



Waste Prevention: Research findings on effective strategies

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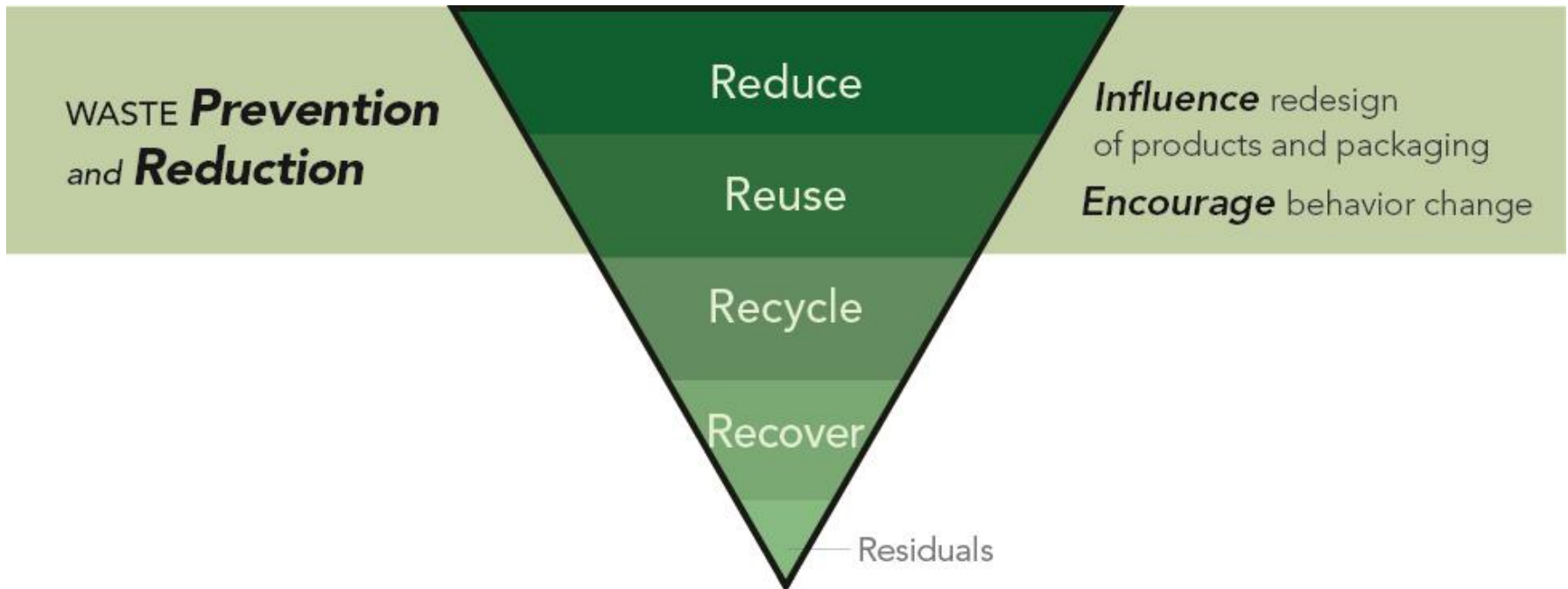
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The Solid Waste Management Hierarchy





Research Questions

- What techniques/practices/approaches have proven effective?
- Which techniques/practices/approaches have been tried or proposed, but not yet evaluated?
- Can the results of different approaches be compared?
- How do costs and savings compare? What factors influence costs and savings?
- Research Summary at:
<http://westcoastclimateforum.com/about/materials>



Key Findings: Residential

- Actual evaluation is severely lacking.
- Best paper (Sharp, Giorgi, Wilson):
 - High tonnage potential: food prevention, composting, bulky item reuse
 - Hundreds of discrete and largely independent actions
 - Important to distinguish from recycling; new and different outreach methods needed
 - Data collection needs to be improved
 - Additional suggestions on successful outreach/promotion



