Colin A. Houston & Associates, Inc. announces
a new multiclient study

ALPHA-OLEFINS - WORLD MARKETS, 2000-2010
and
ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE

Consumption of linear alpha-olefins in direct end uses totaled 2.5 million tons in 2000 and is forecast to grow at an average rate of 6.6 percent/year to 2010. However, there are wide variations in growth rates among the various end uses, and the outlook for individual chain lengths ranges from a potentially severe shortage of octene-1 to significant surpluses of certain other chain lengths. There are also major differences in consumption patterns and growth rates from region to region.

Alpha-olefins capacity has increased from 2.4 million tons/year in 1997 to 3.2 million tons/year by year-end 2001, and could reach 4.2 million tons/year by 2005, including both confirmed and potential new plants and expansions.

Colin A. Houston & Associates, Inc. (CAHA) has completed a comprehensive new multiclient study of the global markets for alpha-olefins that analyzes supply and demand for alpha-olefins through 2010. The study profiles producers and quantifies and forecasts production by region and chain length to 2010. It includes a thorough investigation of 18 separate end uses for alpha-olefins, covering derivative producers and production, technology and trends, and it quantifies alpha-olefin consumption in each use by region and chain length annually for 2000 through 2005, and for 2010.

In addition to the print version of the new study, a PDF version of all the key end use and summary tables is available online in an electronic database accessible to clients via an assigned user name and password. Details of the new study and database are explained on the following pages. Please contact either Joel Houston, President or Marilyn Bradshaw, Vice President to discuss this valuable new program.

CONTENTS

DESCRIPTION OF THE STUDY

The alpha-olefins market is facing a complex array of developments, including major new plants and expansions coming on stream in the 2000 to 2004 timeframe. Although demand continues to be strong overall, growth rates vary by chain length, by end use and by region. For alpha-olefin producers, profitability depends on finding and winning the right mix of customers while optimizing alpha-olefin production and disposition by chain length. A major purpose of CAHA's new study is to provide comprehensive data and analysis that will support the development of successful alpha-olefin production, sales and marketing strategies.

For alpha-olefin customers, it is imperative to understand the short-term and long-term availability of individual chain lengths and the competitive position and potential strategies of their suppliers. CAHA's new study profiles each producer and comments on expansion plans and new suppliers, and it explains in detail the supply/demand outlook for each chain length by region.

ALPHA-OLEFIN SUPPLY

CPChem brought a new plant on stream in Texas in 2000; BP started up its new Canadian plant in 2001; and Shell will bring a new plant on stream in Louisiana in early 2002. All of the other new alpha-olefin plants being built or under consideration for the 2003 to 2005 timeframe will be located in the Middle East, Asia and Africa.

There are currently seven companies who manufacture a range of alpha-olefins via ethylene oligomerization, and one producer who manufactures specific chain lengths from coal-derived synthesis gas. By 2004, several of the producers will have added capacity, and there will be two new producers via ethylene oligomerization — SABIC, producing a full range of alpha-olefins, and Q-Chem, producing hexene-1.

Several additional alpha-olefin plants are under consideration, but have not yet received final approval. These include new hexene-1, octene-1 and multipurpose units planned by Sasol; a joint venture plant proposed by Idemitsu and Formosa Plastics; and a new world-scale plant planned by Chevron Phillips.

CAHA's new study profiles each of the current, new and potential producers, providing details of their capacities and expansion plans, production by chain length, technology, product specifications and integration including captive vs merchant use. It also details alpha-olefin technology available for license.

ALPHA-OLEFIN DEMAND

Overall growth in demand for alpha-olefins is forecast to average more than 6 percent per year between 2000 and 2010. The largest end use is also the fastest growing: polyolefin comomoners account for over 50 percent of alpha-olefin consumption, and growth is expected to average 8.6 percent/year through 2010. CAHA's new study breaks out alpha-olefin consumption by region, by major polyolefin type and by chain length, and discusses the supply/demand outlook for butene-1, hexene-1 and octene-1. The availability of on-purpose hexene-1 provides the opportunity for the supply and demand for this comonomer to be in balance, but for octene-1, a severe deficit is likely unless production from new sources can be realized.

