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LCAccess – Global Directory of LCI resources

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Abstract

LCAccess is an EPA-sponsored web-site intended to promote the use of life cycle assessment (LCA) in business decision-making by facilitating access to data sources that are useful in developing a life cycle inventory (LCI). While LCAccess does not itself contain data, it is a searchable global directory of potential data sources. In addition to directing users to relevant data sources, LCAccess also serves as a central source for LCA information. To find the LCAccess web-site go to: http://www.epa.gov/ORD/NRMRL/lcaccess. LCAccess is soliciting organizations that have completed LCI/LCA studies to provide their data sources for reference in LCAccess.

Keywords: Life cycle assessment (LCA); Life cycle inventory (LCI); Web-site

1. Introduction

LCAccess is a US Environmental Protection Agency (EPA) sponsored web-site dedicated to the promotion of life cycle assessment (LCA) to make more informed decisions through a better understanding of the human health and environmental impacts of products, processes, and activities. LCAccess accomplishes this goal by providing information on EPA's role in LCA, the benefits of LCA, what is LCA and an overview of how to conduct an LCA, how to find LCI data sources (LCI Global Directory), available LCA resources (i.e., documents, software tools, other related links), ongoing efforts in the field of LCA (e.g., EPA, other US efforts, international efforts), and upcoming events.

Specifically, LCAccess was created to address a critical need in the LCA community – where and how to locate existing life cycle inventory (LCI) data. The lack of readily-available, quality LCI data is often a barrier to manufacturers, among others, for incorporating life cycle considerations into their decision-making process. While much progress has been made on standardizing and improving the uniformity of the LCA methodology, less success has been achieved in increasing the availability of quality life cycle inventory data. Three specific areas of improvement exist to promote the use of LCA in decision-making by industry, government, and LCI practitioners.

1. Educate decision-makers about how to conduct an LCA and about the benefit thereof.
2. Increase awareness of existing LCI data sets and other surrogate data sources.
3. Provide direction on how and where to access these LCI data sources.

The LCAccess web-site was launched in the Fall of 2000. Over the past three years web-site activity

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has increased to over 400 users per month and the Global LCI Directory has also increased to over 650 searchable profiles. In our efforts to continually improve the utility of the web-site to the public, the following future enhancements are planned for the upcoming year:

- Continuing to update Sections 2.4–2.6 as new information and resources become available
- Expanding the list of case studies
- Develop five detailed "real world" examples of how LCA has been used to save industry money and improve their environmental decision-making processes, and
- Adding new data source profiles to the Global LCI Directory to increase the depth in available resources.

2. LCAccess web-site

The LCAccess web-site is divided into six primary areas (see Fig. 1) to help educate people who are new to the concept of LCA while serving as a focal point for LCA practitioners and decision-makers to stay current with the field of LCA; and most importantly, to promote the use of LCA to make more informed decisions by providing access to tools, publications, and EPA programs. Each of the six primary areas of the LCAccess web-site is described below.

2.1. Why LCA

This section of the web-site is designed to provide a broad overview of LCA to educate people new to the concept of LCA on "Why they would want to perform an LCA?" This section is presented in a report format starting with the history of LCA in the United States and how LCA can be used to make more informed decisions. This section also contains more detailed information on the following topics to introduce current trends in the application of LCA and the direction in which the development of LCA is evolving towards in the future.

- Streamlining LCA
- Interest in LCA approaches is growing internationally
- LCA within industry
- LCA within government
- Future direction in LCA development
- LCA in environmental decision-making.

