

SINGLE-USE PULSE 2021

A WEBINAR SERIES EXPLORING

THE BUSINESS OF SUTS

WEDNESDAY,
MARCH 24

10:30-11:15
AM EDT

SUSTAINABILITY THROUGHOUT THE
VALUE CHAIN: INSIGHTS FROM THE
FOOD INDUSTRY



RUSSELL DARLEY &
TIFFANI BURT
SEALED AIR CORPORATION

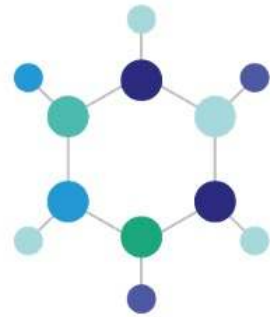


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The AdvantaPURE logo features the word "AdvantaPURE" in a green, serif font, with "NEWARK INDUSTRIES" in a smaller, sans-serif font below it.The Broadley James logo features the name "Broadley James" in a blue, serif font, with a registered trademark symbol (®) next to "James".The bürkert logo features the name "bürkert" in a blue, sans-serif font, with "FLUID CONTROL SYSTEMS" in a smaller, sans-serif font below it.The CPC logo features the letters "CPC" in a blue, sans-serif font, with a stylized blue arc to the left.The cytiva logo features a green circular icon with a white dot inside, followed by the word "cytiva" in a black, sans-serif font.The Entegris logo features a red circular icon with a white dot inside, followed by the word "Entegris" in a black, sans-serif font.The Millipore Sigma logo features the words "Millipore Sigma" in a blue, sans-serif font.The Nordson MEDICAL logo features the word "Nordson" in a blue, sans-serif font, with "MEDICAL" in a smaller, sans-serif font below it.The PALL Biotech logo features the word "PALL" in a blue, sans-serif font, with "Biotech" in a smaller, sans-serif font to the right.The PENDOTECH logo features the word "PENDOTECH" in a blue, sans-serif font, with "Adding Value To Your Process" in a smaller, sans-serif font below it.The RENOLIT logo features a black square icon with a white dot inside, followed by the word "RENOLIT" in a black, sans-serif font, and "Relu on it." in a smaller, sans-serif font below it.The SAINT-GOBAIN logo features a stylized graphic of a building or structure in blue and red, followed by the words "SAINT-GOBAIN" in a blue, sans-serif font.The SaniSure logo features a green circular icon with a white dot inside, followed by the word "SaniSure" in a black, sans-serif font, and "Be sure." in a smaller, sans-serif font below it.The SARTORIUS logo features the word "SARTORIUS" in a black, sans-serif font.The ThermoFisher SCIENTIFIC logo features the words "ThermoFisher" in a red, sans-serif font, with "SCIENTIFIC" in a smaller, sans-serif font below it.

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Sustainability Throughout the Value Chain: Insights from the Food Industry



Tiffani M. Burt, Ph.D.

Sealed Air Corporation
Executive Director, Material Lifecycle
Innovation & Sustainability

Sealed Air—A Leading Packaging Solutions Company



Food Packaging



Protective Packaging



Medical Packaging



\$4.8

Billion
Global Sales

~16.5K

Employees

124

Countries Served

95

Manufacturing
Facilities

56

Labs and Research
Facilities

2,700

Patents & Pending
Application
worldwide



Sealed Air®

We are in business to protect,
to solve critical packaging challenges, and
to leave our world better than we found it.

SEE Solving Critical Packaging Challenges



70%

Protein, Foods, Fluids,
Medical & Life Sciences

15%

Industrial, Transportation,
Electronics & Other Protective

15%

Consumer,
Retail & 3rd Party Logistics

Smoked & Processed Cheese Seafood Medical & Life Science Industrials Retail & Consumer Goods
Red Meat Poultry Liquids & Fluids Electronics Transportation 3rd Party Logistics



Cryovac Barrier Bags

Vertical Pouch Packaging

StealthWrap®

KorrVu®

Bubblewrap™ Inflatable Pouches

Autobag® Bagging Systems

Specialty Foams

Darfresh® Vacuum Skin

Case Ready Solutions

FlexPrep®

Medical Films

Bubblewrap™ On-demand

Automated Mailer Systems

Instapak®



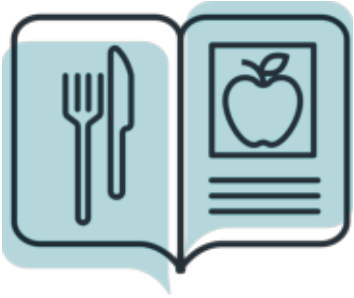
A worker wearing a high-visibility yellow and orange safety vest, a hard hat, and dark gloves is sorting through a massive pile of food waste. The pile is composed of various food scraps, including watermelon rinds, orange peels, vegetable scraps, and other organic matter. The worker is positioned on the left side of the frame, leaning over the waste. The background shows a concrete wall and a corrugated metal roof.

