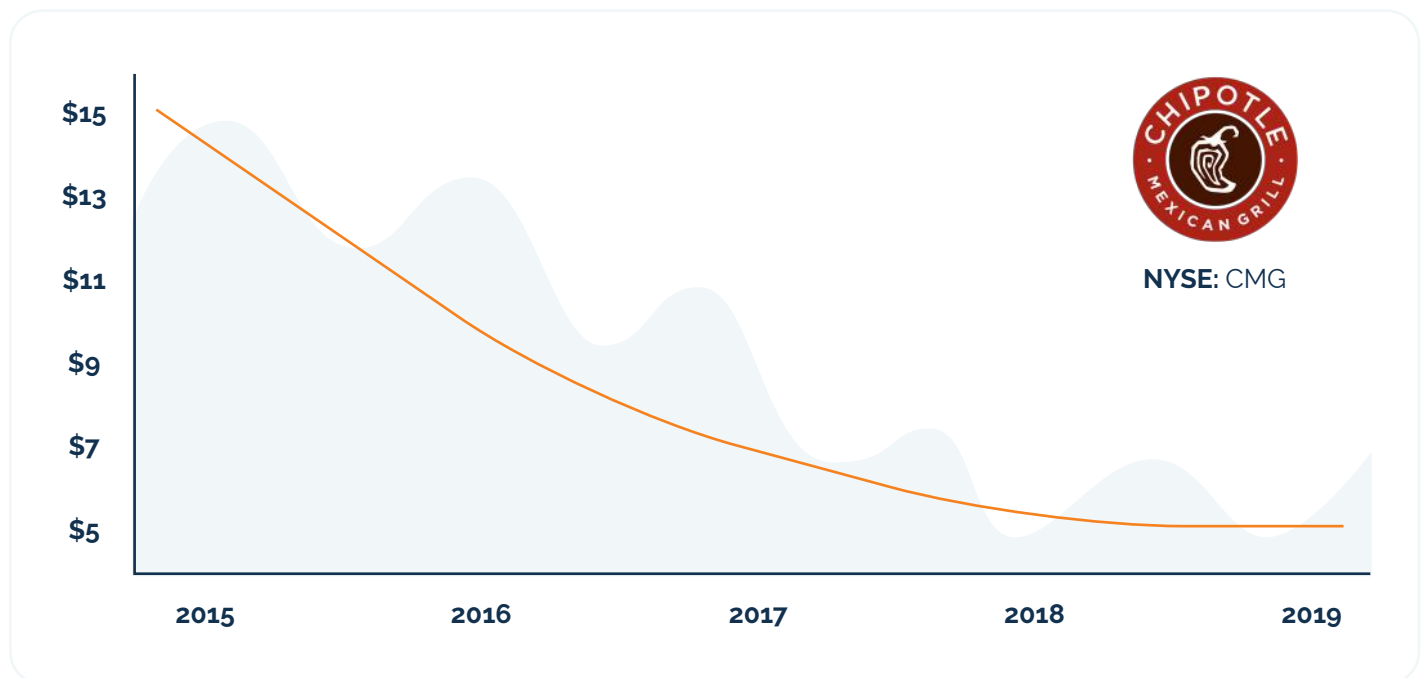
The impact of FMSA and other regulations on packaging operations

Chipotle Mexican Grill's stock price was at a then-all-time high of nearly \$15 per share in August 2015.⁵ Then, in October of that year, a wave of foodborne illness outbreaks was linked to its restaurants ranging from Boston, Mass., to Simi Valley, Calif., and Minneapolis, Minn.

Analysts and food-safety experts criticized the restaurant for its slow response. The situation rolled on in waves through 2018. By then, **more than 1,100 people across the United States were sickened.**⁶ Though no one died, the company ultimately agreed to pay a \$25 million criminal fine and institute a comprehensive food safety review to settle charges filed by the U.S. Justice Department that it violated the Federal Food, Drug, and Cosmetics Act.

On Feb. 9, 2018, the stock price cratered to just \$5.11 a share.⁷

Today, Chipotle is a leader in driving change in the food safety arena ([See Case Study](#)). It provides just one instance of high-profile foodborne illness outbreaks that have led to the call for improved traceability of our fresh-food supply. These outbreaks are tied directly to a strengthening of the Food Safety Modernization Act (FSMA).



