

# Sustainable Packaging

First Steps

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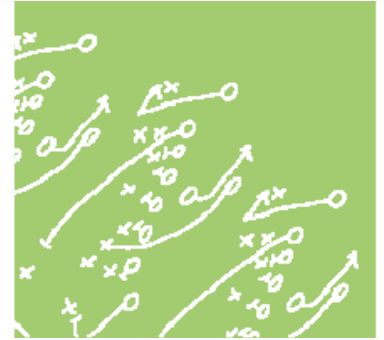


pure

STRATEGIES

SOLUTIONS FOR A SUSTAINABLE FUTURE

# 10 Strategies for the Journey



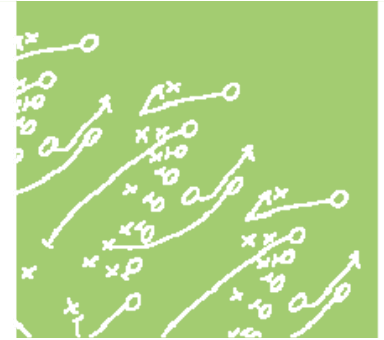
1. Dematerialize
2. Use Recycled Content
3. Eliminate toxics
4. Review the entire packaging system
5. Design for Recyclability
6. Use the Plastics Hierarchy
7. Minimize where possible
8. Design for Reuse
9. Design for Compostability
10. Eliminate unnecessary packaging



"I hate the amount of packaging that food comes wrapped in these days"

Everybody has their packaging problems

# #10: Dematerialize



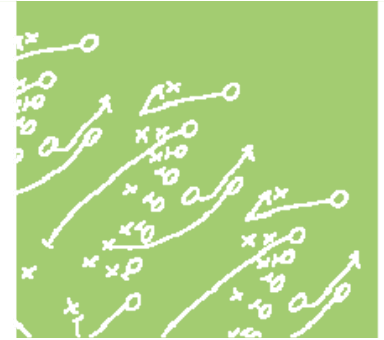
- ▶ Less mass = less impact
- ▶ Less mass = less cost
  - ▶ Raw material
  - ▶ Transportation
  - ▶ Manufacturing (component assembly)

## ▶ Examples

- ▶ Private-label: cereal box elimination
- ▶ Unilever: Reduced cap weight by 20% through use of advanced manufacturing technology



# #9: Use Recycled Content



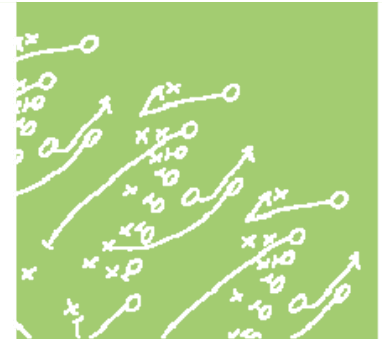
- ▶ Reduce consumption of virgin materials
- ▶ Reduce energy use
- ▶ Create markets for recovery of post consumer wastes

# Energy Benefits of Using PCR Materials



Material	Recycled (MJ)	Virgin (MJ)	Energy Savings
Newsprint	31.8	51.2	38%
Corrugated board (unbleached)	27.1	35.5	24%
Steel slab	6.6	34.6	81%
Aluminum ingot	14.1	208	93%
HDPE	18.4	74.9	75%
PET	20.4	76.4	73%
PVC	15	58	75%
Glass	10.7	22.5	52%

# Elegantly Simple



## Light Elements

- First 100% PCR - HDPE jar
- Use of PP tool to run PCR - HDPE
- Bottles 100% PCR PET and 80% PCR PE

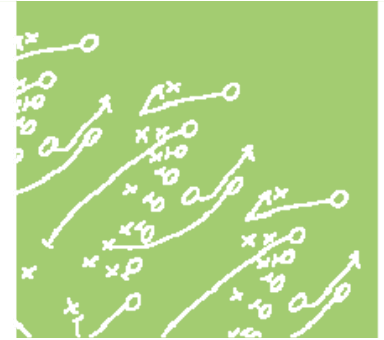


## Brilliant Re-launch

- Light weighted
- 100% PCR



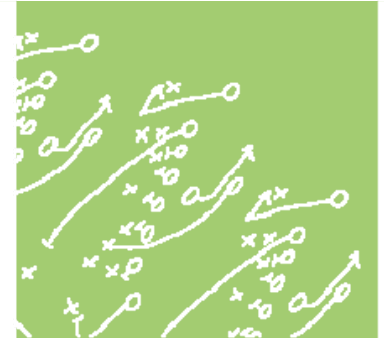
# #8: Eliminate Toxics



- ▶ Heavy metals
  - ▶ Cadmium
  - ▶ Hexavalent Chromium
  - ▶ Lead
  - ▶ Mercury
- ▶ Endocrine Disruptors
  - ▶ Certain Phthalates (in PVC)
  - ▶ Bisphenol-a (polycarbonate)
- ▶ Chlorine bleaching (paper, linerboard, corrugated)
  - ▶ changing from bleached to unbleached paper or paperboard reduces energy consumption and organo-halide pollution.



