Kenneth A. Spencer Award
2010

Presented Oct. 15, 2010
The Kenneth A. Spencer Award
for Outstanding Achievement
in Agricultural and Food Chemistry

Founded 1955

American Chemical Society
Kansas City Section

Endowed by the Kenneth A. and Helen F. Spencer Foundation
Kenneth A. Spencer
(1902 - 1960)
On Dec. 9, 1966, the Kenneth A. and Helen F. Spencer Foundation rededicated the Spencer Award as a memorial to Kenneth A. Spencer “so long as the foundation is in existence and determines the award to be worthy of Mr. Spencer’s name.” In September 1978, the board of directors voted to dissolve the Spencer Foundation. On Jan. 24, 1979, a generous grant from the Spencer Foundation to the Kansas City section of the American Chemical Society guaranteed the perpetuity of the award, which shall henceforth be sponsored and administered by the Kansas City section.

There is no field of human endeavor so enduringly important to man’s welfare as the field of agricultural and food chemistry. Men of vision in agricultural and food chemistry have always labored to improve on life’s necessities by providing more nourishing foods, better shelter and better clothing. If man is to continue to have an improved standard of living, these endeavors must make vigorous progress. Therefore, I have long felt that the efforts in industry, research and education by the chemists who toil for better living through better agriculture and better foods should be rewarded.

This award is respectfully dedicated to Kenneth A. Spencer, a man of vision, ideals and deep humility, who constructively and progressively built his dreams into reality for the betterment of his fellow men.

Kenneth Alfred Spencer was born in Columbus, Kan., Jan. 12, 1902, son of Charles Favor and Clara (Hughes) Spencer. After receiving his preparatory education at Columbus, Pittsburg, Kan., and Culver Military Academy, he attended Cornell University in Ithaca, N. Y., and the University of Kansas in Lawrence, Kan. He graduated from the University of Kansas in 1926 with an A.B. in mining engineering and geology. In January 1927, he and Helen Elizabeth Foresman were married. They had no children.
Starting in 1926 as a junior engineer in construction with his father's company, The Pittsburgh & Midway Coal Mining Company, Spencer successively became chief engineer, general manager, vice president and treasurer and, in 1942, he succeeded his father as president. In 1941, he organized and became president of the Military Chemical Works Inc., a wholly-owned subsidiary of The Pittsburgh & Midway Coal Mining Company. In 1940, Spencer submitted a proposal to the U.S. War Department calling for the development in the Kansas-Oklahoma-Missouri area of a chain of war plants to produce explosives. As a result, he was requested to take on the responsibility of constructing and operating the Jayhawk Ordinance Works near Pittsburg, Kan., to supply wartime demands for anhydrous ammonia and ammonium nitrate. This responsibility he discharged with great distinction.

At the end of the war, The Military Chemical Works Inc. leased the Jayhawk Works for peacetime operation. The name of the corporation was changed to the Spencer Chemical Company and it ceased to be a subsidiary of the coal company.

The Jayhawk Works was purchased outright from the government in 1948. Additional plants were purchased or built in Calumet City, Ill., Henderson, Ky., Vicksburg, Miss., Fort Worth, Texas, and Orange, Texas. Through an international subsidiary company, products of the company were distributed in 43 states and Canada in addition to many foreign countries. Three years after Spencer's death, the stockholders of Spencer Chemical Company voted to accept a favorable offer from Gulf Oil Corporation to purchase the company and in October 1963 the sale was consummated.

Spencer was one of the nine original incorporators of Midwest Research Institute of Kansas City. He served on the boards of several local companies and took an active part in the civic, cultural and political affairs of this area.

On a national level, Spencer served as a member of the Business Advisory Council to the U.S. Secretary of Commerce from 1951
until his death. He was a trustee of Commerce for Economic Development. Also, he was a member of the board of directors of such corporations as American Telephone & Telegraph, Armco Steel Corporation, Goodyear Tire & Rubber Co. and International Harvester Company. Serving with Herbert Hoover, Spencer was a National Associate of Boys Clubs of America.

Spencer was the recipient of numerous honors. The University of Kansas awarded him a citation for outstanding achievement in 1943. In 1957, Baker University in Baldwin, Kan., awarded him an honorary LL.D. degree. Park University in Parkville, Mo., awarded him an honorary D.Sc. degree in 1959. In 1955, the National Association of Soil Conservation Districts presented him with its Distinguished Service Award. He received the Sam Casey Award of the Society for the Advancement of Management in 1957. He was a member of the National Coal Association, American Institute of Mining, Metallurgical and Petroleum Engineers, the American Institute of Chemical Engineers, Alpha Kappa Psi, Sigma Gamma Epsilon, Sigma Tau, Tau Beta Pi and Beta Theta Pi, whose local alumni chapter named him “Man of the Year” in 1959.