⁵ <https://www.google.com/finance/quote/CMG:NYSE?sa=X&ved=2ahUKEwi-wMH7ouuKAXVv78kDHUIRIEcQ3ecFegQIQBAf&window=MAX>

⁶ <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/press-releases/chipotle-mexican-grill-agrees-pay-25-million-fine-resolve-charges-stemming-more-1100-cases-foodborne>

⁷ <https://www.google.com/finance/quote/CMG:NYSE?sa=X&ved=2ahUKEwi-wMH7ouuKAXVv78kDHUIRIEcQ3ecFegQIQBAf&window=MAX>



The Farm Bill and Other Regulations

FSMA Section 204 is just one of the regulations affecting packaging.

The United States is built for change. Depending on the elected federal body, some degree of turnover is all but guaranteed every two, four, six, or eight years, and along with the new faces in our nation's governing bodies come different priorities and views on the role of the federal government.

We are in just such a period of change. Deciphering with 100% accuracy exactly what these new but familiar names reascending to power in the executive and legislative branches will do is impossible, but the fact that the new presidential administration has been there before offers some clues.

Most of the changes will come through the next Farm Bill. In late December 2024, Congress avoided a government shutdown by passing a bill signed by then-President Joe Biden that contained a resolution that extended the existing Farm Bill through Sept. 30, 2025.

What the food supply industry can expect in the next Farm Bill under a Republican-led Congress and

Executive branch is likely some combination, or all, of the following:

- More stringent controls on migrant workers.
- Strict border controls.
- The elimination of pathways to citizenship seen in the previous administration's Farm Bill.

This likely will exacerbate a labor shortage for workers who pick fresh fruits and vegetables, leading to a decrease in supply and upward pressures on pricing.

Tim Debus, president and CEO of the Reusable Packaging Association believes that these changes provide a strong incentive for suppliers and farms to become more efficient in their operations. The goal is to lose less product before it is sold to avoid decreases in profit from waste. Suppliers need to be forward-looking, more agile, and ready for a period of change.

Regulation Name	Status	Compliance Deadline	Goal	Applies To	Key Requirements
FEDERAL REGULATIONS					
FDA Food Traceability Rule (FSMA 204)	Final rule published	January 20, 2026	Enhance food traceability and safety	Food businesses handling items on the FDA's Food Traceability List	Maintain records with Key Data Elements for Critical Tracking Events Provide information to FDA within 24 hours when requested Develop a traceability plan
FDA Uniform Compliance Date for Food Labeling Regulations	Announced	January 1, 2028	Standardize compliance dates for food labeling regulations	All food products subject to labeling regulations	Businesses must update food labels to meet new rules and ensure compliance. They should also manage existing label stock while preparing new labels before the deadline.
FDA "Healthy" Nutrient Content Claim	Final rule issued	February 25, 2028	Update definition and create a voluntary symbol for front-of-package labeling	Food manufacturers and retailers	Updates criteria for using "healthy" claims on food labels Requires specific amounts of food group equivalents Sets limits on added sugars, sodium, and saturated fat
FDA Proposal on Salmonella in Poultry	Proposed rule issued	To be determined	Reduce Salmonella contamination in chicken products	Poultry producers and processors	Declares certain Salmonella serotypes and levels as adulterants Requires internal procedures for monitoring and sampling Aims to reduce Salmonella contamination in raw poultry products
Mandatory Front-of-Package Nutrition Labeling	Proposed rule submitted to Office of Management and Budget	To be determined	Help consumers make healthier choices by highlighting key nutrition information	Food manufacturers and retailers	It is not yet finalized but is likely to include highlighting information on saturated fat, sugar, and sodium
Keep Food Containers Safe from PFAS Act of 2024	Introduced in U.S. Congress (H.R.9864)	To be determined	Prohibit intentionally added PFAS in food packaging	Manufacturers, distributors, and sellers of food packaging	Businesses must remove intentionally added PFAS from products by the compliance date, reformulate packaging if necessary, and keep records to prove compliance with the new rules. RPCs do not contain PFAs.
Request to Revoke Color Additive Listing for Use of FD&C Red No. 3 in Food and Ingested Drugs	Enacted	Effective immediately for new products. Manufacturers have until January 1, 2027 to reformulate existing products containing Red Dye 3.	Protect public health by removing Red Dye 3, a potentially carcinogenic substance, from the food supply.	All food and drug manufacturers in the United States	Completely remove Red Dye 3 from all food and drug products Update product labels to reflect the removal of Red Dye 3 from the ingredients list Reformulate their products using alternative colorants or natural food dye There may be additional verification and consumer education measures in the future