Food waste is the single, largest contributor to landfills in the world.



**Food waste alone
causes 10% of
greenhouse gases**

Regional Food Loss Statistics



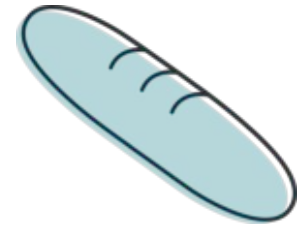
Americans waste
150,000 tons
of food each day
— equal to a
pound per person.



In Latin America,
*20% of retail
food waste*
is due to
spoilage.



In the EU, around
*88 million tons
of food waste*
is generated
annually.



In Asia, up to
30% of grains
are lost between
the producer and
market.



FOOD WASTE
is about more than just wasted food.

And that's why **SEALED AIR**
is committed to a **waste-free future.**

CRYOVAC[®]
BRAND FOOD PACKAGING

Sealed Air[®]
BRAND PROTECTIVE PACKAGING

Autobag[®]
BRAND AUTOMATED SYSTEMS


BubbleWrap[®]
BRAND PACKAGING

CRYOVAC® Brand Food Packaging has been minimizing food waste for decades by engineering solutions that...



extend shelf life and help reduce food waste.



are thin, lightweight and use resources wisely.



are easy to recycle and create a circular packaging solution.

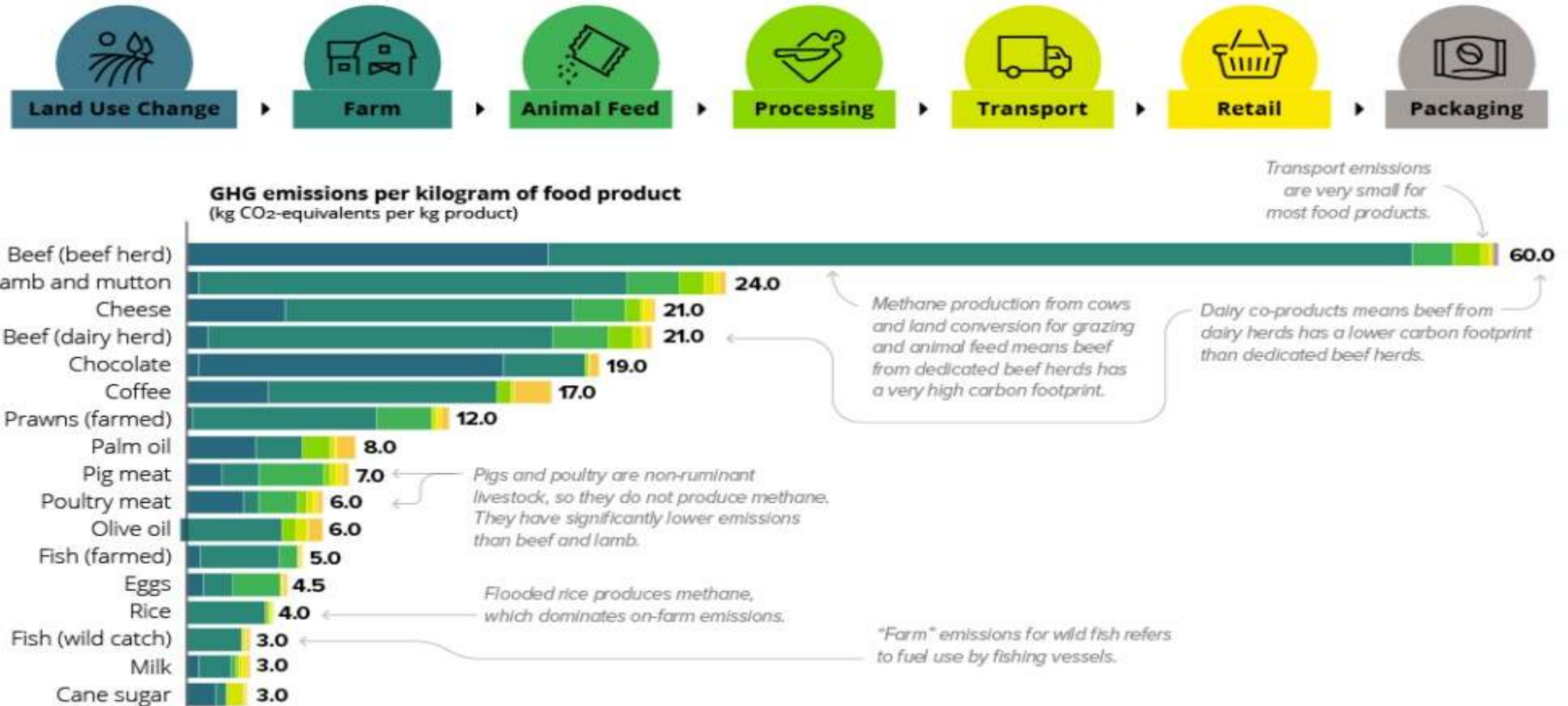


digitally provide information to eliminate waste and drive connectivity in the supply chain