During the 1990s, the polyalphaolefin (PAO) market was limited by insufficient supplies of decene-1, but the situation has changed. An important development impacting PAO is the growing use of Group III base oils, which are able to challenge PAO on a cost performance basis in many lubricant applications. Based on numerous interviews with alpha-olefin and PAO producers, and synlube suppliers and users, CAHA's study quantifies the effect of these developments and forecasts consumption of alpha-olefins by chain length in synthetic lubricants.

The markets for C_{12} and C_{14} alpha-olefins have been tight in 2000 and 2001, but longer term, their growth rates are not expected to match those of the lower chain lengths. However, their outlook varies by region, and some producers will be better-positioned than others to take advantage of higher-growth market opportunities. These opportunities are identified in the study.

The phenomenal growth in the use of internal and alpha-olefins in oilfield drilling fluids has tightened the market for C_{16} and C_{18} alpha-olefins, but the consumption and outlook for these products varies by region, primarily depending on environmental issues. CAHA's new study quantifies the impact of changing environmental regulations on the use of internal and alpha-olefins by chain length in this dynamic market.

METHODOLOGY

CAHA's extensive files, data, knowledge and expertise on alpha-olefins gained through 20 years of consulting experience in alpha-olefins provided a unique foundation for this study. New research undertaken during the period of September 2000 through September 2001 included scores of interviews with knowledgeable contacts at more than 110 companies and organizations at over 160 locations on five continents.

The following pages contain the complete table of contents of the print version of this 700-page study as well as sample table formats. Subscribers also have access to an online database that includes the key tables in PDF format.

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SAMPLE TABLES

Table I-5

WORLD - ALPHA-OLEFIN PRODUCTION BY REGION, 2000-2010
(thousand tons)

Region	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
North America								
West Europe								
Asia								
Other Regions								
TOTAL								

Table I-6

WORLD - ALPHA-OLEFIN PRODUCTION BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_4								
C_6								
C_8								
C_{10}								
C_{12}								
C_{14}								
C_{16}								
C_{18}								
C_{20+}								
TOTAL								

Table I-7

WORLD - ALPHA-OLEFIN CONSUMPTION IN ALL APPLICATIONS, 2000-2010
(thousand tons)

	2000	2001	2002	2003	2004	2005	2010	AAGR% 2000-2010
POLYOLEFIN COMONOMERS								
HDPE								
LLDPE								
VLDPE/Plastomers								
Elastomers								
Polypropylene Multipolymers								
Subtotal								
SURFACTANTS AND INTERMEDIATES								
Detergent Alcohols								
Linear Alkylbenzene								
Alkyldimethylamines								
Alpha-olefin Sulfonates								
Subtotal								
Plasticizer Alcohols								
Synthetic Lubricants								
Synthetic Acids								
Petroleum Additives								
Alkenyl Succinic Anhydride								
Oilfield Chemicals								
Miscellaneous End Uses								
GRAND TOTAL								

Table II-22

NIZHNEKAMSKNEFTEKHIM - ALPHA-OLEFIN
PRODUCTION BY CHAIN LENGTH, 2000
(thousand tons)

Carbon Chain Length	Production	Percent of Total Production
C_4		
C_6		
C_8		
C_{10}		
C_{12}		
C_{14}		
C_{16}		
C_{18}		
C_{20+}		
TOTAL		

Table II-37

SABIC - POTENTIAL ALPHA-OLEFIN CAPACITY
BY CHAIN LENGTH
(thousand tons)

Carbon Chain Length	Capacity	Percent of Total Capacity
C_4		
C_6		
C_8		
C_{10}		
C_{12-18}		
C_{20+}		
TOTAL		

Table III-7

WORLD TOTAL - ALPHA-OLEFIN END USE CONSUMPTION BY CHAIN LENGTH, 2005
(thousand tons)