Key Findings: Non-residential

- Even less literature than household
- Similar challenges:
 - Hundreds of discrete and largely independent actions . . . and a less homogenous population!
- Two key studies:
 - Oregon DEQ (2007) review of literature and business programs
 - Alameda County study:
 - Adoption rates for 95 different practices
 - Drawn from over 450 telephone interviews and site visits



Key Findings: Non-residential (continued)

- Key findings
 - Light-weighting (especially packaging)
 - Impact of traditional product stewardship (especially EPR) appears weak
 - Interest in upstream policy changes to increase product durability (e.g., extending warranties)
 - Minimization of materials use (and downstream waste) is driven by costs of labor and raw materials, not waste costs



Other Key Findings

- Waste prevention is huge . . . although not typically counted.
- “Green purchasing” and recycling may both be barriers to waste prevention.
- Outreach programs informed by a “rational choice model” of consumer behavior will likely not be very effective.
- Not all waste prevention is the same!
 - Life cycle analysis is helping to evaluate the relative impacts of different practices; but evaluation of different instruments to realize changes in those practices is lacking
- Rebound effects undermine the benefits of prevention.



Potential Roles for Government/ Best Practices

- Start from a strong policy foundation.
- Consider a broader “sustainable consumption” framework.
 - “Waste prevention” will fail when organized as a waste strategy.
- Focus on priority materials/sectors.
- Provide positive, inspiring, radical examples.
- Provide convincing evidence via research.
- Facilitate conditions and situational factors (vs. direct outreach).
- Partnerships are essential, as are new skills and ways of thinking.

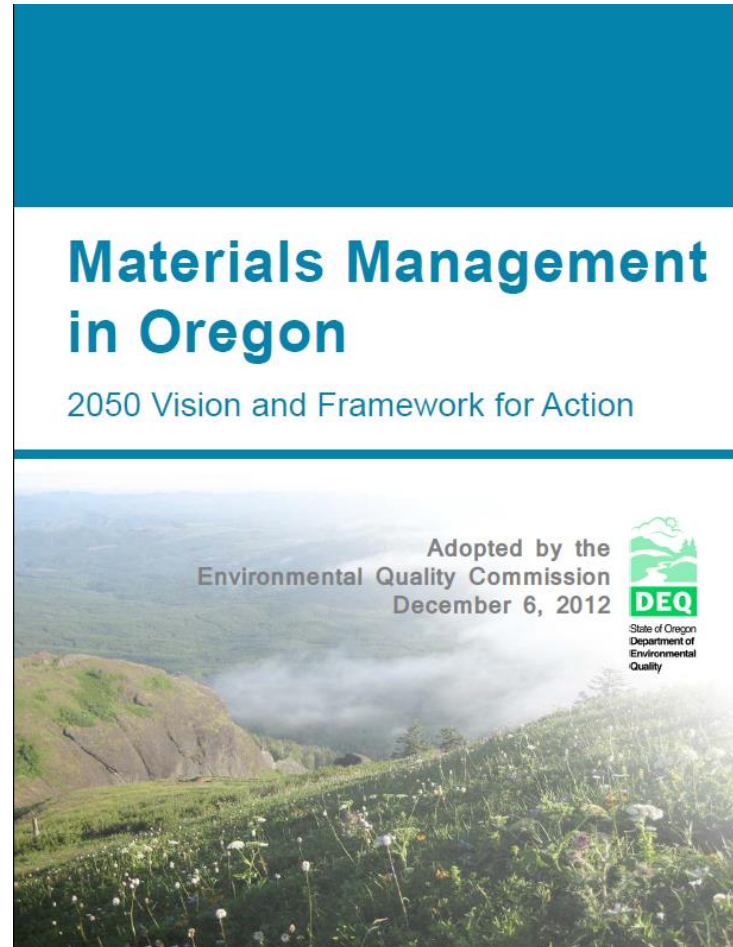


Research Needs (and Challenges)

- Hundreds of discrete and somewhat unrelated actions (unlike recycling)
- Significant measurement/evaluation challenges
- More pilot programs needed (with evaluation)
- Important to keep clear distinction from recycling
- Specific topic areas: reduce wasting of food, extending durability of consumer goods . . . and many more!