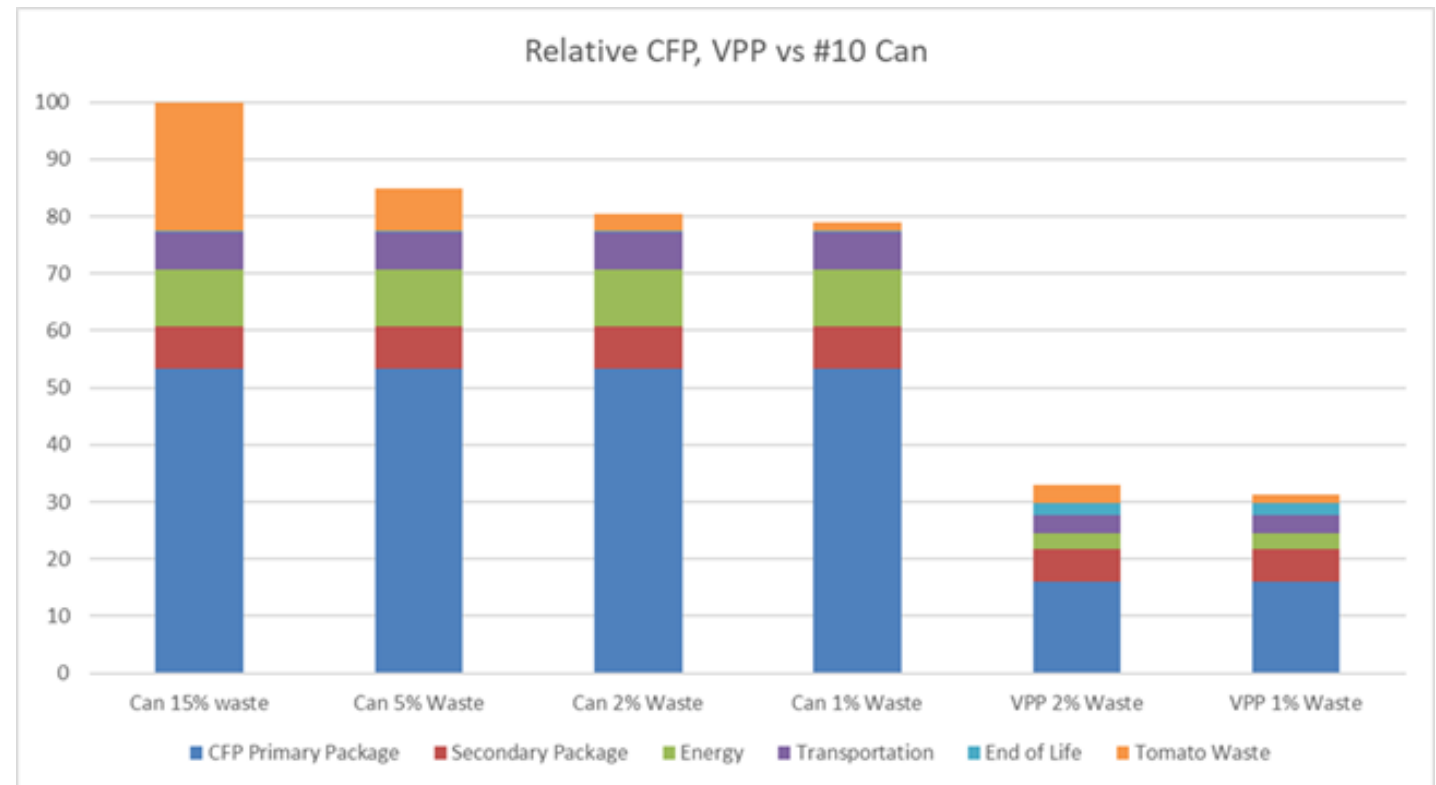
Combating waste with *critical* packaging solutions.

Greenhouse Gases of Various Food Types

There is a vast difference in greenhouse gases (GHG) that are produced across various food types.



