

# Ecolabels and Life-Cycle Analysis

Life Cycle Assessment and Sustainability Standards

Arthur B. Weissman, Ph.D.  
President and CEO, Green Seal, Inc.

greengov<sup>SM</sup> Symposium  
Washington, D.C.  
October 7, 2010



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Topics Covered

- Background on ecolabels and LCA
- Role of LCA and other tools for ecolabels
- LCA methodology
- Green Seal as example:
  - Science program
  - LCA research and standard development
  - LCA studies



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Background on Ecolabels and LCA

- Original intent to look at life-cycle impacts
- Most programs have taken a life-cycle approach
  - Focus may be on certain stages
  - Don't necessarily use rigorous LCA
- Now, more use of LCA *per se* as more data become available, programs mature



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

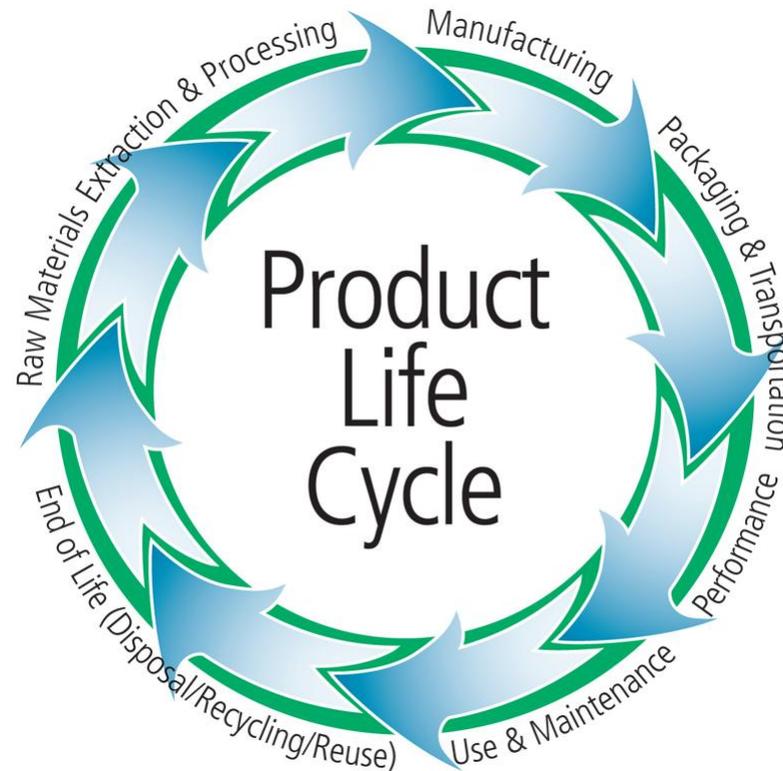
# Role of LCA and Other Tools for Ecolabels

- Evaluating key impact areas of products and services
- Guarding against transfer of impacts
- Ensuring improvement from standards
- Suggesting options for improvement
- Evaluating effectiveness of standards, certification



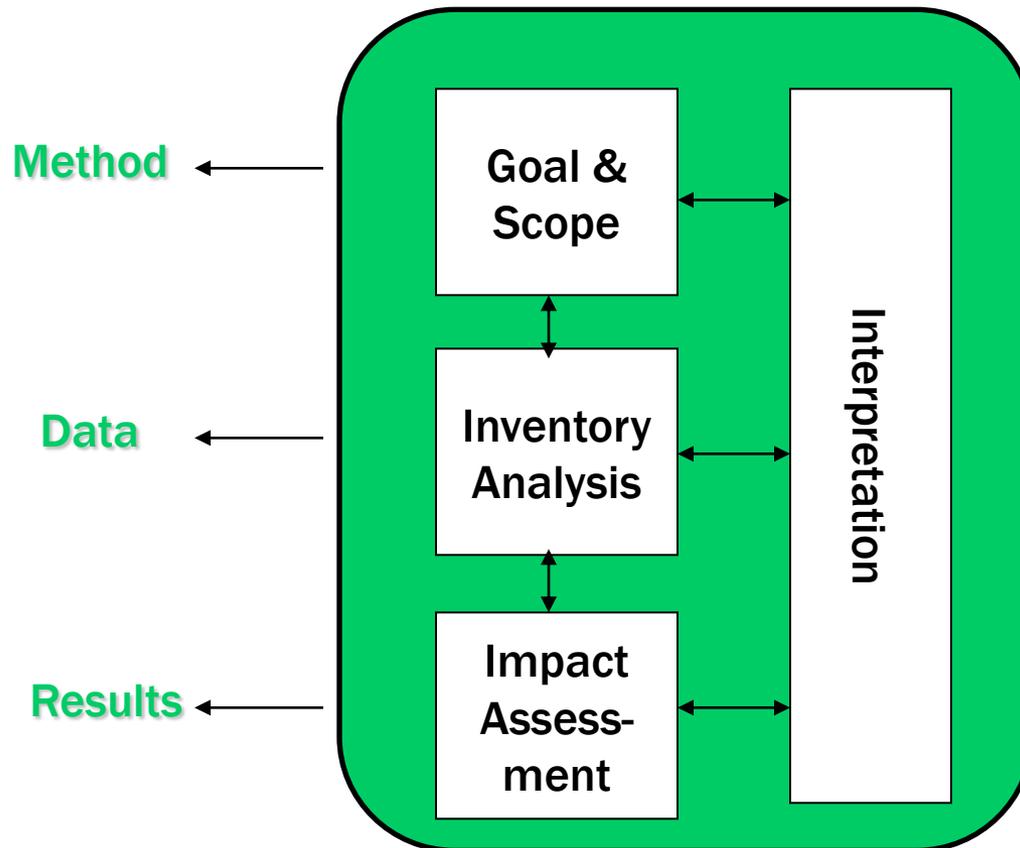
THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Life-Cycle Approach



