The US LCI Database Moving Toward Full LCI Data by Material and Product

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Background

- The US LCI database is underway, as described by Greg Norris in the preceding presentation.
- Franklin Associates' role in the database project is data development and input of unit process data into the database.

Key Elements of Data Development

- Unit Processes
- Transparency
  - Sources of data
  - Utilization of data
- Data Quality
  - Time-related coverage, geographical coverage, technology coverage
  - Representativeness (degree to which the data set reflects the true population of interest)

Our Data Development Role

- Fuels and Energy Unit Processes (under the NREL contract)
  - Extraction, processing, delivery and combustion of fuels for process energy and transportation
  - Includes electricity generation (national grid, 3 regional grids)
  - Includes precombustion burdens to produce and deliver fuels used (iterative process)
  - Derived largely from public data sources

Our Data Development Role (cont'd)

- Transformation Processes
  - Athena International Contract with Vehicle Recycling Partnership (Ford, GM, DaimlerChrysler)
  - Automotive transformation processes such as aluminum casting, iron casting, steel stamping, etc.
  - Data collected by VRP, reviewed and aggregated by Franklin Associates

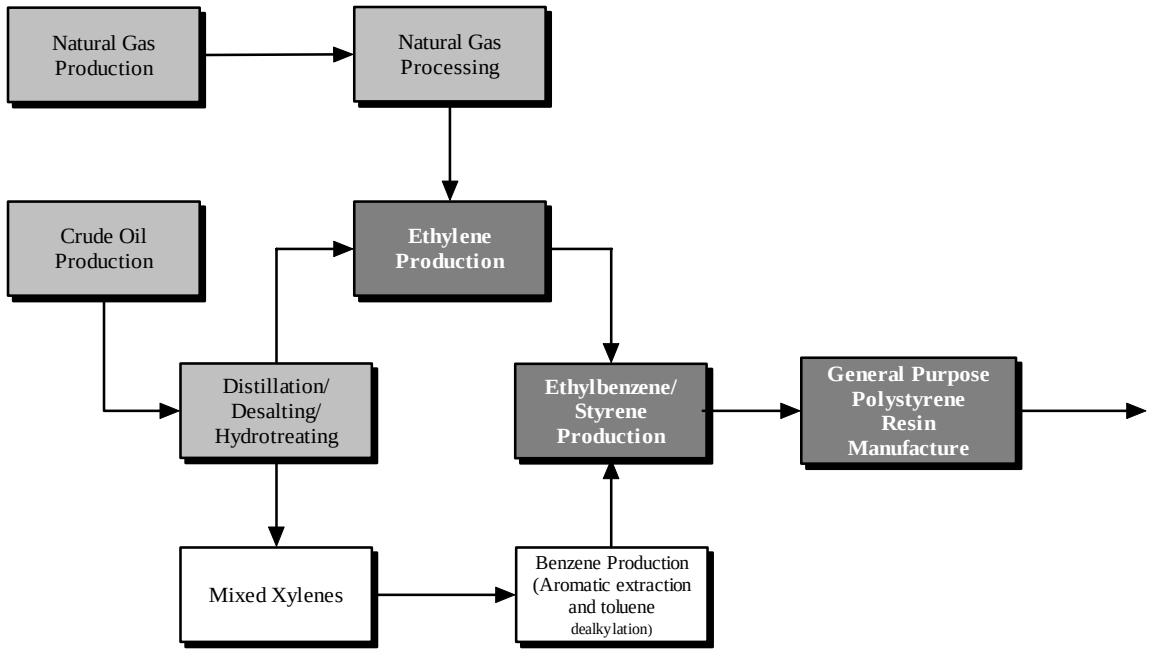
Industry Participation is Vital

- American Plastics Council
  - Committed to be a part of the process
  - Contract with Franklin Associates to develop data on 11 plastic resins and up to 5 polyurethane precursors for the database.

Key Issues Related to Industry Data

- Primary data collected by participating companies, reviewed and aggregated by consultant.
- Procedure for protecting confidentiality.
- Using individual company data sets to develop data set representative of industry.
- Procedure for assuring data quality and transparency via unit process.

Example Cradle-to-Resin Process Tree for GPPS



Flow diagram for the production of general purpose polystyrene resin.
Shaded boxes represent recently updated data for the US LCI Database.
Darker boxes with white text represent data expected from APC members.

APC Contribution to US LCI Database

- Develop unit process data for all steps from raw material extraction through production of resin or precursor
  - Primary data provided by member companies and suppliers
  - Secondary data from public sources
- Utilize fuels and energy data developed under NREL contract.
- Cradle-to-resin linked process trees will be developed.

Payoff for Database Users

- Cradle-to-resin process trees available in a readily accessible and usable form.
- User-friendly – users will not need LCI consultant or software to assemble process trees themselves.
- Data for individual unit processes in the process tree still accessible to ensure transparency (as opposed to “black box” typical of most rolled-up LCI data sets).

Payoff for Database Users (Cont'd)

- When completed, this will be a major step in demonstrating how LCI database can be used to develop process trees while maintaining transparency
- Sets stage for participation of other material industries
- Provides a jump-off point for modeling the remaining steps in a complete product life cycle:
  - Product fabrication
  - Use
  - End of life.