Steel Cans versus Fluids Flexible

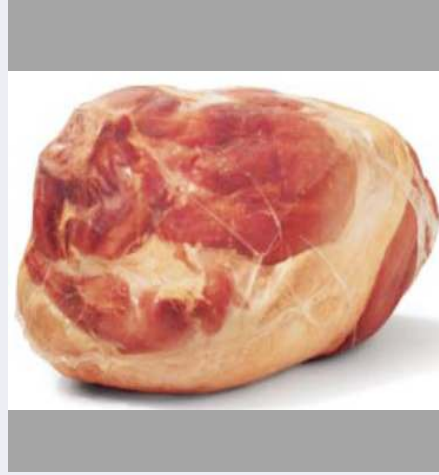


Carbon Footprint of Fresh Food versus Packaging



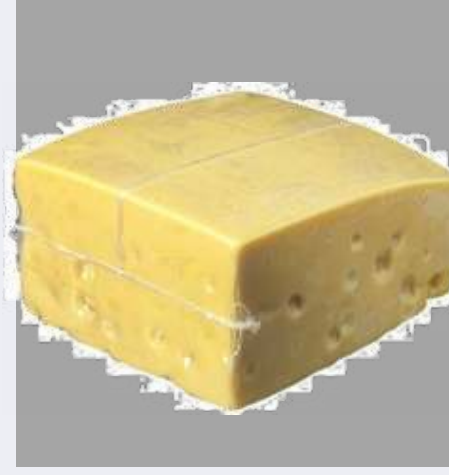
Beef

The carbon footprint of 1 kg of beef is **370 times** the carbon footprint of the bag used to package it



Cured Ham

The carbon footprint of 1 kg of cured ham is **624 times** the carbon footprint of the bag used to package it



Cheese

The carbon footprint of 1 kg cheese is **52 times** the carbon footprint of the packaging



Poultry

The carbon footprint of 1 kg of chicken is **114 times** the carbon footprint of the bag used to package it

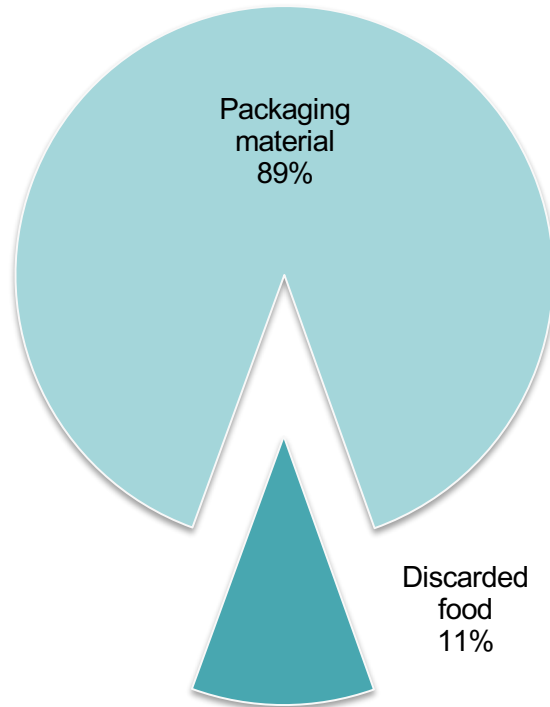
Packaging compromises that lead to increased product waste create significant environmental, economic and social impacts across the supply chain

The Conundrum of Flexible Plastic Packaging

Consumers value end-of-life more than overall environmental impact



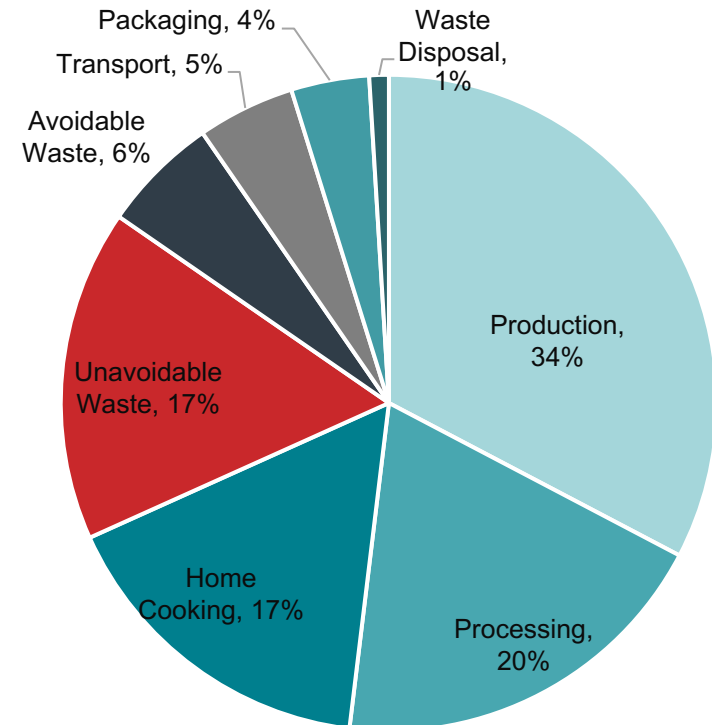
How the Consumer Sees Packaging



Which is more harmful to the environment?