# #7: Examine the packaging system



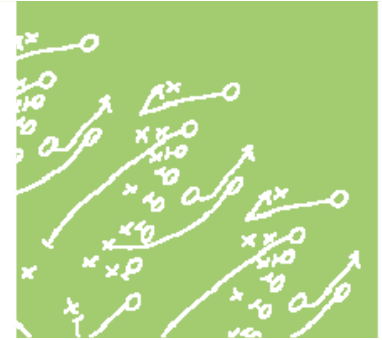
- ▶ The Packaging System:
- ▶ Primary (bottle & cap), secondary (corrugated), tertiary materials (stretch wrap)
- ▶ Energy use & equipment to package product
- ▶ Transportation
  
- ▶ Stonyfield Farm example  
Optimizing the entire product delivery system





*"We're encouraging people to become involved in their own rescue."*

# #6: Design for Recyclability



Simple design choices affect recycling efficiency and product quality

Use of base attachments on PET soda bottles reduces yields 10-20%

Material	Use	Avoid
Paper	water-based adhesives vegetable based inks	UV varnishes plastic laminates
Corrugated	oil-based barriers uncoated top layer	waxed corrugated Coated top layers



# Plastic: APR Design Guidelines



	PET	HDPE	Pigmented HDPE	Polypropylene	PVC
<b>PVC/PET Attachments</b>					
	No PVC	No PVC	No PVC	No PVC	No PET
<b>Closures/Closure liners Attachments</b>					
Preferred	PP; HDPE & EVA with plastic			HDPE, LDPE or PP; unpigmented or same color as bottle; No liners, no residual rings, no attachments	
Undesirable	PVC and Aluminum; EVA with plastic			Metal closures	
<b>Basecups/Adhesives</b>					
Preferred	No Basecups			N/A	N/A
If Basecup is used	Water-soluble adhesives or ones dispersible at temperatures between 140° and 180°F			N/A	N/A
	Unfilled HDPE or clear PET				

- ▶ Sleeves & Safety Seals
- ▶ Labels & Adhesives
- ▶ Direct Printing
- ▶ Inks & Adhesives
- ▶ Layers & Coatings
- ▶ Non-detaching components

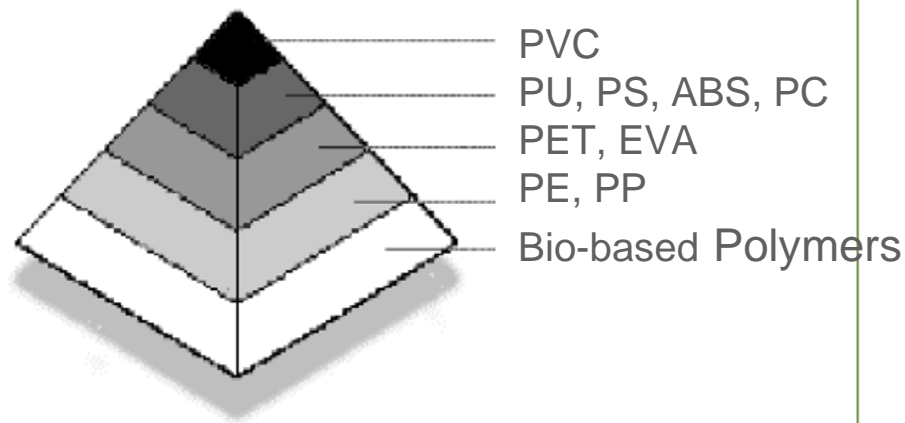
[www.plasticsrecycling.org](http://www.plasticsrecycling.org)