Regulation Name	Status	Compliance Deadline	Goal	Applies To	Key Requirements
STATE-LEVEL REGULATIONS					
California Assembly Bill No. 418	Enacted	January 1, 2027	Prohibit the use of certain harmful food additives	Manufacturers, distributors, and retailers	Prohibits use of brominated vegetable oil, potassium bromate, propylparaben, and red dye 3 in food products
Illinois, Maryland, Missouri, New Jersey, Rhode Island, South Dakota, Washington, and New York have also proposed similar legislation.					
California Senate Bill 253	Enacted	January 1, 2026	Publicly report their greenhouse gas emissions	Public and private businesses with revenues greater than \$1B USD	The law requires large public and private US-based organizations that do business in California to disclose their greenhouse gas emissions in accordance with the GHG Protocol. Under the law, impacted companies will need to report their full carbon inventories, including scope 3 emissions.
California Senate Bill 261	Enacted	January 1, 2026	Companies disclose the threats they face as a result of climate change	Large businesses with annual revenues over \$500M USD	The law requires large businesses to prepare and submit a biannual climate-related financial risk report, publicly disclosing their climate-related financial risks and the measures they're taking to mitigate these risks.
State-level PFAS regulations Several U.S. states are addressing the use of PFAS chemicals, augmenting the regulations underway at the federal level. States that have recently enacted PFAS laws for food-related concerns include Maine, Minnesota, California, Connecticut, and Vermont.					
Single-use plastic regulations *Several U.S. states are implementing regulations to address single-use plastics to reduce waste. These states include California, Delaware, Illinois, Colorado, Minnesota, Maine, Oregon, Washington, Vermont, and Rhode Island.					
INTERNATIONAL REGULATIONS					
Canadian Front-of-Package Nutrition Labeling	Regulations in force	December 31, 2025 (end of transition period)	Provide nutritional clarity for consumers	Canadian food manufacturers and retailers	Add front-of-package nutritional labeling for high levels of certain nutrients
Canadian Supplemented Foods Labeling	Regulations in force	December 31, 2025	Improve labeling for supplemented foods	Manufacturers of supplemented foods in Canada	Update labeling practices to include food facts table (SFFT) for all supplemented foods
EU Food Waste Reduction Regulation	Proposed	December 31, 2030	Reduce food waste at all stages of the supply chain	EU Member States and businesses within their jurisdiction	Member States must reduce food waste by 10% in processing and manufacturing and by 30% per capita at retail and consumption levels by 2030
EU Farm-to-Fork Strategy Implementation	Proposed	Phased implementation through 2030	Reduce pesticide and fertilizer use, improve sustainability	EU farmers, food producers, and exporters	Reduce pesticide use by 50% Increase organic farming to 25% of agricultural land Improve food labeling and information

The wise way forward to modernize packaging is to increase reusable materials and implement RFID technology, Debus and Avery Dennison's Peter Jackson said.

"When you look at the economic opportunity over time with reusable packaging, the payback is significant and the improvement of your business can be tremendous, especially when your supply chain can be digitized," Debus said. *"That now generates a bunch of new value that you can extract as part of that ROI for the capital that you place."*

Jackson added : *"When you've given something a digital identity, when you've got RFID traceability, you can say, 'Hang on a second. We know where that came from, which farm, which location, and we only need to take these ones out of circulation. That helps the retailer and the consumer. That's the important part.'"*

REDEFINING PACKAGING:

Balancing sustainability and compliance

To build a successful sustainable packaging strategy requires a view from above. To see packaging as merely the wrapper that contains a product is to miss the big-picture view that there are multiple layers involved in protecting products, meeting regulations, and increasing traceability. A comprehensive strategy incorporates all layers.



PRIMARY

What it is: Packaging that directly interacts with the product, ensuring its safety, quality, and consumer appeal.

Examples: Glass bottles, metal cans, skin packs, blister packs, and flexible pouches.

Key Considerations: Material selection and barrier properties.

- **Prioritize** the use of recyclable, compostable, or renewable materials.
- **Reduce** the amount of packaging material used while maintaining product integrity and functionality. Lightweighting and downsizing are two possibilities.
- **Select** materials that provide adequate protection against contamination, moisture, and oxygen while minimizing the use of harmful chemicals.