End Use	C_4	C_6	C_8	C_{10}	C_{12}	C_{14}	C_{16}	C_{18}	C_{20+}	TOTAL
POLYOLEFIN COMONOMERS										
HDPE										
LLDPE										
VLDPE/Plastomers										
Elastomers										
Polypropylene Multipolymers										
Subtotal										
SURFACTANTS AND INTERMEDIATES										
Detergent Alcohols										
Linear Alkylbenzene										
Alkyldimethylamines										
Alpha-olefin Sulfonates										
Subtotal										
Plasticizer Alcohols										
Synthetic Lubricants										
Synthetic Acids										
Petroleum Additives										
Alkenyl Succinic Anhydride										
Oilfield Chemicals										
Miscellaneous End Uses										
GRAND TOTAL										

Table IV-45

WORLD - ALPHA-OLEFIN DEMAND FOR HDPE PRODUCTION BY REGION, 2000-2010
(thousand tons)

	2000	2001	2002	2003	2004	2005	2010	AAGR% 2000-2010
North America								
Latin America								
West Europe								
Asia								
Other Regions								
TOTAL								

Table IV-64

LATIN AMERICA - ALPHA-OLEFIN DEMAND FOR LLDPE[a]
PRODUCTION BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR% 2000-2010
C_4								
C_6								
C_8								
TOTAL								

[a] Excluding VLDPE, Plastomers and Elastomers.

Table V-43

WORLD - ALKYLDIMETHYLAMINE PRODUCTION BY SOURCE, 2000-2010
(thousand tons)

Process	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
from olefin								
from alcohol								
from acid								
TOTAL								

Table V-65

ASIA - AOS PRODUCTION BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_{14}								
C_{16}								
C_{18}								
TOTAL								

Table VI-23

NORTH AMERICA - ALPHA-OLEFIN DEMAND FOR PLASTICIZER RANGE ALCOHOL PRODUCTION BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR% 2000-2010
C_6								
C_8								
C_{10}								
TOTAL								

Table VII-26

WEST EUROPE - ALPHA-OLEFIN DEMAND FOR POLYALPHAOLEFIN PRODUCTION BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_8								
C_{10}								
C_{12}								
TOTAL								

Table VIII-11

NORTH AMERICA - CONSUMPTION OF LINEAR C_5, C_7, AND C_9 ACID FROM ALL SOURCES BY END USE, 2000-2010
(thousand tons)

End Use	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
Synthetic Lubricants								
NOBS Production								
PVB Production								
Other								
TOTAL								

Table IX-15

ASIA - ALPHA-OLEFIN DEMAND FOR PETROLEUM ADDITIVE PRODUCTION BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_{12}								
C_{14}								
C_{16}								
C_{18}								
C_{20+}								
TOTAL								

Table X-11

WEST EUROPE - PRODUCTION OF ALPHA-OLEFIN DERIVED ASA
BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_8								
C_{16}								
C_{18}								
C_{20+}								
TOTAL								

Table XI-7

NORTH AMERICA - INTERNAL AND ALPHA-OLEFIN DEMAND FOR
OILFIELD USES BY CHAIN LENGTH, 2000-2010
(thousand tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_6								
C_8								
C_{10}								
C_{14}								
C_{16}								
C_{18}								
C_{20+}								
TOTAL								

Table XII-1

WORLD - ALPHA-OLEFIN DEMAND FOR MISCELLANEOUS END USES, 2000-2010
(thousand tons)

End Use	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
Metalworking								
Epoxides								
Mercaptans								
HMW Waxes								
Polybutene-1								
Leather								
Amyl Alcohol								
Misc. Other								
TOTAL								

Table XII-15

ASIA - ALPHA-OLEFIN DEMAND FOR METALWORKING FLUIDS
AND ADDITIVES BY CHAIN LENGTH, 2000-2010
(tons)

Chain Length	2000	2001	2002	2003	2004	2005	2010	AAGR % 2000-2010
C_{10}								
C_{12}								
C_{14}								
C_{16}								
C_{18}								
TOTAL								