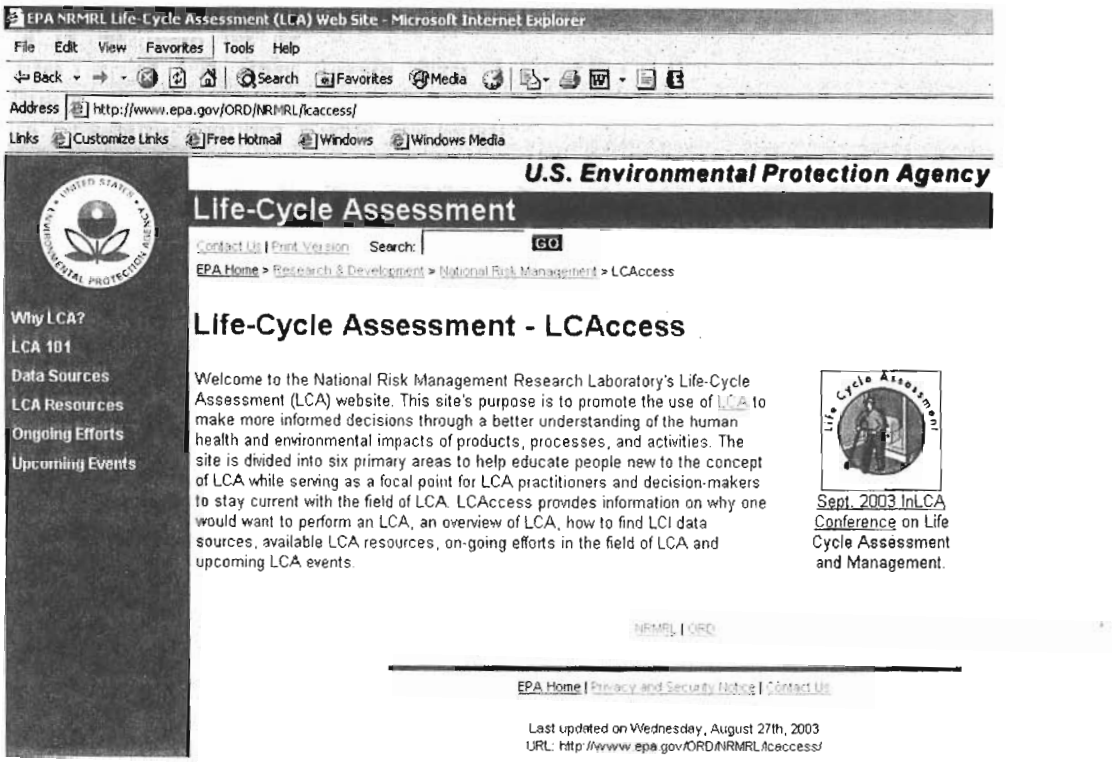

Fig. 1. LCAccess home page.

2.2. LCA 101

The LCA 101 section of the web-site provides an introductory overview of LCA. The uses and major components of LCA are discussed. This section differs from Section 2.1 by providing a more detailed overview of how to organize and manage an LCA project. This section is also presented in report format using text that had been adapted from several US EPA projects, including applying LCA to facilitating remediation, treatment, and pollution prevention decisions. The following outlines the topics covered under the LCA 101 section.

Chapter 1: What is a life cycle assessment

- Why should you conduct an LCA?
- Benefits of conducting an LCA
- Limitations of conducting an LCA

Chapter 2: Goal definition and scoping

- What is goal definition and scoping?
- How does goal definition and scoping effect the LCA process?
- Getting started

Chapter 3: Life cycle inventory

- Why conduct an LCI?
- What do the results of the LCI mean?
- Key steps of a life cycle inventory

Chapter 4: Life cycle impact assessment

- What is a life cycle impact assessment?
- Why conduct an LCIA?
- What do the results of an LCIA mean?
- Key steps of a life cycle impact assessment

Chapter 5: Life cycle interpretation

- What is life cycle interpretation?
- Life cycle interpretation is a formal process
- Can I select an alternative based only on the results of the LCA?
- Key steps to interpreting the results of your LCA
- Reporting your results
- Conclusion

2.3. Data sources (i.e., Global LCI Directory)

This section of the web-site provides a 'yellow pages' index to existing data sources through an on-line tool called the 'Global LCI Directory'. The Global LCI Directory is an international directory of existing LCI data sources and other sources of LCI data (i.e., not collected for the purpose of performing an LCI) that can be used to reduce the time and resources required to obtain LCI data. The purpose of the Global LCI Directory is to provide free of service to the public a searchable directory of LCI resources. LCI data sources contained within the tool were voluntarily submitted by data owners to help promote LCA. Both publicly available (free of charge) and data sources available at a cost are included in the directory. The Global LCI Directory currently (Fall, 2003) contains over 650 data source profiles submitted from over 45 data providers world-wide. Approximately 99% of the data source profiles are from the completed LCIs and cover over 300 product categories.