Source: Harris Poll on Consumer Food Waste (2015)

How the Life Cycle Analyst Sees Packaging

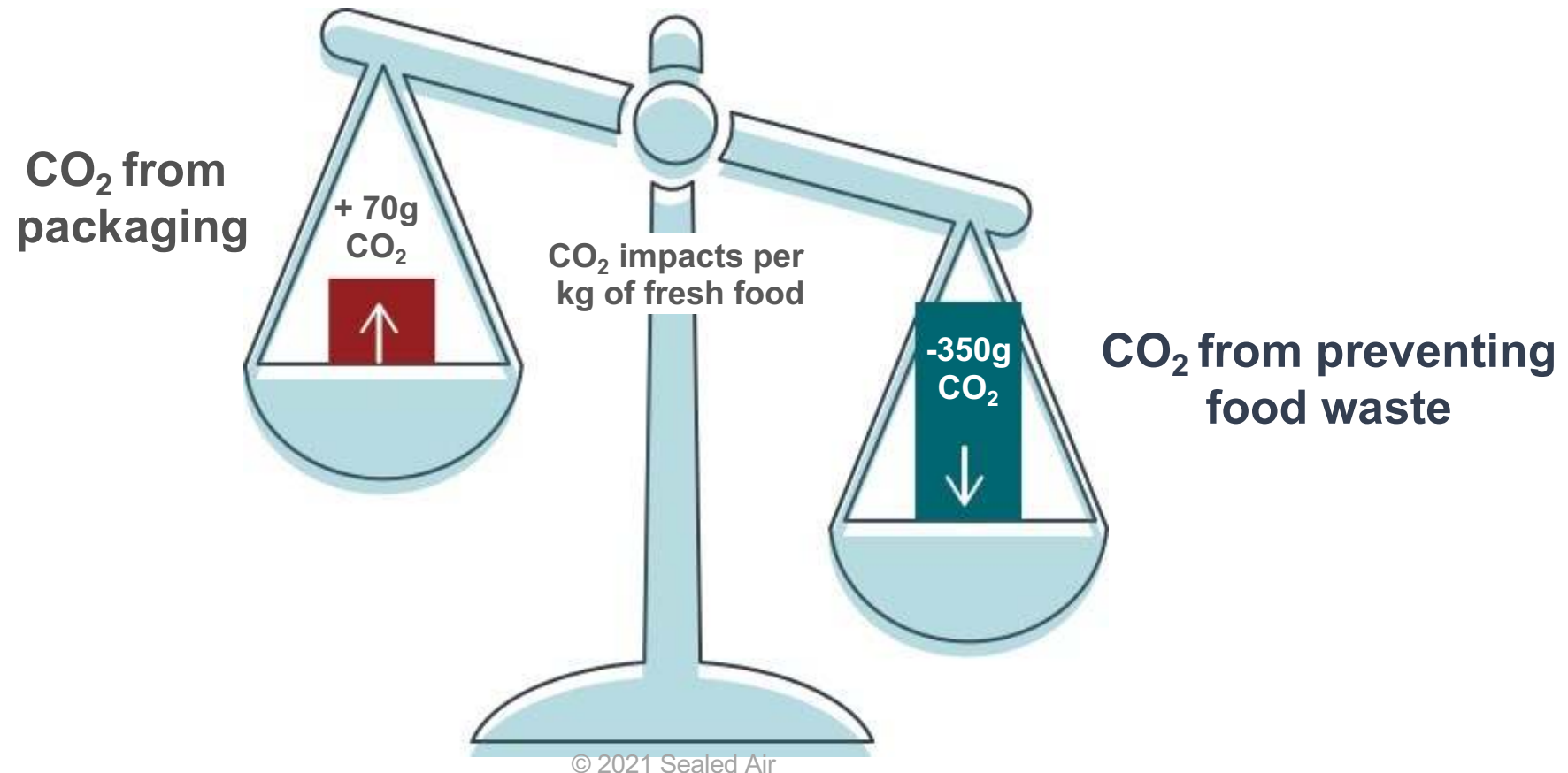


GHG emissions for US poultry supply chain

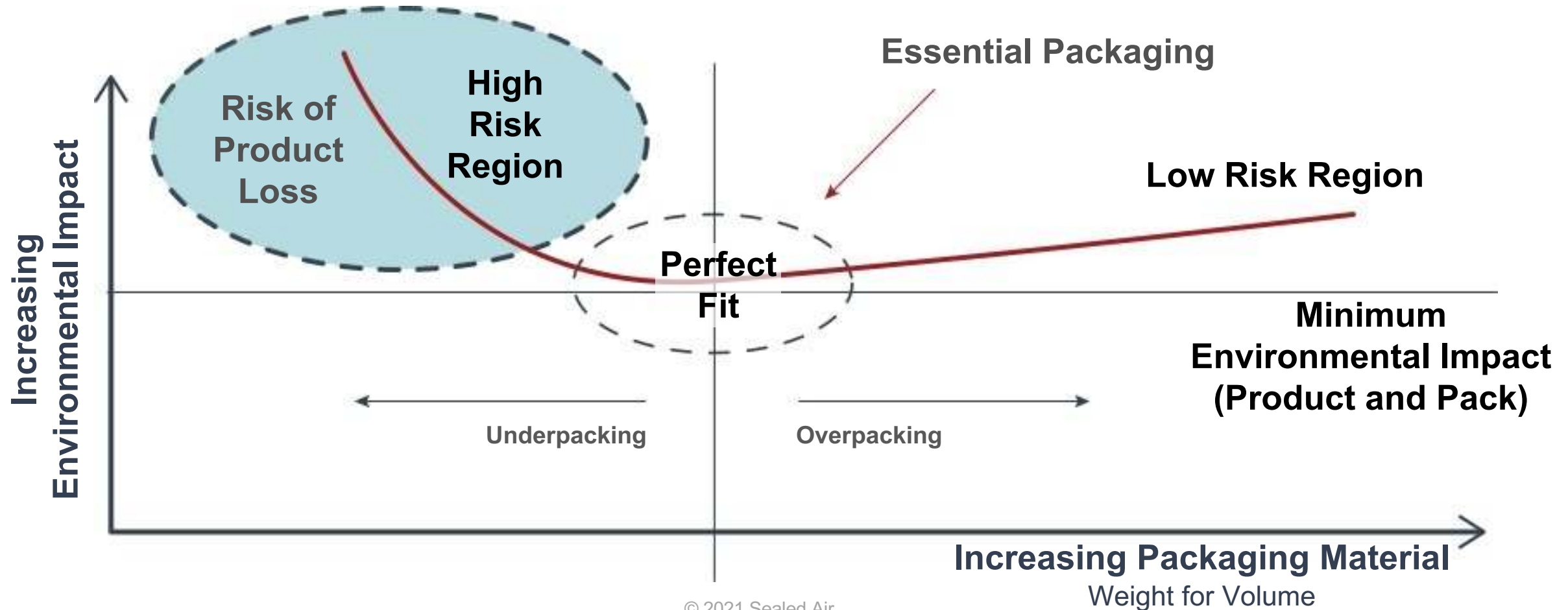
Source: AMERIPEN Value of Packaging (2013)

The flexible packaging industry must continue to reduce waste and the global carbon footprint

Even if improved packaging solutions contribute to increased CO₂ emissions, the CO₂ savings from reduced food waste are in most cases much higher*



Climate change requires that we optimize the carbon footprint in conjunction with circular economy evaluation





REDUCE

Down-gauging, light-weighting “reduce plastic intensity”
Darfresh® v MAP, rPET thermoform webs, Zero waste
Darfresh® on Tray



REUSE

Difficult to reuse food packaging materials but, Sealed Air provides a variety of reusable, secondary packaging solutions



RECYCLE

Darfresh® on Board – recyclable paperboard solution, Solid Rigid APET and PP Trays - Designed for Recycling



RECOVER

Sealed Air has developed proprietary technology to separate and recover complex barrier packaging materials



DISPOSE

Always dispose of thoughtfully
A lot of plastic pollution is the result of poor decision making by individuals and organisations

SUSTAINABILITY WASTE HEIRARCHY



sky ocean
rescue

Recycling

breakthrough

Plastic pollution
we can make things better



WAR
ON WASTE

Our 2025 Sustainability Pledge



Invest in Innovation

Design and advance packaging solutions to be **100% recyclable or reusable**



Eliminate Plastic Waste

Target **50% average recycled content** across all packaging solutions, of which **60% is post-consumer recycled content**



Collaborate

Lead collaborations with partners worldwide to **increase recycling and reuse rates**



Eliminate waste → simplify the process → remove people from harm's way → automate

LINEAR ECONOMY



TAKE

MAKE

DISPOSE

CIRCULAR ECONOMY



MAKE

USE

RECYCLE

Global Partnerships to Enable Circularity



Definition of Recyclable

System for *collection*, *sorting* and *recycling* must be in place & accessible to **60%** of population*.