# #5: Use the Plastics Hierarchy



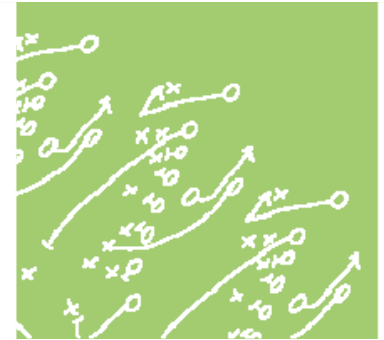
## Aveda's Preferred Plastics Hierarchy

Most Preferred	High Density Polyethylene (HDPE) Low Density Polyethylene (LDPE)
Acceptable	Polyethylene Terephthalate (PET) Ethylene Vinyl Acetate (EVA) Polypropylene (PP)
Least Preferred	Polyurethane (PS) Acrylonitrile Butadiene Styrene (ABS) Polycarbonates (PC) Acrylic
Prohibited	Polyvinyl Chloride (PVC)



Eliminate PS & PVC – they only serve as contaminants to PET

# #4: Minimize Where Possible



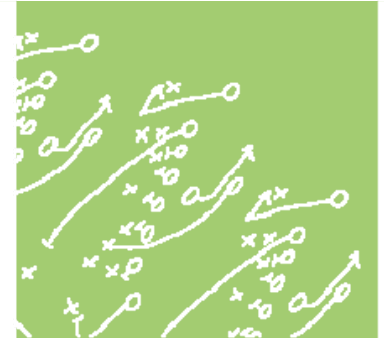
Strategy	% in total energy
25% recycled HPDE plastic bottle	6
25% consumer recycling	7
Triple-concentrate (3x) in existing container	67
Single strength (1x) product in soft pouch (PET and LDPE laminate)	32
Triple-concentrate (3x) product in soft pouch (PET and LDPE laminate)	77
Triple-concentrate (3x) product in paper gable top carton (paperboard/LDPE)	72



Source: Kuta et al (1995)



# #3: Design for Reuse

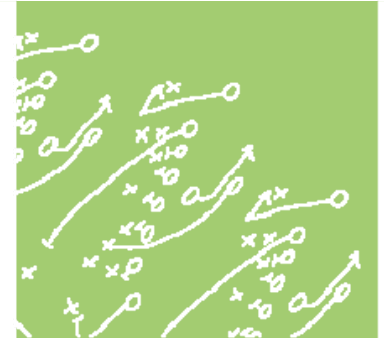


- ▶ 1/3 of soft drink packaging for mineral water and wine in the European Union is refillable.
- ▶ 90% of glass and PET beverage bottles in Denmark, Finland, Germany and Sweden are refilled.



Source: Container Recycling Institute

# #2: Design for Compostability

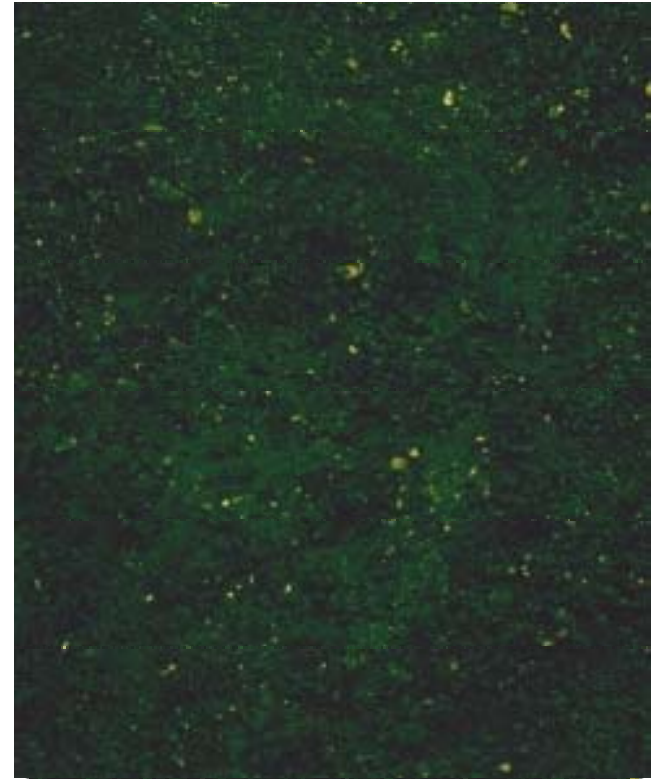


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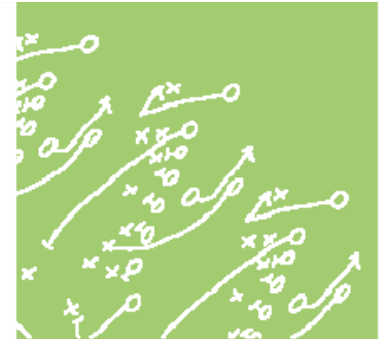
PLA: Requires high temperature and moisture found in municipal compost systems

