

# Recycling is Lit

Mallory, Mallory, Thomas, Sean

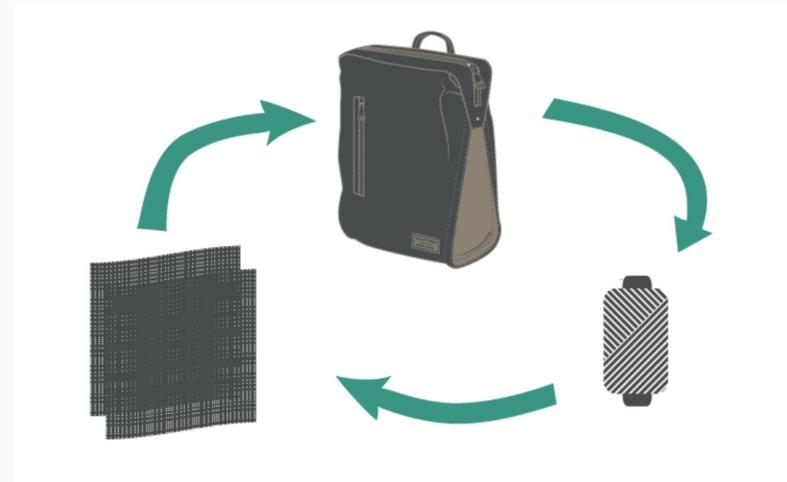


# Recycling in California

- **AB 939 (California Integrated Waste Mgmt Act)**
  - California shall reduce 50% of its solid waste! Whether by recycling or other means
- **AB 341**
  - California, by the year 2020, shall recycle 75% of its solid waste! This act holds corporations accountable

# What is so Lit About it???

- Recycling is the process of converting waste materials into new materials and objects.
  - In terms of the materials economy, it reduces operation of the extraction phase for raw materials.
    - Benefits:
      - Reduction in material usage
      - less waste in landfills,
      - lower energy consumption,
      - etc.



# What if Recycling Wasn't so Lit?



- Waste and space saving
  - Waste saving
    - Have to:
      - Cut more trees
      - Mine raw materials
      - Manufacture from raw materials (it's more energy intensive)
        - Metals
        - Oil
        - Etc.
  - Space saving
    - All of our waste would enter landfills
      - Greater GHG emissions from sites (methane)



# Types of Recycling - Which one is more Lit?

- Upcycling (Most LIT)
  - Recycling used materials into products of greater or equal value than the original product
    - Benefits
      - No loss of material or value
      - Saved Energy
      - No input into landfills
- Down Cycling (Also LIT)
  - Recycling used materials into products of lesser value than original product
    - Benefits
      - No loss of material
      - Saved energy
      - No input into landfills
- Point:
  - All recycling is beneficial as long as it remains as a closed loop cycle

# San Luis Obispo

- **Municipal Programs**
  - Suburban recycling (included with regular garbage service)
  - Commercial recycling (included with regular garbage service)
- **Landfills (Waste repository)**
  - Cold Canyon Landfill
  - Chicago Grade Landfill
  - Paso Robles Landfill
- **Transfer Stations (Recyclate sorting, recovery, or redirection)**
  - Santa Maria
- **Goals:**
  - Compliance with AB 341



# Consequences of Recycling Incorrectly or Not Recycling

- Abandonment of recyclates
  - Incineration
  - Landfills
    - Cold Canyon Landfill
    - Chicago Grade Landfill
    - Paso Robles Landfill
- Think about our Oceans



# Want to be a LIT Recycler?

## DO

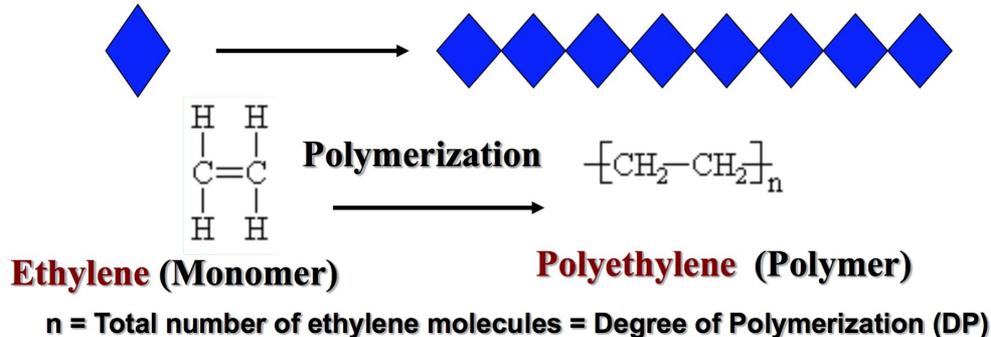
- Clean and dry any recyclable as necessary (no residue)
- Use clear plastic recyclable bags, not white trash bags!
- Recycle
  - Paper: Bags, cardboard, cereal boxes, paperback books
  - Plastic: Bottles, cups, crates, small buckets, jars, jugs
  - Metal: Aluminum foil and trays, food and soda cans

## DON'T

- Recycle objects with food waste
- Assume something can be recycled (look it up!)
- Recycle
  - Paper: Milk/juice cartons, cups, frozen food containers, towels
  - Plastic: Bags, film wrap, thin packaging, foam products
  - Metal: Electronics, appliances, needles

# Considering Plastic Bottles

- Polyethylene terephthalate (PET)
  - Petroleum hydrocarbons
  - Embodied energy: 7.1 KWh/kg
  - Processing Energy: 1.86 KWh/Kg
  - Annual US consumption: 38 billion bottles
    - Avg. bottle mass: 12.7 grams



# Energy, Carbon, and Capital

	Energy Cost (TWh)	Carbon Emitted (Tonnes CO2)	Cost in CA (\$US)	Energy Averted (TWh)	Carbon Averted (Tonnes CO2)	Cost Averted (\$US)
New	4.3	$1.43 \cdot 10^6$	$6.45 \cdot 10^8$	0	0	0
Recycled	0.9	$3.0 \cdot 10^5$	$1.35 \cdot 10^7$	3.4	$1.13 \cdot 10^6$	$6.32 \cdot 10^8$
30% Recycled (Typical)	3.28	$1.13 \cdot 10^6$	$5.1 \cdot 10^8$	1.02	$3.0 \cdot 10^5$	$1.35 \cdot 10^8$

Energy Cost = (E embodied + E processing) \* ( $3.8 \cdot 10^{10}$  bottles \*  $1.27 \cdot 10^{-2}$  Kg)

# Policy Proposal

- Market Mechanism
  - Proposed tax on non-recyclable plastics
    - Increased sales tax on non-recyclable products
    - Potential issues with disproportionate impact
- Command and Control
  - No consumer products with non-recyclable plastics by 2022
    - Provides time for manufacturers and producers to phase out products.



# Societal Transformation

- Recycling bin accessibility
- Public education on proper recycling
- Proper recycling is secondary to decreased consumption
- Change in society's subsystems is long-term and interdependent



**ZERO WASTE**

# A Most Lit Conclusion

- What are you contributing to when you recycle properly?
  - California's long term goals
    - Positive and conscious environmental policy
  - Reduction of:
    - Energy usage
    - Waste diversion to landfills
    - Land use
    - Raw materials harvesting
      - Trees, metal, oil, etc.



“Recycling aluminium, for example, can reduce energy consumption by as much as 95%. Savings for other materials are lower but still substantial: about 70% for plastics, 60% for steel, 40% for paper and 30% for glass.”

# Sources

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