Collected

What streams exist in the region?

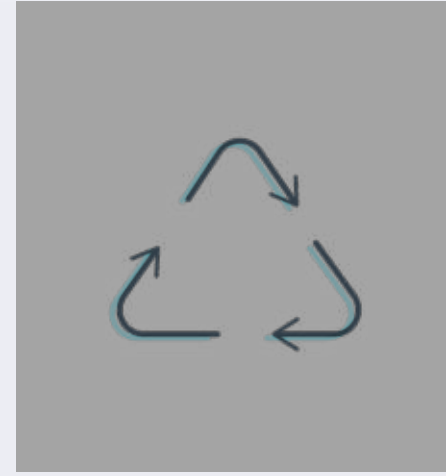
PET – Bottles/Rigids
HDPE – Bottles
PP – Bottles/Rigids
PE - Flexibles



Sorted

What mechanism is used for sortation?

Size
Material Type
Float/Sink

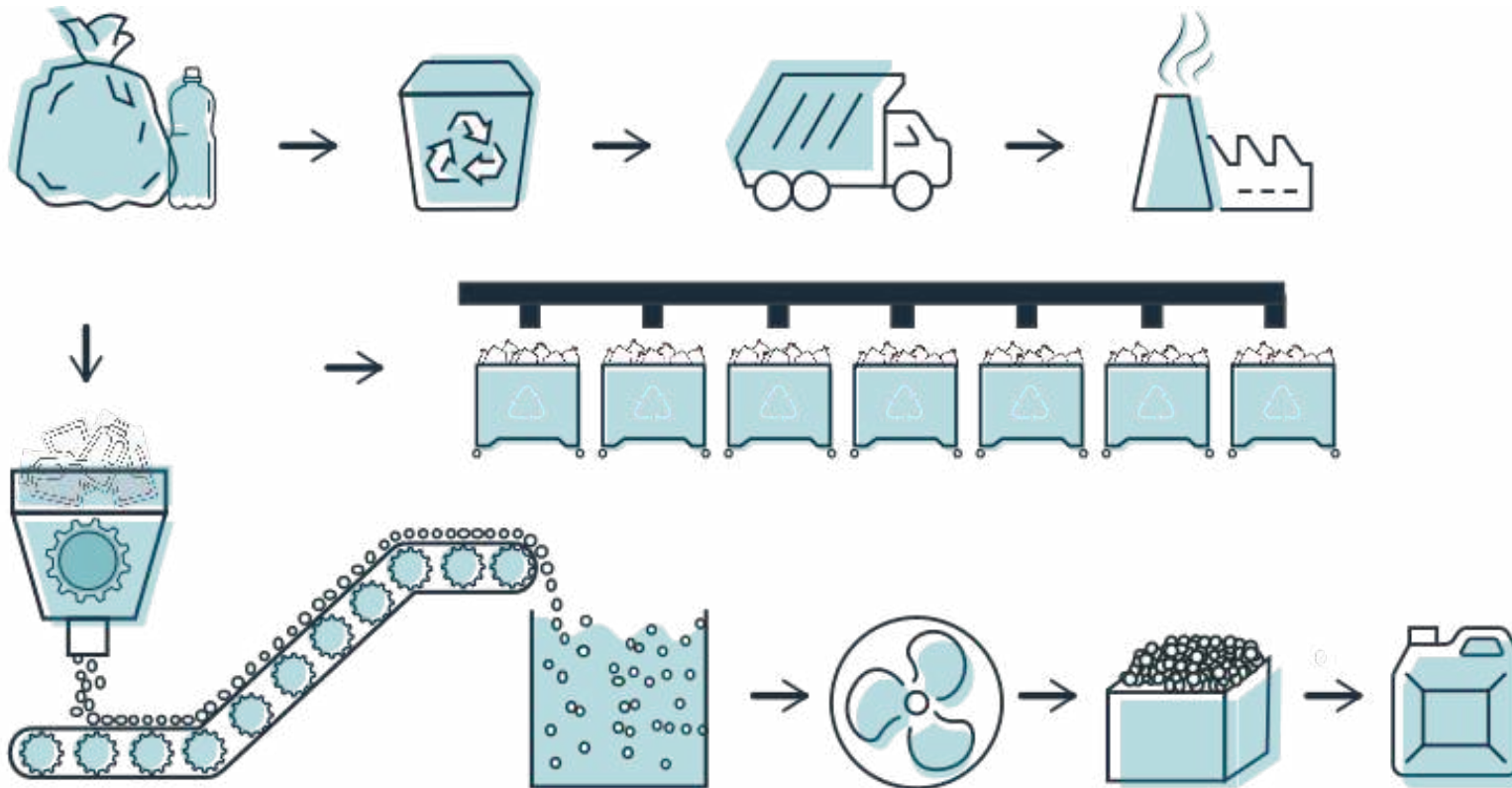


Recycled

Is the material compatible with the polymer stream?