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# LCA Methodology: ISO 14040, 14044



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

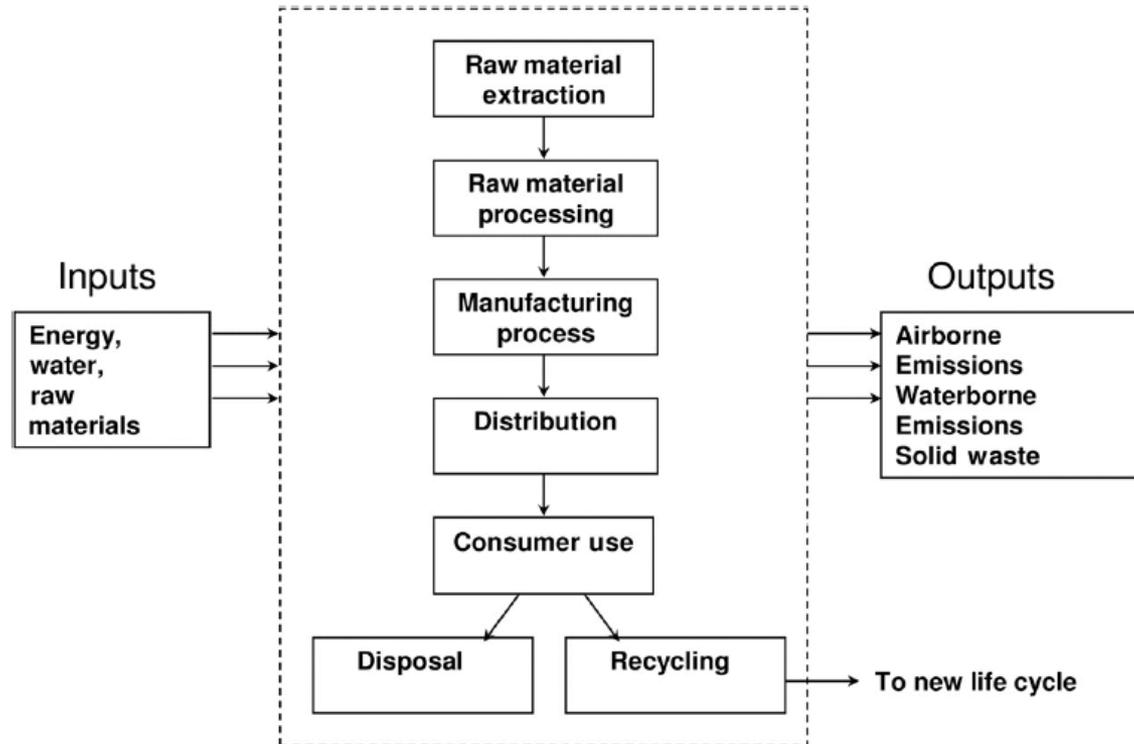
# Goal and Scope

- Boundaries
  - Cradle to Gate
  - Gate to Gate
  - Cradle to Grave
  - Cradle to Cradle
- Impacts
  - Carbon footprint
  - Ecological footprint



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Inventory



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Impact Assessment

**Ecoindicator  
Example**

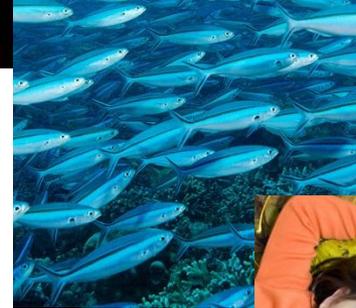
## Resources:

- Fossil fuels
- Land use
- Minerals
- Radiation



## Ecology:

- Climate change
- Ozone layer
- Exotoxicity
- Acidification/Eutrophication



## Human Health:

- Carcinogens
- Respiratory inorganics



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Interpretation

- May normalize for comparisons (ISO-compliant rating)
- May use models or groupings (e.g., to segregate impact sources within product/service)
- Uncertainty and sensitivity analysis of various factors
- Completeness and consistency check
- Peer review of studies



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# The Original Green Seal of Approval

Green Seal is a non-profit environmental organization that uses science-based programs to empower consumers, purchasers, and companies to create a more sustainable world.