Meets composting standards: DIN 54900-1; EN 13432; ASTM D 6400, GreenPLA

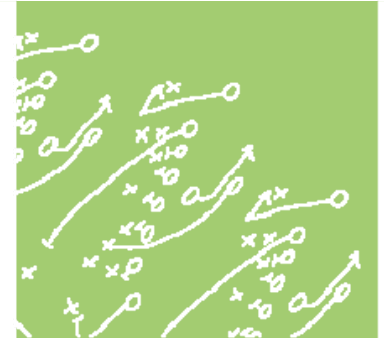




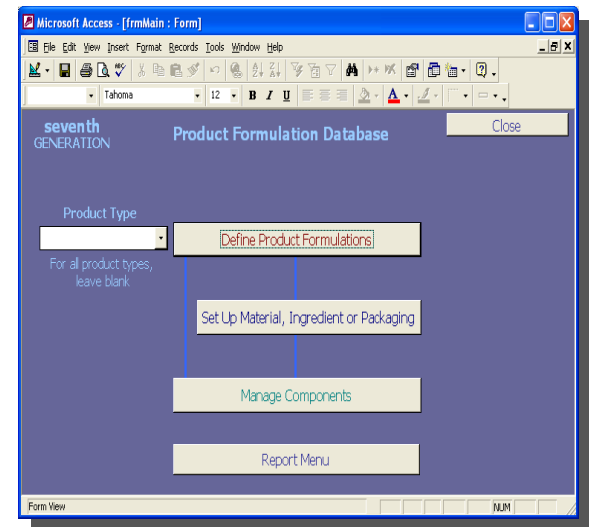
# #1: Reduce Unnecessary Packaging



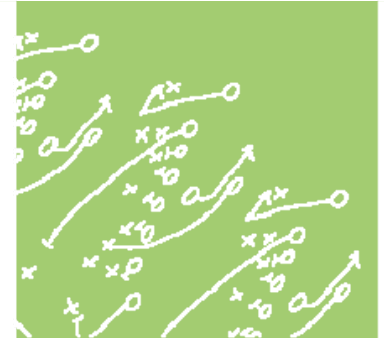
# Get Started!



- ▶ Know thy packaging
  - ▶ All packaging materials
  - ▶ Weights & dimensions
  - ▶ Supplemental: Inks, attachments
- ▶ Near term improvements
  - ▶ Eliminate unnecessary packaging
  - ▶ Increasing recycled content, eliminate chlorine bleaching
  - ▶ Adhesives, inks and finishes to upcycle at the end of life
  - ▶ Review APR Design Guidelines with packaging supplier

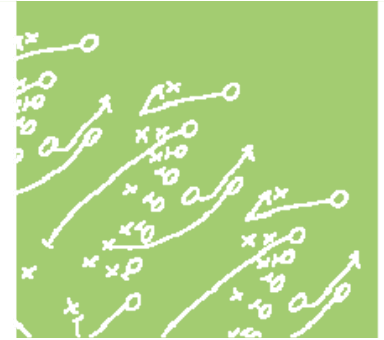


# Longer Term Choices



- ▶ New packaging design, bottle molds
- ▶ Product reformulation to concentrate product
- ▶ Invest in composting/recycling infrastructure
- ▶ Source locally!
- ▶ Make more sustainable plastic choices

# Resources



- ▶ MERGE  
[www.environmentaldefense.org/alliance/merge/Merge.htm](http://www.environmentaldefense.org/alliance/merge/Merge.htm)
- ▶ Sustainable Packaging Coalition  
[www.sustainablepackaging.org](http://www.sustainablepackaging.org)
- ▶ Association of Postconsumer Plastic Recyclers  
[www.plasticsrecycling.org](http://www.plasticsrecycling.org)
- ▶ Sustainable Packaging Alliance  
[www.cfd.rmit.edu.au/programs/sustainable\\_products/sustainable\\_packaging\\_alliance](http://www.cfd.rmit.edu.au/programs/sustainable_products/sustainable_packaging_alliance)

“It took Britain  
half the resources of the planet  
to achieve its prosperity;

how many planets will a  
country like India require...?”

**Mahatma Gandhi**

[when asked if, after independence,  
India would attain British standards of  
living]





Thank you.

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