

## Life Cycle Assessment (LCA)

A Tool for Comparing Two or  
More Processes or Products  
Performing the Same Function

## Phases of Life Cycle Assessment

- Goal Definition
- Scope
  - definition of the functional unit that will be used for comparison
- Life Cycle Inventory
- Impact Assessment
- Improvement

## LCA Scope and Definition

- Critical for making appropriate comparisons
  - by weight of material produced
  - by functional unit (i.e. cable feet)

LCA is just one tool of many and  
should be used in conjunction with...

- Risk Assessments,
- Full Cost Accounting,
- Pollution Prevention,
- Product Stewardship, Etc.

## Life Cycle Inventory

- Quantified listing of the energy and raw materials consumption
- Air, water, and solid waste emissions for the production, use, recycle, reuse and disposal of a product.
- The consensus protocol for conducting this has been developed mainly by SETAC (Society of Environmental Toxicology and Chemistry) and has been issued as an ISO stds (14040 series)

## Impact Assessment

- Resource depletion
- Human health impacts
- Ecological impacts

## Impact Assessment

- No consensus methodology; Different approaches used globally
- Areas of disagreement
  - what impacts can be rolled together at a regional or global level (e.g. GWP) and which must remain as site specific;
  - time frame of emissions;
  - environmental fate in various media;
  - renewable vs. nonrenewable;
  - hazards vs. actual exposures,
  - burdens for recycle streams, etc.

## Improvement

- Typically points to reduction of emissions and/or energy consumption
- Allow for setting of priorities
- Creates discussion of trade-off issues
  - Makes trade-off issues apparent to decision makers (businesses, governments, consumers)

## Summary

- LCA applies a system-wide perspective
  - Encourages consideration of numerous potential issues
  - Identifies many difficult trade-offs; issues and opportunities along the entire supply chain
  - Leads to better understanding of what actions are needed to achieve sustainability
  - Industry and government participation builds essential data base