- Over 3500 products and services certified in 140 categories
- Over 30 standards and growing: cleaning and floor care products, building and construction products, paper products, paint, cleaning services, hotels, restaurants, and companies
- Designated as an ANSI-accredited Standards Development Organization (SDO)



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

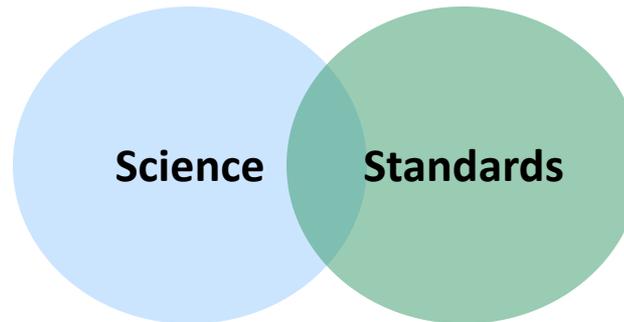
# Green Seal's Science Program

**Green Seal's Science Program provides new insight about sustainability issues across products, services, and companies.**

Types of research:

- Life-Cycle Studies (using SimaPro)
- Product Testing
- Field Studies

**This research complements Green Seal's sustainability standard program**

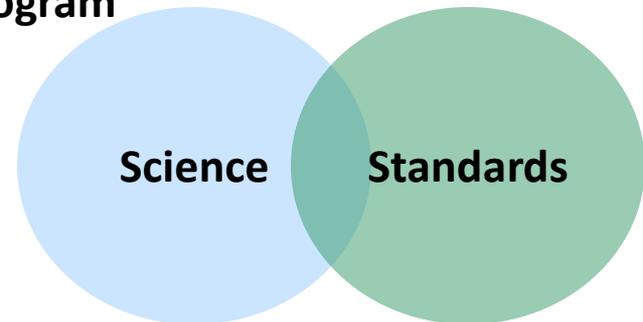


THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Life-Cycle Assessment Research for Green Seal's Standards

Life-cycle assessment research helps:

1. Inform standard development
2. Evaluate effectiveness of standard
3. Add value to standards/certification program



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Life-Cycle Assessment Program

## 1. Inform standard development

- Prioritize: identify main sources of impacts
- Highlight preferable options: test feasible options
- Provide additional credibility to standard: fill research gaps

*LCA is not the sole source of impact assessment for standard development*



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Examples of LCA Studies

## 1. Inform standard development

LCA on restaurants to inform standard development:

- Cradle to Gate (raw materials to delivery of service)
- Operational inputs and outputs from six restaurants
- Food leading source of impacts in all categories
- Found key sources of environmental impact and tested which sources were modifiable –findings used to help develop standard, GS-46 (study is published in *International Journal of Life Cycle Assessment*)



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Life-Cycle Assessment Program

## 2. Evaluate effectiveness of standard

- Do criteria identify environmentally preferable products/services?
- What is overall impact of products/services compliant with standard (GS vs. conventional products)

*LCA is not the sole tool used to evaluate effectiveness*



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Examples of LCA Studies

## 2. Evaluate effectiveness of standard

LCA on cleaning products to evaluate effectiveness of standard:

- Cradle to Grave
- Inputs and outputs from two model products – GS-compliant and conventional product (from independent third party)
- Conventional product greater source of impacts in all categories
- With normalization, able to quantify reduced impact (e.g., 88% less impact with GS-37-compliant product)



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Life-Cycle Assessment Program

## 3. Add value to standards/certification program (education and outreach)

- Producer tools, highlighting key levers (sources of impacts and how they can be reduced) – one-pagers, guides, etc.
- User tools, highlighting why to use Green Seal-compliant products/services (calculators)
- Add meaningful message on benefits of standard – Type III, carbon labeling, xx% reduced impact
- Requirement in standard – GS-C1



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Examples of LCA Studies

## 3. Add value to standards/certification program (education and outreach)

LCA on client's hotel on overall performance:

- Cradle to Gate (raw material to delivery of service), carbon footprint
- Operational inputs and outputs
- Energy use key source of impacts
- Meeting Green Seal standard for hotels, GS-33, resulted in reduction of carbon footprint, with additional opportunities identified



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989

# Summary



Life cycle assessment is used for variety of purposes to strengthen ecolabeling standards, education, and outreach but is only one tool Green Seal uses in its Science Program .

*Thank You!*



THE ORIGINAL GREEN SEAL OF APPROVAL SINCE 1989