QUALIFICATIONS AND PERSONNEL

Colin A. Houston & Associates Inc. (CAHA) was founded in 1971 to provide consulting services to the chemical industry worldwide. The primary area of expertise was and continues to be surfactants: raw materials, intermediates, major surfactants, and the surfactant-consuming industries. Other areas of activity include: a variety of industry studies on such topics as oilfield chemicals, detergent builders, ingredients for personal care products, and bleaching agents; engineering studies such as a worldwide study of glycerine evaporation plants with recommendations for improved efficiency; a world study of the state of the art in spray-drying detergents; contracts with the U.S. Government to develop industry effluent guidelines; and business strategy and acquisition studies.

CAHA has been studying alpha-olefin markets for most of its 25 year history. In 1980, CAHA was commissioned to undertake a major proprietary study of North American and West European alpha-olefin markets. In 1988, CAHA published its first world multiclient study on alpha-olefins. A second comprehensive study was completed in 1994. In addition, since 1989 CAHA has published a monthly alpha-olefin newsletter covering pricing and market developments for alpha-olefins and for polyolefins and other end uses for alpha-olefins.

The project team approach utilized by CAHA includes a core of senior and technical professionals augmented by expert consultant associates. The following brief synopses present the staff and consultants who carried out the study, *ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 and ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE*.

Marilyn L. Bradshaw, Vice President,

was the project leader for ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 AND ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE. She is also the author and editor of CAHA's monthly alpha-olefin newsletter, and provides consultation to clients on alpha-olefins. Ms. Bradshaw was also the project leader for POLY-OLEFIN COMONOMERS - WORLD MARKETS, 1995-2005 and ALPHA-OLEFINS - WORLD MARKETS, 1990-2002. Other recent multiclient studies she has directed include U.S. I&I CLEANING PRODUCTS - SURFACTANT SUPPLIERS AND CUSTOMERS, and INDUSTRIAL APPLICATIONS OF SURFACTANTS - NORTH AMERICAN FORECAST TO 2010. Since joining CAHA in 1980, she has also been the project leader for numerous proprietary projects. Ms. Bradshaw has a B.A. from Finch College and an economics and management certificate from Manhattanville College. She is a committee chair and former director of CDMA and a member of ECMRA.

Joel H. Houston, President,

authored the Detergent Alcohols section of ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 AND ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE. In addition, Mr. Houston was the project leader for numerous multiclient studies including HIGHER ALCOHOLS: MARKET FORECAST TO 2010, SURFACTANTS FOR EMERGING MARKETS IN ASIA/PACIFIC, 1996-2010, OPPORTUNITIES IN PERFORMANCE SURFACTANTS IN THE U.S., SURFACTANTS FOR CONSUMER PRODUCTS - NORTH AMERICAN FORECAST TO 2008, and DETERGENT ALKYLATES - WORLD MARKETS, 1992-2005. He has guided CAHA's research in oleochemicals since 1980, and in detergents since 1987. Mr. Houston has extensive experience in projects for consumer products, has presented papers at CMRA, ECMRA and CSMA meetings, and is the editor of CAHA's global detergent newsletter, AGGLOMERATIONS. He is a member of CDMA, AOCS and ASTM.

H. James Bigalow, Senior Research Associate,

authored several sections of ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 AND ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE. In addition he has contributed to numerous multiclient studies including INDUSTRIAL APPLICATIONS OF SURFACTANTS - NORTH AMERICAN FORECAST TO 2010, SURFACTANTS FOR EMERGING MARKETS IN ASIA/PACIFIC, 1995-2010, DETERGENT ALKYLATES - WORLD MARKETS, 1995-2010 and SURFACTANTS FOR CONSUMER PRODUCTS - NORTH AMERICAN FORECAST TO 2008. Mr. Bigalow has also worked on proprietary detergent and surfactant studies. Mr. Bigalow has over 20 years experience as a senior marketing research executive in the chemical industry. He has conducted successful business analysis projects which have included financial evaluations of businesses and acquisition candidates, identifying current and future markets for new and existing products, and product development and usage. Additional experience has included economic and sales forecasting, strategic planning, proprietary market research projects, benchmarking, and product safety. He is a member of the CDMA, the Society of Competitive Intelligence Professionals (SCIP), ACS and the Chemical Marketing and Economics Division of the ACS. Mr. Bigalow holds an M.S. Industrial Administration, Krannert School of Management, Purdue University and a B.S. degree in Chemistry, Denison University.

