Life Cycle Approaches to State and Local Regulation – California Experience

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Key Questions and Challenges for Greater Use of LCI in Local/State Policy

- How does LCI data get incorporated into public policy on issues of the environment – like reducing litter and marine debris – when the proposed policy suggests specific product bans as the solution?

- When LCI data counter the proposed solution they aim to remedy, what is the mechanism for bringing a more scientific focus and decision to the political process?

- How can LCI and life cycle thinking be better understood and assimilated in political, legislative and regulatory processes as a useful and meaningful tool?

- What is the role of respective stakeholders (governments, industry, NGOs, universities, opinion-makers) in better utilizing life cycle data and approaches to achieve sound public policy and make measurable improvements to the environment and society?

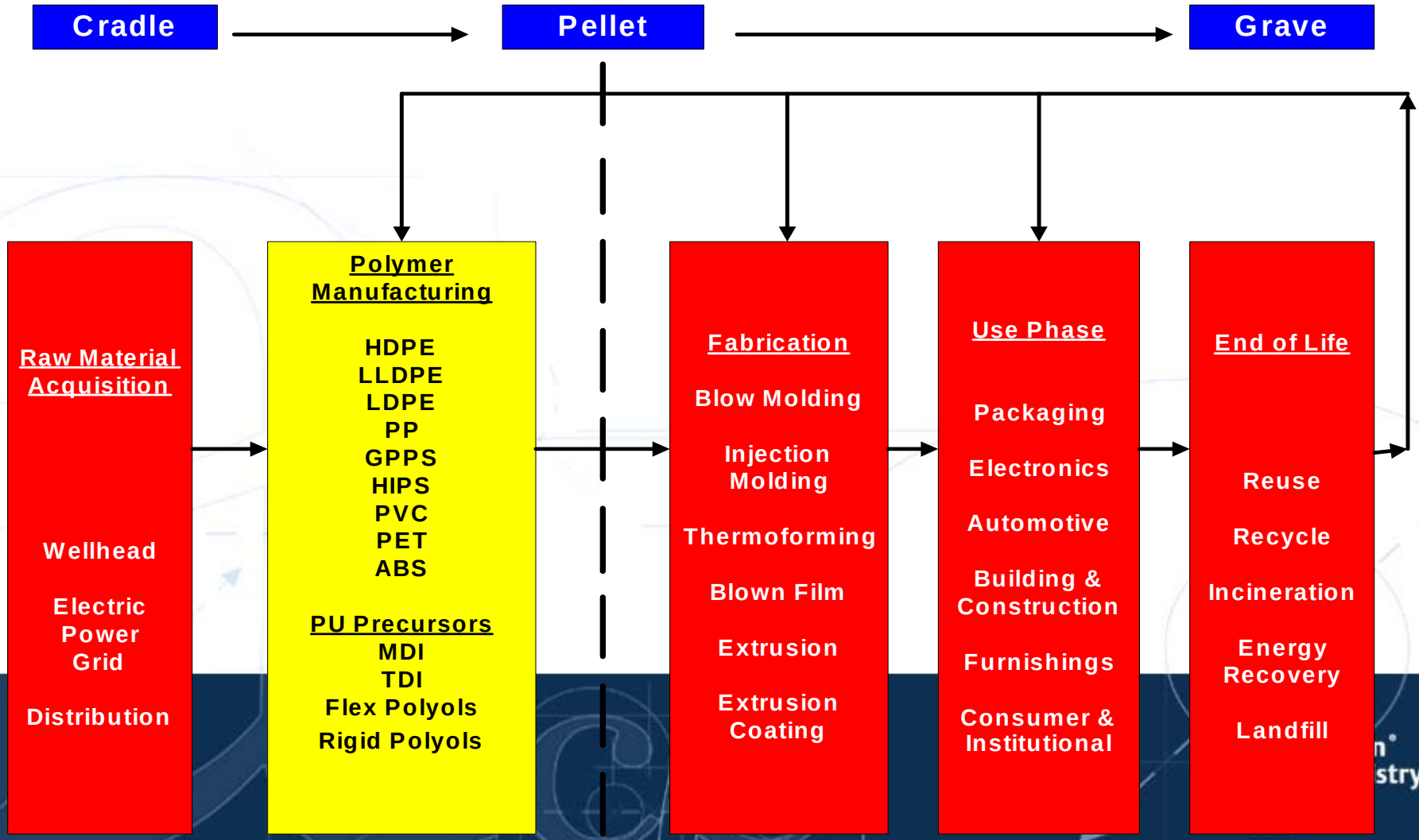
American Chemistry Council's (ACC) Plastics Division and Life Cycle

- The plastics industry and the chemical industry are committed to sound science and sustainable practices worldwide
- Life Cycle Assessment, Life Cycle Management, and Life Cycle Thinking will help evaluate and produce cleaner technologies, with both a lighter footprint on the environment and optimization of energy efficiency
- In a world of price, performance, and competition – we believe life cycle principles will help us all be smarter in our use of energy and raw materials, and provide information to help bring about improvements throughout the value chain

What are customer and stakeholder interests in plastics industry LCI data?