Materials Management in Oregon: 2050 Vision and Framework for Action



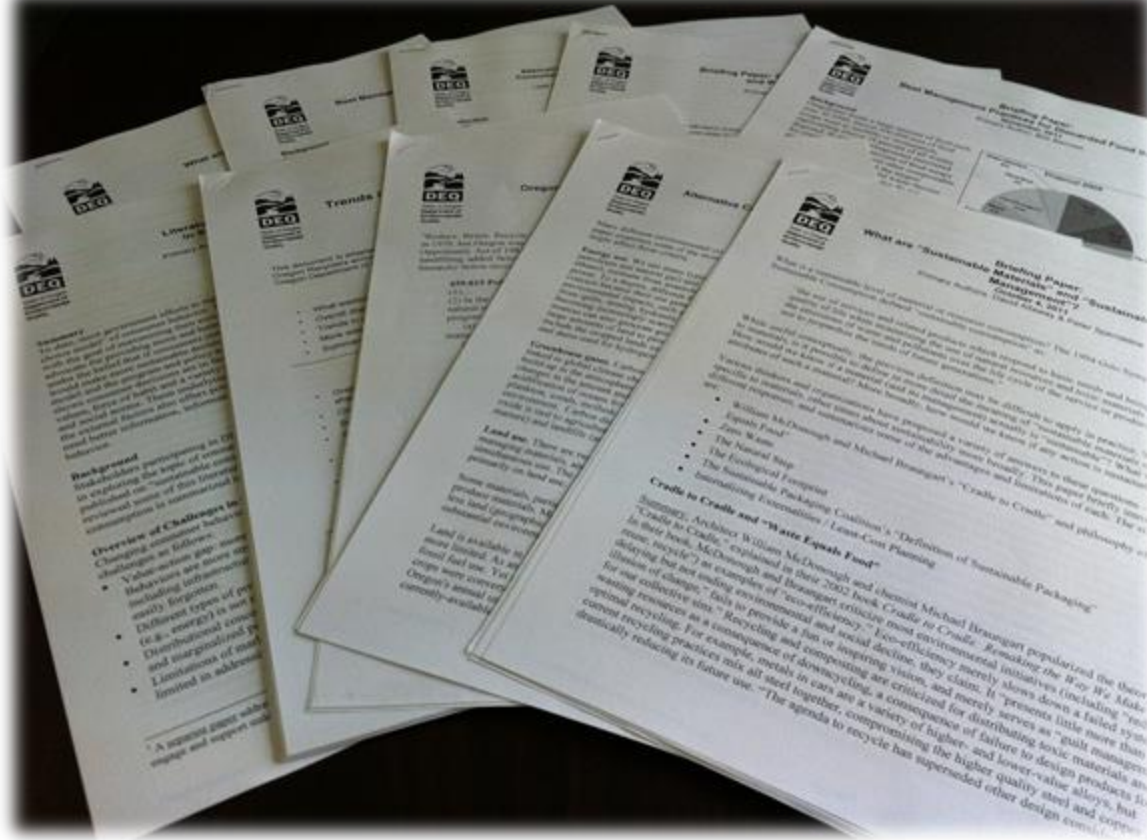


Materials Management: A “Life Cycle” View





Background Papers



Documents available:

www.deq.state.or.us/lq/sw/materialsmgmtplan/bkgrddocs.htm



Thank You!