Please note that no 'LCI data' is contained within the directory or available on the web-site; one must use the contact information provided to obtain the data. The following provides an overview of the Global LCI Directory.

The Global LCI Directory comprises of seven basic web pages (screens).

2.3.1. Screen 1: Global LCI Directory home page

The Global LCI Directory home page provides a brief overview of the tool's capabilities and links to direct the user either to conduct a search using the pre-defined matrix or to search the database using keywords and/or user-defined meta-data characteristics. The screen provides a link to additional information on the functionality of the tool.

2.3.2. Screen 2: Enter a profile

This screen is accessible from the Global LCI Directory home page. It provides an LCI data profile template to be completed by users seeking to add a profile to the Global LCI Directory database. There is no cost to add a data profile to the directory. For an example of the LCI data profile, see Figs. 2 and 3.

2.3.3. Screen 3: Matrix search

The matrix search is designed to provide the user with an overview of the types of data sources contained in the database. The matrix search organizes the information contained in the Global LCI Directory by industry area and life cycle stage. To view the summary results for a specific industry area and life cycle stage, the user can click on the number in the matrix table corresponding to their request. The matrix search is designed for users who want to know what types of data are in the Global LCI Directory and/or are trying to identify a broad range of data sources.

"LCI Data Source Profile"

General Information

Title:	Name of the LCI data set as referred to or cited.	
Source:	Your company or organization's name.	
Description:	One or two paragraphs describing the applicability, relevance, data quality procedures, and/or methodology for collecting the data. This space (field) is provided for you to add any additional text that you determine necessary to best explain your data set.	
Media Format:	Electronic:	Description of the type of electronic format the data set is available in; e.g., Microsoft Excel 97 spreadsheets.
	Non-Electronic:	Description of the media format; e.g., English language, number of pages, bound or un-bound, etc.
Contact Information:	How and where to obtain the LCI data set from you; i.e., when someone decides that they want to further investigate the applicability of your LCI data set to their needs who should they contact and how.	
Web-site:	The URL for obtaining your LCI data set, if applicable.	
Cost (estimate only):	$XXX (In US Dollars)	Cost explanation, if necessary; e.g., the cost for the data set includes 5 other data sets as a data set package.
Date Profile Last Updated:	April 26, 2001	Date is automatically entered when your profile is added to the Global LCI Directory.

Applicability of Data Source

Functional Unit:	Unit of output for which your results are presented.	
Life-Cycle Stages Covered:	*Pick one or more stages from the list below that best represents your LCI data set.*	
	Raw Material Acquisition	Manufacturing
	Use/Reuse/Maintenance	Recycle/Waste Management
Industry Covered:	*Pick one or more from the list below that best represents your LCI data set.*	
	Food	Furniture and Related Product
	Leather and Allied Product	Machinery
	Miscellaneous	Nonmetallic Mineral Product
	Paper	Petroleum and Coal Products
	Plastics and Rubber Products	Primary Metal
	And 20 other industry categories...	
Level of Aggregation:	*Pick the level of aggregation from the list below that best represents your LCI data set.*	
	Global Average, National Average, Industry Average, Site Specific, Other	
Product Covered:	*List up to four Products or Product Categories that your LCI data set best represents.*	
Geographical Area Covered:	*Pick one or more from the list below that best represents your LCI data set.*	
	Global	Africa
	Asia and the Pacific	Europe
	Latin America & the Caribbean	North America
	Afghanistan	[plus 116 other countries]
Data Collection Period:	YYYY to YYYY	*Enter the time period that best represents your LCI data set in years; i.e., 1999 to 2000.*

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Fig. 2. Meta-data field descriptions for 'completed LCI data source profile'.

2.3.4. Screen 4: Keyword search

The keyword search allows the user to search by words or phrases, or define their own meta-data selection criteria.