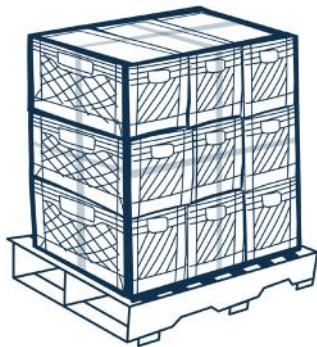
SECONDARY

What it is: Packaging used for storing and transporting the primary products.

Examples: Boxes, cartons, bubble mailers, reusable plastic containers, bulk bins, and pallets.

Key Considerations: Reusable solutions.

- **Stability** for protection of primary packaging and contents.
- **Sufficient space** to accommodate primary packaging without unnecessary space.
- **Stackability** for efficient storage.



TERTIARY

What it is: Packaging used for securing all bulk secondary packaging.

Examples: Corner boards, straps, and plastic wraps..

Key Considerations: Weight, stability, and transport efficiency.

- **Optimize** packaging designs to maximize load efficiency during transportation.
- **Improve** worker safety with greater stability and container integrity.
- **Protect** and minimize damage that can happen in transit.

► **Calculate your potential savings** by switching your current packaging.

Leveraging reusable packaging solutions

Eliminating single-use packaging through RPCs provides benefits in two key areas

Operational

- ✓ **Enhance Logistics Efficiency:**
Streamlines logistics operations and improves supply chain efficiency.
- ✓ **Labor Optimization:**
Traditional packaging often involves significant manual labor for assembling and disassembling boxes, pallets, or crates. RPCs, being durable and stackable, eliminate the need for constant repackaging. The standardized design of RPCs makes them easy to stack and handle. This results in faster loading and unloading processes.
- ✓ **Increased Safety:**
RPCs have ergonomic handles to prevent back strains that take valuable workers offline. RPCs also stack much more safely, which reduces injuries.
- ✓ **Improved Automation and Handling Efficiency:**
RPCs are designed for durability and standardized dimensions, making them suitable for automation processes. Because they are automation friendly, operation becomes more efficient and productive. There is also a drop in machine jams and downtime.

Bottom-Line Impact

- ✓ **Increased Savings:**
Investments in RPCs can lead to cost savings
- ✓ **Less Waste:**
Reusable packaging is stronger than corrugated, meaning food doesn't get damaged and there is less food waste
- ✓ **Reduced Cost:**
By minimizing packaging materials and optimizing transportation, businesses can reduce costs associated with material procurement, logistics and EPR fees and fines.

Sustainability

- ✓ **Reduced Carbon Footprint:**
Significantly reduces carbon emissions associated with transportation and waste disposal.
- ✓ **Improved Resource Efficiency:**
Conserves resources and eliminates landfill waste generated by single-use packaging.
- ✓ **Alignment with ESG goals:**
A well-defined packaging strategy can contribute significantly to a company's Environmental, Social, and Governance (ESG) goals. By minimizing environmental impact, reducing waste, and promoting sustainable practices, businesses can enhance their brand reputation, improve relations with socially responsible investors, and gain a competitive advantage by differentiating themselves from less environmentally responsible offerings.

Tackling challenges in sustainable packaging adoption

Problem #1: Operational Disruptions

Implementing new packaging solutions may require adjustments to production processes, supply chains, and logistics. This can involve investing in new equipment, retraining staff, and reconfiguring production lines to accommodate new materials or packaging formats.

Solution: Proper prior planning and a phased implementation approach minimizes these disruptions. Work closely with suppliers and logistics partners to ensure a smooth transition at all levels. And much like the approach to bottom line impact, look at operational gains along with any disruptions, such as how the rigidity and standard sizing of reusable secondary packaging works better in an automated environment.

Problem #2: Internal Resistance to Change

The biggest impediment to making the switch to RPCs frequently comes from within. C-suite executives, often laser-focused on that quarter's bottom line, sometimes fail to see the wise case behind the transition to RPCs.

Solution: Regulations such as FSMA Section 204 and those surrounding Extended Producer Responsibility are designed to incentivize a culture shift. Emphasize this alongside the cost of non-compliance in conversations with C-Suite executives. Tailor the message to show the data of the initial investment and the return on investment. The right message of environmental benefit and economic success is crucial. After discussing financials and environmental benefits, the key is to zoom way out and to reevaluate the purpose of packaging.