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Supplemental Materials





DEQ's Life Cycle Analysis of Water Delivery

- 3 basic systems:

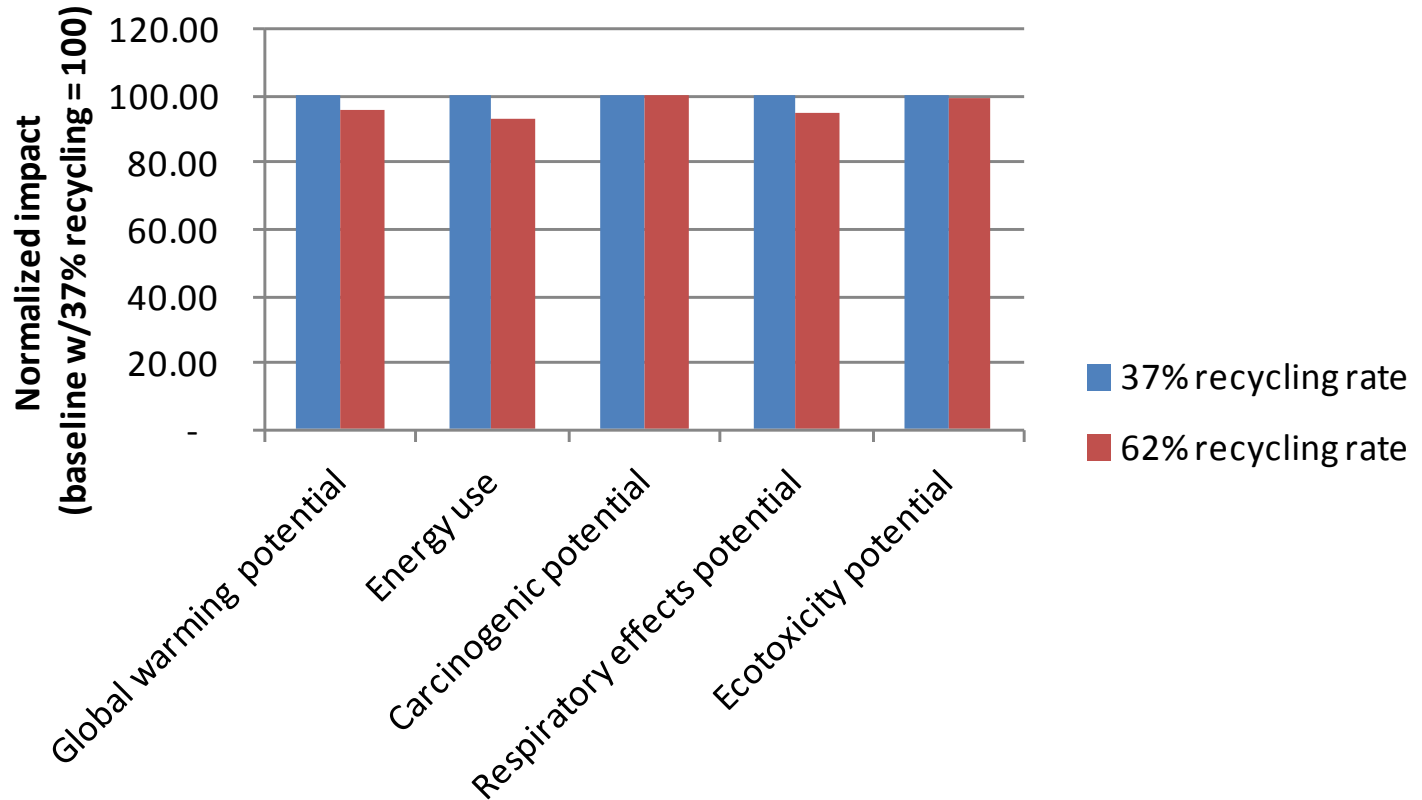


Full study at

www.deq.state.or.us/lq/sw/wasteprevention/drinkingwater.htm



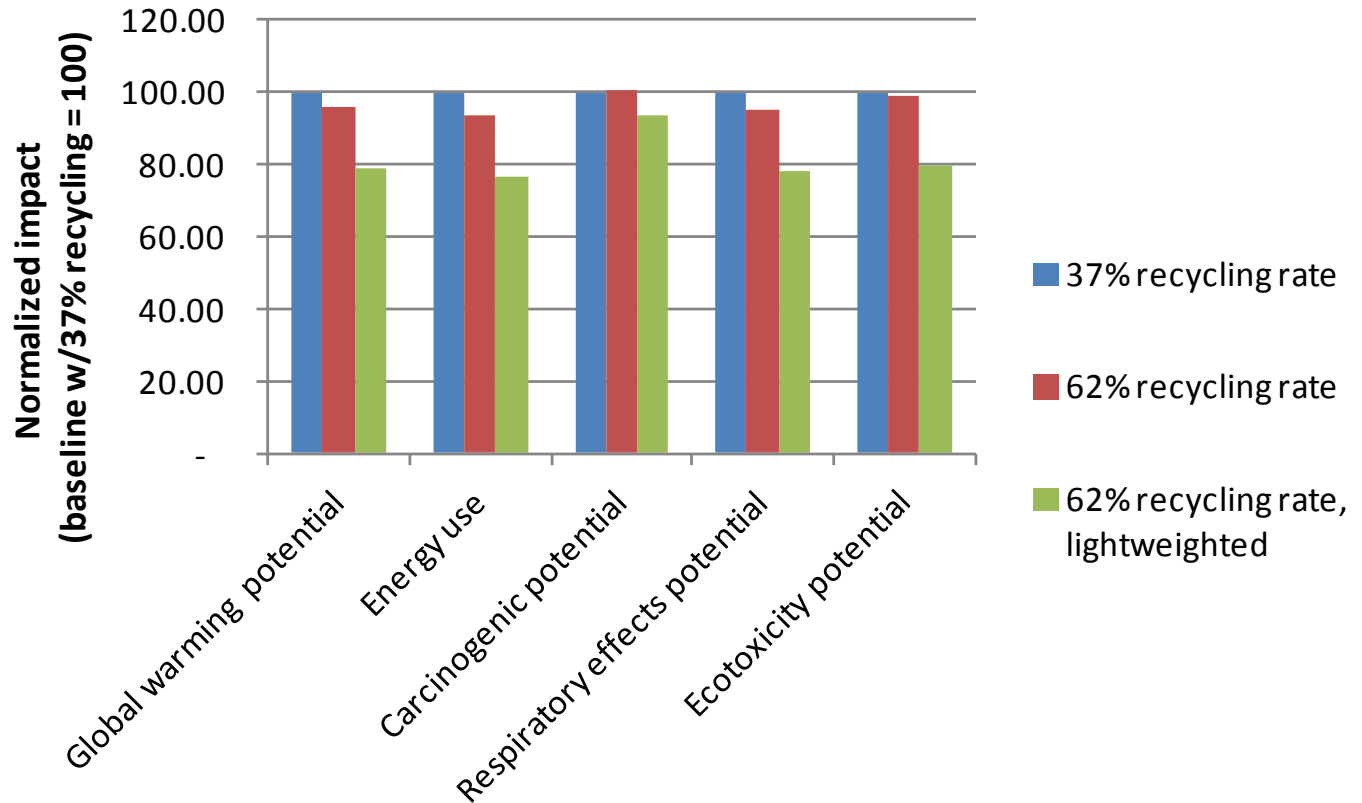
Benefits of Recycling . . .



“Baseline” = PET, half-liter, 13.3 grams, 0% post-consumer recycled content (PCR), on-site molding, purified municipal water (reverse osmosis, ozone and uv), 50 miles to retail, 5 miles home-to-retail, co-purchase w/24 other products, no chilling.