2.3.5. Screen 5: Search results

Search results are presented in two tables: (1) completed LCIs and (2) other sources of LCI data. Search results are organized by title and data source. The user can select individual data sources to view by checking the box before 'Title' or select all profiles to view.

2.3.6. Screen 6: Completed LCI data source profile

Fig. 2 is an example of a completed LCI data source profile. After reviewing the profile, the user has the option to print the profile, view the next profile, or return to the search results table.

"Other Source of LCI Data Profile"

General Information

Title:	Name of the data source as referred to or cited.	
Source:	Name of the company or organization that created the data source; i.e., the author.	
Description:	One or two paragraphs describing the applicability of the data source as LCI data. This space (field) is provided for you to add any additional text that you determine necessary to best explain the data source.	
Purpose of Data Collection:	Description explaining why the data was originally collected.	
Media Format:	Electronic:	Description of the type of electronic format the data is available in; e.g., Microsoft Excel 97 spreadsheets.
	Non-Electronic:	Description of the media format; e.g., English language, number of pages, bound or un-bound, etc.
Contact Information:	How and where to obtain the data; i.e., when someone decides that they want to further investigate the applicability of the data for their needs who should they contact and how.	
Web-site:	The URL for obtaining the data, if applicable.	
Cost (estimate only):	$XXX (in US Dollars)	Cost explanation, if necessary; e.g., the cost for obtaining the data source.
Date Profile Last Updated:	April 26, 2001	Date is automatically entered when the profile is added to the Global LCI Directory.

Applicability of Data Source

Life-Cycle Stages Covered: *Pick one or more stages from the list below that the data source best represents.*

Raw Material Acquisition	Manufacturing
Use/Reuse/Maintenance	Recycle/Waste Management

Industry Covered: *Pick one or more from the list below that the data source best represents.*

Food	Furniture and Related Product
Leather and Allied Product	Machinery
Miscellaneous	Nonmetallic Mineral Product
Paper	Petroleum and Coal Products
Plastics and Rubber Products	Primary Metal
And 20 other industry categories…	

Information Type: *Pick the type of information that the data source best represents from the list below.*

Raw Material Use, Air Releases, Water Releases, Solid Waste Disposal, Other, All

Geographical Area Covered: *Pick one or more from the list below that best represents the data.*

Global	Africa
Asia and the Pacific	Europe
Latin America & the Caribbean	North America
Afghanistan	[plus 116 other countries]

Data Collection Period: YYYY to YYYY *Enter the time period in years that the data best represents; i.e., 1999 to 2000.*

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Fig. 3. Meta-data field descriptions for 'other sources of LCI data profile'.

2.3.7. Screen 7: Other sources of LCI data profile

Fig. 3 is an example of a data source profile for an other source of LCI data. After reviewing the profile, the user has the option to print the profile, view the next profile, or return to the search results table.

2.4. LCA resources

This section of the web-site provides a list of publications, books, standards and links to other web-sites that contain additional information on both managing and conducting an LCA. While the list is not comprehensive, it serves as a starting point for researching LCA.

2.5. Ongoing efforts

This section of the web-site provides a list of ongoing efforts in the field of LCA. The information provided is organized by US EPA efforts, other US efforts, and international efforts. While the list is not comprehensive, it serves as a starting point for researching ongoing LCA efforts.

2.6. Upcoming events

This section of the web-site provides a calendar of LCA-related conferences, meetings, and activities. All organizations are welcome to announce/add their LCA-related events to the calendar.

3. Conclusion

All organizations wishing to improve the use of environmental data in business decision-making are encouraged to participate in LCAccess. As discussed previously, LCAccess is intended both, as a public source of information regarding LCAs and, specifically, as a directory of LCI data sources. As such, LCAccess can be used by the public, academia, organizations, companies, and government entities to identify sources of information for LCA studies. Participation by LCAccess users in providing summaries of their relevant work or data sources is encouraged to continue to expand the knowledgebase contained within the directory. Participation both as a consumer of information as well as a provider of data sources is key to the increased usability of LCAccess. With the continued support and contribution of data, LCAccess will grow to become an even more useful tool for facilitating the incorporation of environmental data in business decision-making.

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