Flexible Packaging

Less Resources. Less Footprint. More Value.

Flexible Packaging: Contributing to Sustainability

Less Resources. Less Footprint. More Value.

Introduction

During the early 1900s, as more Americans moved from the farm to the city, food had to be shipped farther from its source and thus had to stay edible for longer periods of time. Food and other consumer products had to be protected throughout the chain of distribution; from the farm or manufacturing plant to the warehouse to the store to the home.

Today, less than 3% of Americans live and work on farms. However, the fact that these few Americans can feed more than 300 million Americans and millions more overseas is the result of the successful development of distribution systems and packaging necessary to avoid spoilage and waste.

The average grocery store contains more than 10,000 different products, each with unique packaging requirements.

Source: Flexible Packaging Association

What is a Package?

A package is the container that encloses products. It comes in many forms including ***wraps, pouches, bags, boxes, cups, trays, cans, tubes, bottles and jars***. Packages are designed to:

- protect and preserve the product
- provide information about the product, and
- make the product easier and more convenient to use

Source: Flexible Packaging Association

Reasons Why Packaging Matters!

- Packaging reduces municipal solid waste by preserving products.
- Packaging reduces the costs of virtually all products by reducing product damage.
- Packaging helps consumers make informed purchasing decisions.
- Packaging delivers nutritious food and reduces food waste.
- Packaging protects against product tampering.
- Packaging provides convenience for product transportation and use.
- Packaging is one key to eliminating starvation, malnutrition and disease by preserving food and improving distribution.
- Packaging reduces diseases by reducing spoilage.
- Packaging gives us product choices we would not otherwise have.

Source: Institute of Packaging Professionals

Flexible Packages

- ***Flexible packages have no shape of their own***, and it can change shape readily, compressing easily and requiring a minimal amount of materials to manufacture.

- ***Flexible packaging materials are used to create a barrier between the product and the environment***. They are used to seal in freshness and lock out potentially damaging environmental elements, such as excess moisture, light, and oxygen that could affect the quality and taste of food, or the efficacy of medication.

Source: Flexible Packaging Association

Flexible Packaging.
Less Resources. Less Waste.

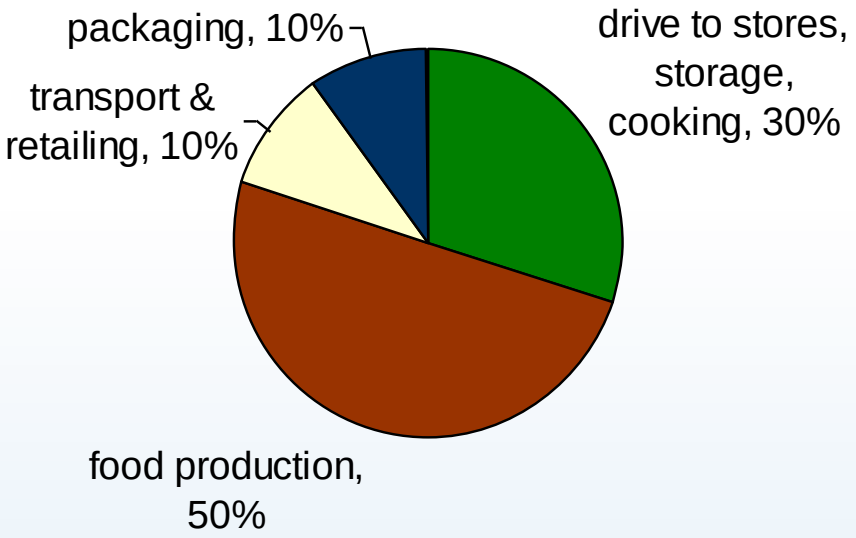
- Flexible Packaging typically uses less energy and less materials.
- ***Flexible packaging*** creates less waste in the first place® through ***source reduction***.
- Source reduction is equivalent to ***minimal packaging – use of the smallest amount of materials possible to package a product***.
- Flexible packaging represents only about ***2%*** of municipal solid waste.

Source: Flexible Packaging Association

Flexible Packaging Uses Less Energy to Manufacture

Of total energy used in the food chain:

- 50% used in food production
- 10% on transport to stores
- **10% to make primary, secondary and tertiary packaging**
- 30% is used by shoppers to drive to the shops and store and cook food



Source: "Packaging in Perspective" prepared by the Advisory Committee on Packaging (UK)

Flexible Packaging Reduces Food Spoilage & Waste

"Food waste has at least 10 times the environmental impact of packaging waste and that's before taking account of the impact of methane from decayed food."

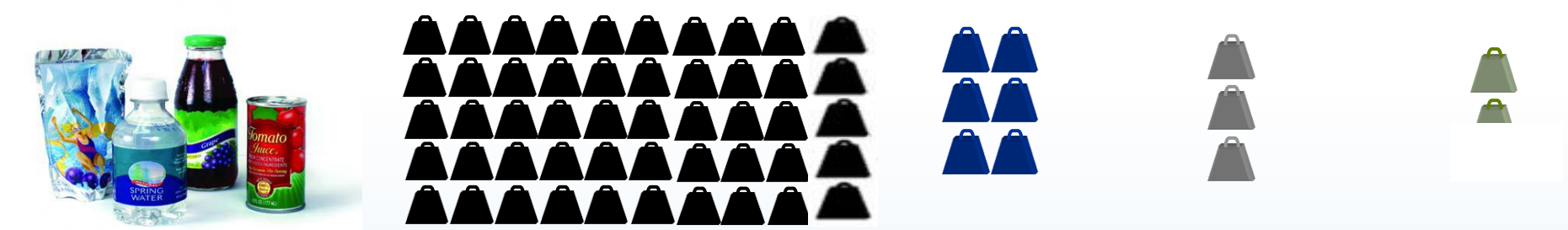
In-store waste reduced from 3% to under 1%