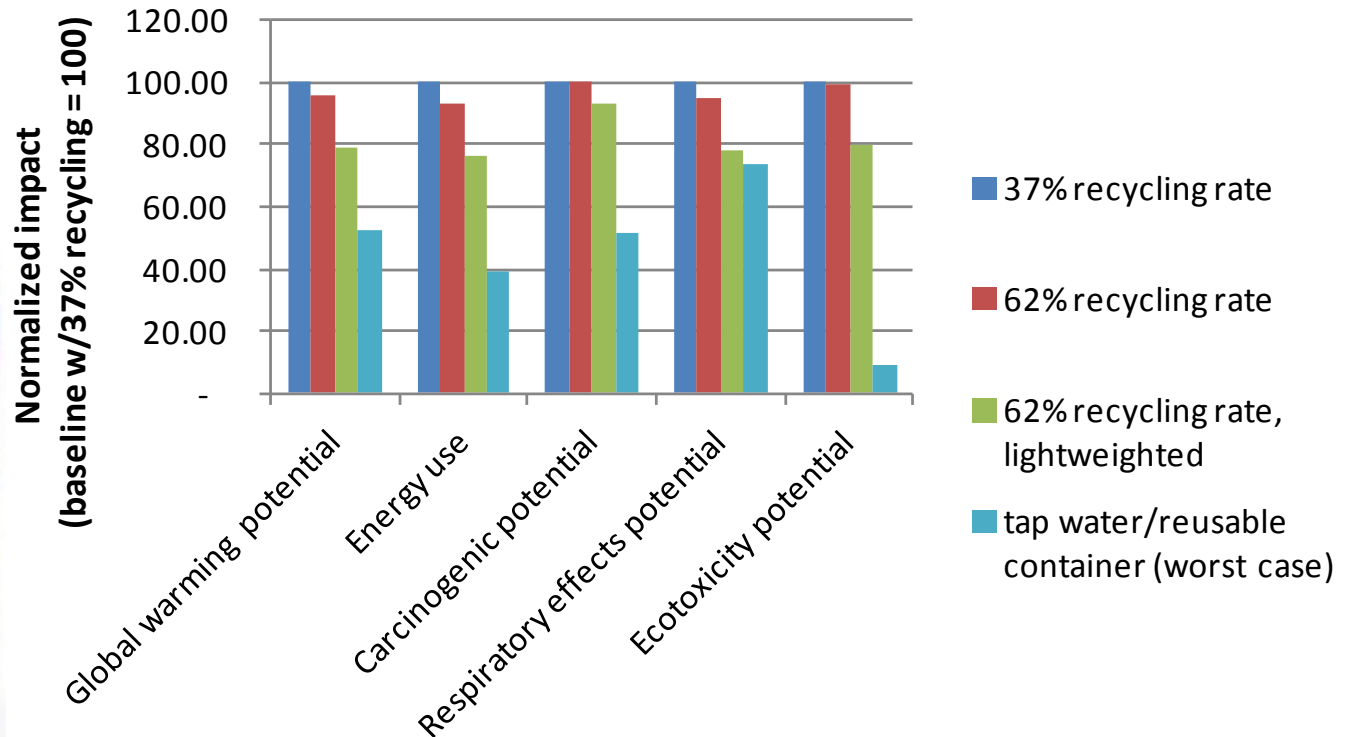
Benefits of Recycling, Lightweighting . . .