Problem #3: Changing Regulatory Landscape

Changing packaging at any and all levels is challenging when regulations seem to be rapidly changing.

Solution: Act with long-term trends in mind. The general trend is toward more environmentally responsible packaging and easier traceability. Keep those two trends front and center, along with the full cost of non-compliance. Failure to comply with regulations can result in significant penalties, including fines, legal action, and reputational damage. Non-compliance can also erode consumer trust, leading to a loss of market share.

CASE STUDY:

Avian influenza and the egg supply

Around the same time Chipotle was having its issues with foodborne illnesses, a larger problem was creeping its way through the nation's poultry community. Avian Influenza created the largest poultry health disaster in U.S. history at the time, resulting in the loss of 43 million egg-laying chickens during the outbreak.

Population control and careful monitoring brought the outbreak to a halt. Until ...

In 2022, a new strain of Avian Influenza emerged. Since its February 2022 origin, more than 50 million poultry birds have been lost, and many more are expected to be culled to help control the problem.

Consumers feel this in a variety of ways, including higher egg prices. **In February 2022, the average price for Grade A large eggs was \$2 a dozen. It peaked at \$4.21 a year later and ended 2024 at nearly \$3.65.**

The current primary solution is enhanced reporting and sanitation protocols. This is a good solution. A better solution is to better protect the eggs we already have.

As many as 6% of eggs break en route from farm to store. Because we know increasing the number of eggs laid is going to be challenging, it would

be wise to improve other areas of the egg supply chain.

RPCs are ideal for this use. Prior to assuming his responsibilities with the Reusable Packaging Association, Debus developed an RPC program for Kroger, the nation's leading grocer. **Debus said he saw firsthand how RPCs significantly improved the distribution of fresh eggs from the farm to the store.**

Eggs are typically laid in the upper 90-degree range. The idea to preserve freshness, Debus said, is to cool them as fast as possible.

"If you go into the storage room of an egg farm or the production area, you've got all these eggs stored in cardboard boxes, and they're sweating the moisture," Debus said. "You can see the cardboard box actually being wet, and that impacts the integrity of the box. RPCs allow airflow and you can add ventilation to get to the target temperature much faster."

Better freshness and more structural integrity in the shipping container leads to happier customers and even happier retailers who are able to put more unbroken eggs on the shelves for sale.

Navigating the path to compliance and beyond

At the heart of compliance with many regulations that currently exist, as well as those expected in the near future, is technology. The ability to track and trace food products throughout the supply chain has become a critical priority. Currently, there are two main types of traceability: active and passive.

Active tracking

Active tracking uses real-time data collection and monitoring technologies, such as GPS-enabled trackers and cloud-connected dashboards, **to provide immediate visibility into your assets' location, condition, and status.** This enables swift, data-driven decision-making, reducing inefficiencies and preventing costly disruptions.

Passive tracking

Passive tracking, on the other hand, leverages RFID tags, barcodes, and other static data points to maintain reliable, cost-efficient tracking of large volumes of assets. These systems seamlessly integrate into your existing operations, ensuring compliance without overhauling your current infrastructure.

Combining both approaches gives you full visibility of your operations but also reduces errors, saves time, and helps predict problems before they happen.

"With RFID, you can scan thousands of items in a couple of seconds," said Avery Dennison's Senior Global Manager Peter Jackson. "It also gives it a unique identity."

That unique identity is vital when it comes to food traceability and the requirements of FSMA Section 204. Jackson gave a not-unfamiliar example of a foodborne illness outbreak linked to romaine lettuce that affects North America. **Without RFID, as soon as a recall is ordered, all romaine lettuce would have to be cleared from the shelves, drastically impacting customers and profits.**

But with RFID, the contaminated romaine lettuce can be traced backward to the farm where it was harvested and through the supplier to the shelf. Then, just those identified culprits need to be removed.

"That helps the retailer. That helps the customer," Jackson said.

Tosca and Avery Dennison have built a strong global partnership over the years, combining our expertise in reusable pallets and their innovative labeling solutions to create advanced traceability systems. This collaboration ensures you have access to world-class technology and solutions to meet today's regulatory demands and operational challenges.