Desktop Analysis
Protocol Testing Methodology

Mechanical recycling: a feedstock & end of life issue



Highly-recycled materials 3D:

- PET bottles 
- Rigid HDPE (milk jug) 
- Polypropylene (bottle caps) 

Unacceptable in typical MRF 2D:

- Multilayer with multicomponent
- Materials with food contamination

Limitations of mechanical recycling:

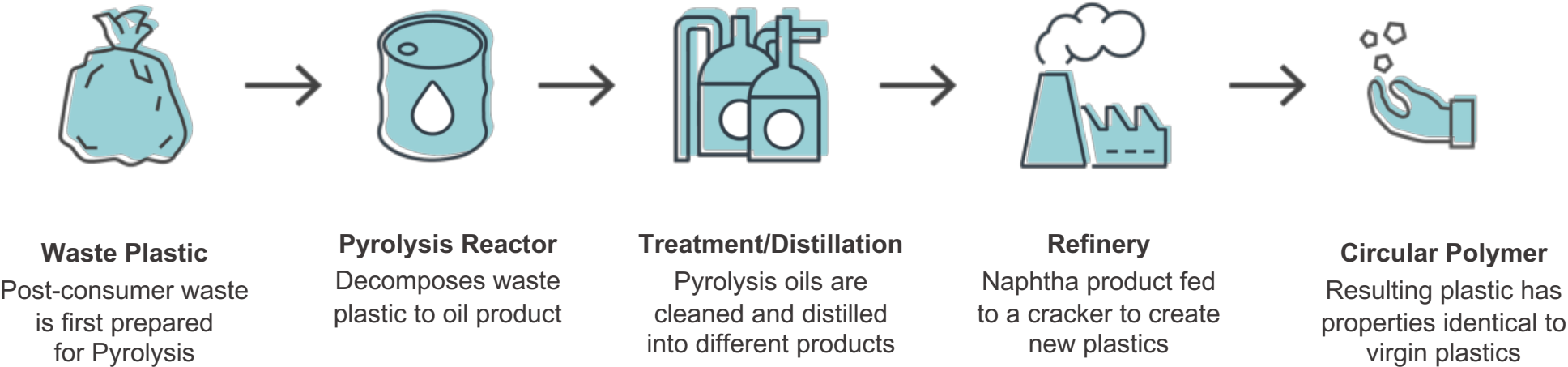
- Low quality/degraded product “downcycled”
- High purity input required
- Very high cleaning costs / LCA impact
- Low value of output
- No flexible food grade upcycling

*Adapted from Closed Loop Partners, “Accelerating Circular Supply Chains for Plastics.”

*Hundertmark, T., Prieto, M., Ryba, A., Jan Simons, T., & Wallach, J. (2019). *Accelerating plastic recovery in the United States*. McKinsey on Chemicals.

*Ed Roberts, Mass Balance, April 2020

Leveraging Advanced Recycling to Close the Loop



Video: Closed-Loop Collaboration

<https://www.youtube.com/watch?v=cNkkg2gqzi8>



Micro-Circularity through Collaboration

Value chain collaboration announced early September with Tesco and their value chain



Value chain collaboration drives
circular economics and business growth

The Next Generation of Packaging

- Make packaging with recycled content – 33%
- No compromise on performance
- BDF food films reduce total plastic usage

The Future of Recycling

- Packaging can be converted back to feedstock
- Micro-circular loops keep the "molecules in play"
- Reduces total carbon footprint impact on supply chain
- Development of new D4R – chemical and mechanical

Growth via Micro-circular Business Models

- Meeting goals of leading brands and retailers
- Can be leveraged to expand sales as uniquely differentiated
- Creates communication opportunities with stakeholders

Thank You



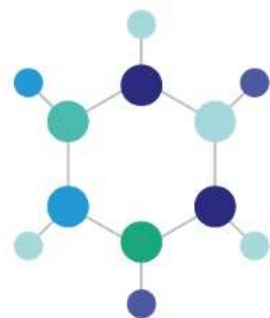
Questions?

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THE BUSINESS OF SUTS

TRANSIT TESTING GUIDANCE FOR SINGLE-USE COMPONENTS & ASSEMBLIES



RICH SALZSTEIN
SMITHERS



JAMES RAW
SMITHERS



ELISABETH VACHETTE
SARTORIUS STEDIM
BIOTECH



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