- Responding to stakeholders
  - Customers (auto, packaging, building & construction)
  - Government Agencies – EPA EPP program, USDA Biobased Products Procurement Preference Program
  - Local & state policy makers – landfill diversion/waste management policy
  - U.S. Green Building Council "LCA in LEED" Program
  - Critics
- Tool to promote plastics' role in a sustainable future
  - Allows sound sustainability decisions to be made
- Benchmarking within the plastics industry
  - Companies identify areas for improvement compared to the industry average data

ACC's Plastics Division Contributes Data to U.S. Life Cycle Database (http://www.nrel.gov/lci) Polymer & Polyurethanes Precursors LCI Database



Understanding California's Political Climate Dealing with Waste Issues

- Federal mandates (TMDLs) to reduce trash in waterways; plastics is most visible litter component
  - Local governments required to reduce trash loads to "zero"
- Cash-strapped governments seeking new sources of revenue
- Political climate (state and local) is ripe for punitive industry legislation (fees, taxes, product bans, etc.)
- Emotional issue – often science, facts and figures ignored to achieve political solutions that may or may not solve the problem – in this case, reducing litter and trash

Case Studies in California

- Polystyrene foam (“Styrofoam”) foodservice
  - Several cities (Oakland, Malibu, Santa Monica, San Francisco) proposed and enacted product bans of PS foodservice products as a solution to litter and waste reduction
  - Alternative products more costly, do not perform same function (hot foods/insulation), and have not been shown to reduce litter
- Plastic (polyethylene) carry out bags/grocery sacks
  - San Francisco banned plastic carry out bags in grocery stores and pharmacies; Other cities in California and elsewhere introducing similar legislation
  - This bans the use of recyclable plastic bags, and requires the alternatives to be compostable plastic bags or recyclable paper bags
  - Current levels of plastic bag recycling impacted by bans, and intended goal of reducing litter, solid waste from plastic bag bans not demonstrated

Unintended Consequences

How could the use of LCA data in these California case studies have made a difference in developing:

- More effective public policy options in lieu of banning polystyrene foam foodservice products?
- More effective public policy options in lieu of banning plastic carry-out bags?

PS Foam Foodservice LCI Info: PS Foam vs. Bleached Coated Paperboard/Corrugated

- In 4 key performance areas (solid waste by weight and volume, energy, and greenhouse gas emissions – GHG), PS foam foodservice products have environmental burdens lower or comparable to coated bleached paperboard and corrugated paperboard products
- For gourmet coffee customers who believe they are doing good for the environmental by choosing two plastics coated paperboard cups (or a paperboard cup with a sleeve) instead of one polystyrene foam cup, this practice of “double cupping” results in twice as much energy and solid waste volume, over five times as much solid waste by weight, and nearly twice as much GHG emissions as the use of a single polystyrene cup.
- Achieving a recycling rate of 2% for polystyrene foam would reduce total energy and environmental impacts less than 1% across the life cycle; achieving a composting rate of 2% for paper coated foodservice products would reduce total energy and environmental impacts of these products by less than 2%.

References:
Franklin Associate 2006 LCI of Polystyrene Foam, Bleached Paperboard, and Corrugated Paperboard Foodservice Products

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Paper or Styrofoam: A Review of the Environmental Effects of Disposable Cups

- Study compared environmental effects of using paper vs. polystyrene (Styrofoam) cups, as well as recyclable PET (polyethylene terephthalate) and compostable PLA (polylactic acid)
- Results:
  - Polystyrene has a smaller impact on the environment during its production and use.
  - PET, paperboard and PLA cups too expensive for UCSD.
  - PLA is compostable (corn derived), but no approved industrial composting facilities exist near UCSD. Because the product would be landfilled, compostability of product had no benefits to UCSD.
  - Polystyrene cups vs. paperboard cups – polystyrene uses less raw materials, less energy/power, less water, and less steam than paper, and generates less waste
  - From a landfill perspective, landfills are designed not to allow the contents (polystyrene, paperboard, PET, PLA) to decompose. Polystyrene's inertness (doesn't break down) is viewed as positive, because in a landfill it does not release toxic gases or leach chemicals into the groundwater.
  - Recycling is not an option (although since the study, a PS recycler is taking school foam trays form San Diego/Burbank public schools).

References:
2006 UCSD (University of California at San Diego) Environmental Science Graduate Report

Plastic Bag vs. Paper Bag – LCA Info

- Plastic grocery bags require 40% less energy to manufacture than paper bags
- For every 7 trucks needed to deliver paper bags, only 1 truck is needed for same number of plastic bags – saving energy and reducing emissions
- Plastic grocery bags generated 40% of the GHG (greenhouse gas emissions) of non-composted paper bags and only 21% of GHG emissions of composted paper bags
- Production of plastic bags consumes less than 4% of the water needed to make paper bags
- In 2005, approximately 650-700 million pounds of plastic bags and film were recycled through retailers and business.

References:
GUA 2005 study; US EPA – Questions about Your Community
Shopping Bags: Paper or Plastics; SAEFL LCIs for Packaging 2005

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California Case Studies – Lessons Learned at the local level …

- Understand the political process of a local government and city council – emotions, politics and sound science (facts and figures) all play a role in the process of developing sound public policy
- Focus on the intended consequences – but use information like life cycle to show unintended consequences. Result = better public policy
- Focusing on metrics and measurement is important – no matter what is enacted, how will we know if it makes a difference?

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Role of Stakeholders – Getting LCA integrated in local public policy

- Think globally, act locally – whenever possible, engage local stakeholders (universities, industry, consultants) to educate local public policy decision makers on benefits of using LCA
- Look at the alternatives – LCA by nature is an iterative process – a “what if I change this” way of analyzing changes to a system. Public policy decision makers should be taught how to use this tool in simple and understandable terms.
- Politics + Emotions + Sound Science = ingredients of successful public policy. NGOs, industry, LCA practioners, universities, Councilmembers all play a role in bringing the best information