CASE STUDY:

Chipotle Responds

Trust was at the heart of the changes at Chipotle. One of the steps it took in the wake of the 2015-2018 problem was to pilot Avery Dennison's RFID solutions to optimize their operations and trace ingredients at its distribution center and approximately 200 restaurants in the Chicago area.

Starting in March 2022, Chipotle used serialized RFID case labels to track ingredients from suppliers to restaurants. The cases carried meat, dairy, and avocados from five suppliers.

According to a Chipotle press release¹, **participating suppliers invested in the RFID technology in anticipation of saving suppliers time on inventory management and stock rotation while mitigating human error and increasing expiration date visibility and accountability.**

So successful was the pilot project that Chipotle asked each of its suppliers to join. In doing so, it took the RFID technology commonly used in retail and became the first restaurant chain to use it at all of its locations, according to Carlos Londono, vice president and head of supply chain.

"Wherever we have the opportunity to use technology to either facilitate labor or improve the efficiency and the efficacy of the restaurant crews, we're all for it," Londono said in a May 14, 2024, article in Supply Chain Dive.²

From where Jackson sits, it's all about ensuring consumers are confident in the safety of the food they buy.

"People are much more aware of the food they are buying for their families. They want to know what they are eating, where it came from, and if it is safe. You need technology that provides the data to do that. That technology is RFID."



1 <https://rfid.averydennison.com/en/home/news-insights/case-studies/rfid-case-study-food-chipotle-deploys-rfid-for-traceability-and-food-safety.html>

2 <https://www.supplychaindive.com/news/chipotle-rfid-supply-chain-operations-carlos-londono/714875/>

Strategic approaches to policy engagement and influence

The right technology can help companies deal with regulations. But how can executives influence future regulations to ensure they are as business-friendly as they are environmentally friendly and good for a safer food supply?

That's where Tim Debus and Reusable Packaging Association come in. The organization was founded in 1999 as a nonprofit trade organization to promote the common and pro-competitive business interests of member suppliers and users of reusable packaging products and services.

Membership in industry trade associations is vital to providing a unified voice to policymakers, Debus said.

"It's through that collaborative work that we can pool resources and expertise and ultimately deliver the impact that individual member companies would not be able to deliver alone," he said. "What we do as an organization is try and raise awareness and educate and inform about how these investments can really pay back quickly to your financials and work across the supply chain with partners to drive value."

What that advocacy looks like varies. **Debus points to an expo for the packaging industry held annually where education sessions present case studies and real-world data about the benefits of RPCs and other reusable packaging.** That event featured an excellence

awards program held annually to generate new case studies to keep the data fresh and recognize companies that are succeeding with RPCs.

"It's vital to be able to showcase that the investments of these companies are really paying back in performance and operational improvements in supply chains," Debus said. "We can show regulators that there is real-world practical evidence associated with companies gaining that benefit associated with reuse systems."

Trade associations like the RPA give their members access to lawmakers and their staff, which enables company leaders to build important relationships with those who make or influence public policy. Companies can leverage these relationships to obtain grants or other incentives to help pilot new technologies.

Debus said RPA's member companies saw a wave of such grants with the Biden Administration's Inflation Reduction Act that offered money to fund recycling infrastructure programs, among other things.

"The federal government in particular is now setting aside money for source reduction in grants and infrastructures for reuse and refill," Debus said. "We are starting to see a dramatic entry of reuse and refill being part of the investments that the government is seeking for national strategies associated with reductions of waste and pollution. It's an exciting time."



CHARTING THE PATH FORWARD:

Your Next Steps

The path forward is a combination of awareness, education, technology, and innovation. Staying abreast of rapidly changing regulations is a challenge made more easy by getting and staying ahead of the curve. With America's propensity for governmental changes of directions and the increasingly complex multinational environment, membership in trade associations whose job it is to stay current and familiar with all regulations affecting the industry is vital.

So is a switch to RPCs and the addition of RFID or Active Tracking technology. Combined, these two changes provide companies a clear path to compliance with current and future regulations.

"We have some stronger sustainability-related regulations and traceability-requirement regulations that help drive our focus," said Tosca's Dr. Karin Witton. "These regulations are and should be top-of-mind for a lot of people in our industry, who should be asking themselves how these regulations are going to affect their business and what they are going to do to ensure compliance without hurting the bottom line."

To learn more about RPCs, visit tocaltd.com

To explore RFID technology through Avery Dennison, visit averydennison.com.

To discover the benefits of the Reusable Packaging Association, visit reusables.org



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