Flexible Packaging Prolongs Shelf Life: Identical bunches stored for 7 days

Shelf life extended from 3 days to 14+ days in store

Source: Incpen

Flexible Packaging Saves Transportation Miles & Fuel Consumption

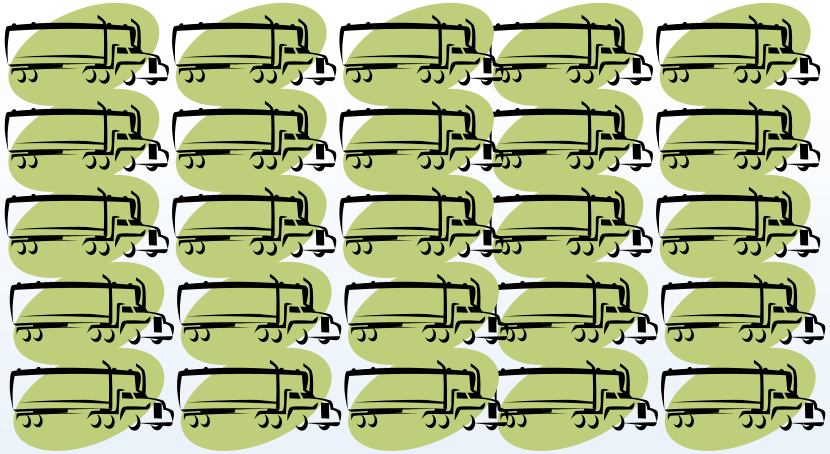


60 pounds of beverage	=	50 pounds of glass	=	6 pounds of Rigid PET	=	3 pounds of aluminum	=	1.5 pounds of Flexible plastic

Sources: Dow Presentation; FPA Case Studies, 2009

Lightweight Flexible Packaging Improves Transportation Efficiency

- Reducing Fossil Fuel Consumption and CO_2 emission
- Lessening Highway Wear/Tear and Congestion



26 Truckloads of Unfilled Glass Jars

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One Truckload of Unfilled Plastics Pouches

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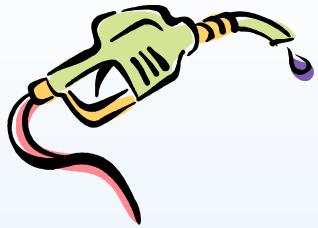


Less Fuel consumed & Less emissions

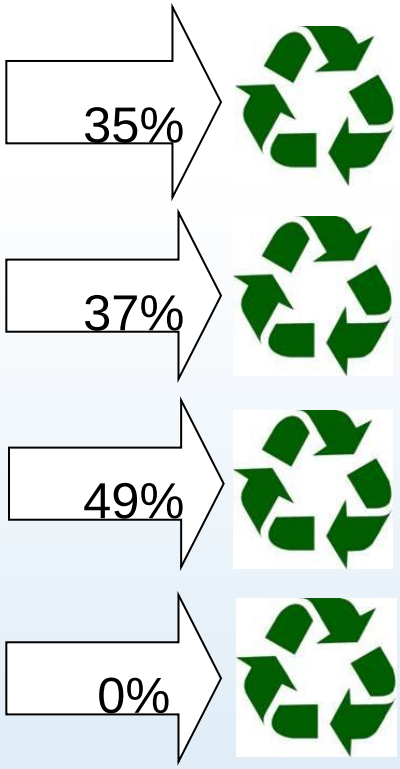
(Pasta Sauce Flexible Pouch Example)

Source: DuPont Awards for Packaging Innovation

Flexible Packaging Sends *LESS* to the Landfill even after Recycling Rates are Considered

Beverage Packaging Example:

	Product Weight (g)	Package Weight (g)	Package Wt per 100 g Product (g)	Recycle Rate	To MSW Landfill	MSW Landfill per 100 g Product (g)
Glass Bottle & Metal Cap	236	198.4	83.9	35%	65%	**54.5**
Plastic PET bottle & Cap	236	22.7	9.6	37%	63%	**6.0**
Aluminum Can	236	11.3	4.7	49%	51%	**2.4**
Flexible Stand Up Pouch	199	5.7	2.8	0%	100%	**2.8**



Sources: FPA Case Studies, 2009; EPA 2007 MSW Report

Beverage Packaging Case Story

Beverage Packaging	Product Weight	Packaging Weight	Product-to-Packaging Ratio	Packaging Weight per 100g Product	MSW Landfill per 100 g Product*	Energy Consumption MJ/8 oz	Emissions Kg CO_2 e /8 oz
Glass Bottle & Metal Cap	8 ounces (236 g)	198.4 g	1:1	83.9 g	54.5 g	3.36	0.29
Plastic PET Bottle & Cap	8 ounces (236 g)	22.7 g	10:1	9.6 g	6.0 g	3.00	0.18
Aluminum Can	8 ounces (236 g)	11.3 g	21:1	4.7 g	2.4 g	0.99	0.08
Stand-up Flexible Pouch	6.75 ounces (199 g)	5.7 g	35:1	2.8 g	2.8g	0.45	0.02

Product assumed to be water; *Recycling rates factored: U.S. EPA 2007 MSW Report.

Cradle-to-grave life cycle energy consumption and CO2 emissions data developed for FPA by Battelle Memorial Institute.

Packaging weight, product weight, and product-to-packaging ratio calculated by Packaging & Technology Integrated Solutions, LLC (PTIS)

Conclusion

- Packaging is critical to modern lifestyle and food safety.
- Flexible packaging generally saves more resources than it consumes.
- Flexible packaging reduces waste to landfill by preserving and protecting products until they are consumed.

Source: Flexible Packaging Association