Mack Hunt, Senior Research Consultant

authored the Synthetic Lubricants, Petroleum Additives and Metalworking Fluids sections of ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 AND ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE. He has over 35 years of experience in the creation, synthesis, development, manufacture and management of fuel and lubricating oil additives. Mr. Hunt is an internationally know expert in motor oil detergents and has authored or co-authored 53 U.S. patents and many foreign patents. He authored U.S. GASOLINE DETERGENT ADDITIVES, 1997-2004 and the U.S. portion of GASOLINE DETERGENT ADDITIVES - UNITED STATES AND WEST EUROPE II, 1992-2002 as well as the Petroleum Additives section of ALPHA-OLEFINS - WORLD MARKETS, 1990-2002. He also conducted a global polyisobutylene market study and proprietary studies of market prospects for

gasoline detergent additives. He holds an A.B. Chemistry, Math and Biology, Nebraska Wesleyan University and an M.S. Organic Chemistry, University of Nebraska.

Dr. Norman F. Brockmeier, President, Oakwood Consulting, Inc.

Dr. Brockmeier wrote the Polyolefin Technology section of ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 AND ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE. He also authored Chapter I - Polyolefin Technology of POLYOLEFIN COMONOMERS - WORLD MARKETS, 1995-2005. In addition to his own consulting practice, Dr. Brockmeier is a chemical engineer with the Process Evaluation Section in the Energy Systems Division at Argonne National Laboratory. He has over 25 years experience in industry, and is recognized as a leading authority on polyolefin process design and economics, recently in the emerging field of metallocene catalysis, with many publications and conference lectures in these areas. He was codesigner of the first Amoco gas-phase manufacturing process for homopolymer polypropylene resin, and part of the design team for a new gas-phase ethylene-propylene copolymer plant in Texas. He has also taught the capstone senior design course at Ohio State University and at the University of Texas. Dr. Brockmeier has a B.S. degree in chemical engineering from the Massachusetts Institute of Technology. He is a member of ACS, AIChE, and the SPE, and is a registered professional engineer.

Michael Tepper, Research Associate

authored several of the Miscellaneous End Use sections of ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 AND ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE. He has conducted research in support of proprietary work and contributes to CAHA's newsletter, *Agglomerations*. Prior to joining CAHA, Mr. Tepper was a mathematician who worked as a senior computing assistant for the University of Chicago, Graduate School of Business while obtaining a Bachelor of Arts degree in Mathematics. His background in statistics and his computer skills were invaluable in developing and implementing the electronic version of the new alpha-olefin study.

COST AND DELIVERY

The price of the study, *ALPHA-OLEFINS - WORLD MARKETS, 2000-2010 and ALPHA-OLEFIN MARKET INTELLIGENCE DATABASE*, is $42,000. One-half of the fee is payable on signing the contract, and the balance is due on receipt of two (2) copies of the final report. Additional copies are available at $300.00 each plus shipping.

Subscribers also have Internet access to the Alpha-Olefin Market Intelligence Database containing all the key tables from the study. A user name and password will be provided upon receipt of the signed contract.

Individual sections of the study may be purchase separately.

HOW TO SUBSCRIBE

To subscribe to the study please complete and sign the detachable contract and mail to the address below. On receipt, we will countersign it and return a photocopy to you for your files along with our invoice for the first half payment.

Colin A. Houston & Associates, Inc.
P.O. Box 427
69 Westchester Ave.
Pound Ridge, NY 10576 USA
Telephone No.: (914) 764-1022
Fax No.: (914) 764-1067
E-Mail: CAHA1@colinhouston.com
http://www.colin-houston.com