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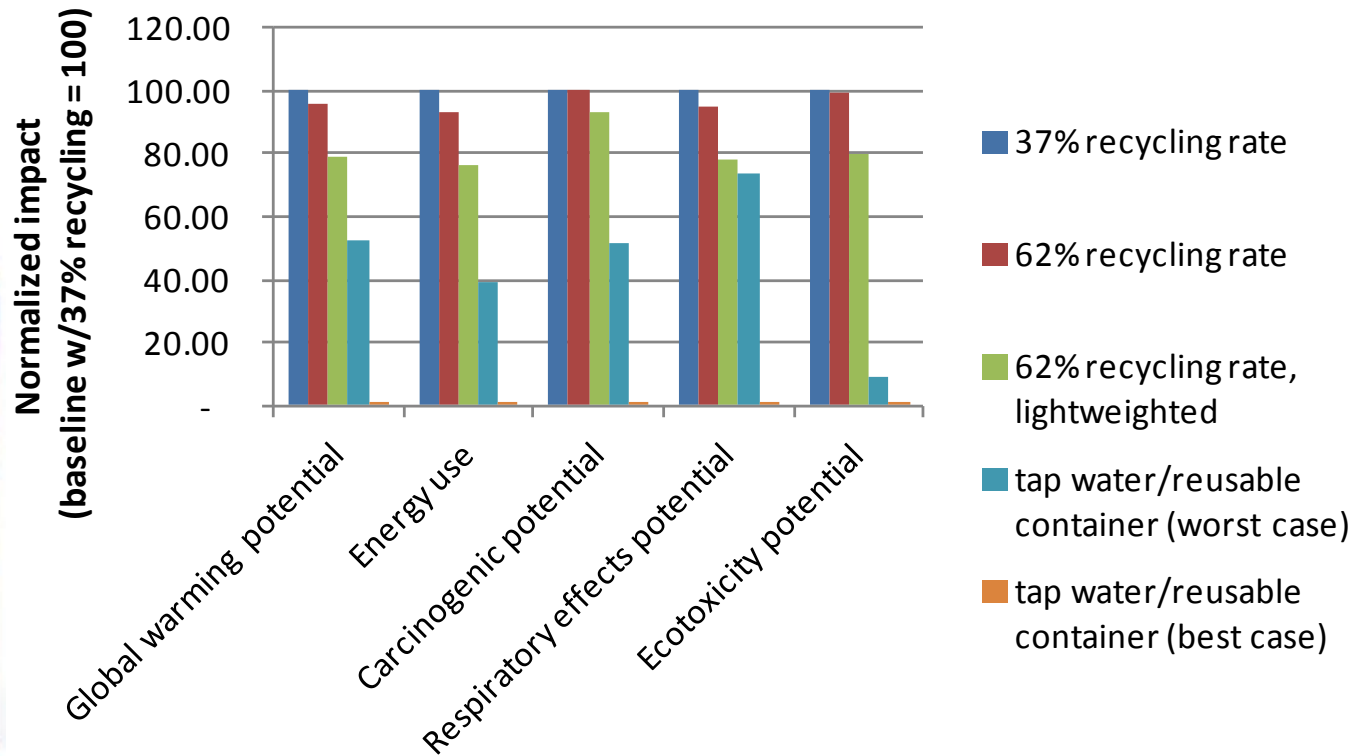
Benefits of Recycling, Lightweighting, and Reuse (done poorly)



“Baseline” = PET, half-liter, 13.3 grams, 0% post-consumer recycled content (PCR), on-site molding, purified municipal water (reverse osmosis, ozone and uv), 50 miles to retail, 5 miles home-to-retail, co-purchase w/24 other products, no chilling.



Benefits of Recycling, Lightweighting, and Reuse (done well)



“Baseline” = PET, half-liter, 13.3 grams, 0% post-consumer recycled content (PCR), on-site molding, purified municipal water (reverse osmosis, ozone and uv), 50 miles to retail, 5 miles home-to-retail, co-purchase w/24 other products, no chilling.



Waste Prevention at Oregon DEQ




- Environmental footprinting of products
- Use of life cycle analysis
- Green building



- Packaging waste prevention
- “Focus area” grants
- Consumption-based greenhouse gas inventories
- Waste Prevention Strategy



Design for Recycling? Design for Prevention? Design for Environment?

Coffee Packaging (11.5 oz product)	Material	Package Weight	Recyclable by Consumers?	Energy Used (MJ/11.5 oz)	GHG Emissions (lbs CO2e/11.5 oz product)*
	Steel can, plastic lid	~4 oz.	Yes	4.21	0.33
	Plastic container and lid	~3 oz.	Yes	5.18	0.17
	Flexible pouch	~0.4 oz.	No	1.14	0.04

Source:
US EPA

*preliminary; please do not cite or reproduce



Portland's "Be Resourceful" Program





Thank You!

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