The 2010 Kenneth Spencer Award Recipient

Clive A. Henrick, Ph.D.

Presented for the 56th consecutive year by the American Chemical Society Kansas City Section
Biographical Sketch: Clive A. Henrick, Ph.D.

Clive A. Henrick was born in Big Bell in Western Australia in 1941 and attended school in Perth before earning his B.Sc. (Honours) in 1962 and Ph.D. in 1965 at the University of Western Australia. Henrick arrived at Syntex Corporation in 1967 after completing a Queen Elizabeth II fellowship at the University of Sydney. He was one of the original scientists who founded Zoecon Corporation in Palo Alto, CA, a company set up by Syntex in 1968 to develop the novel concept that insect pests could be selectively controlled without environmental problems by using improved mimics of their natural juvenile hormone.

In 1970, Henrick discovered a new class of insect growth regulators that includes methoprene, hydroprene and kinoprene, which were quickly commercialized by Zoecon. He became director of chemical research at Zoecon in 1971 and soon established himself as the company’s leading inventor, eventually earning 170 U.S. patents related to work aimed at developing new environmentally-sound pesticides and inventions in the fields of insect sex pheromones and pyrethroids. Among his inventions is fluvalinate, a pyrethroid remarkably nontoxic to mammals and uniquely nontoxic to honey bee colonies [U.S. Patent 4,411,912 (1983) and related patents].

Methoprene was the first commercial juvenile hormone mimic, and has been used worldwide as the standard juvenoid since its discovery. It was the first insecticide called “biorational,” a term coined in 1974 by Zoecon scientists to describe their approach to environmentally safe insecticides. Henrick is an internationally acknowledged expert on juvenoids and other biorational insect control agents.

Methoprene and hydroprene are remarkably nontoxic to mammals. Methoprene has an acute toxicity to rats of LD50>34,500 mg/kg (NaCl has an LD50 of ~ 5,000 mg/kg). Among methoprene’s many different applications are mosquito, horn fly and flea control, and control of insect pests (including organophosphorus-resistant strains) in stored wheat and other stored products. Methoprene is approved by the World Health Organization for use in drinking
water cisterns, an important means of preventing malaria, and has become widely used in the U.S. to prevent West Nile virus.

Hydroprene is used for long-term cockroach control, and kinoprene is used to control homopterous insect pests such as aphids and whiteflies. Henrick also invented the commercial process used to manufacture methoprene, hydroprene and kinoprene. These products are extraordinarily safe for humans and other non-target organisms, and their commercial success marked the beginning of the use of biorational insecticides for the environmentally-safe selective control of insect pests.

Henrick was also an early leader in the development and application of insect sex pheromones. He began an extensive synthesis program in 1969 and introduced the first large-scale synthesis of orchard insect pheromones such as the codling moth, and in the early 1970s, he worked closely with 1983 National Medal of Science recipient Wendell Roelofs in the identification of additional pheromones.

In the last decade, Henrick has served as consultant and vice president of research and development with Trécé, the company that acquired Zoecon's pheromone business. He is the co-inventor of the recently discovered pear-derived kairomone, the first kairomone that is as active as a pheromone. Trécé is introducing a number of monitoring and mating disruption products based on this kairomone.

Among Henrick’s many career accolades are the 1995 Sandoz Presidential Commendation Award for Creative Research, the 1995 Sandoz Agro Lumiere Award for Innovative Research and the 1979 Hooker Chemical Company's Inventor of the Year Award. He is author or co-author of 73 publications, and holds 179 U.S. patents.

Clive A. Henrick and his wife Solita have five grown children, Arthur, Cathy, Catherine, Clive and Geraldine, plus 11 grandchildren. Their hobbies include listening to classical music and collecting CD's and DVD's; they love growing prize roses, traveling, nature photography, Asian culture and art.
The Kenneth A. Spencer Award

The Kenneth A. Spencer Award (formerly the Charles F. Spencer Award) for outstanding achievement in agricultural and food chemistry is administered by the Kansas City section of the American Chemical Society. The award recognizes meritorious contributions to the field of agricultural and food chemistry. The Kansas City section presents this award as a stimulus to education, research and industrial developments in science and technology to further progress in agricultural and food chemistry. The award shall consist of a medal and an honorarium of $6,000, both of which will be presented at a public meeting sponsored by the Kansas City section of the American Chemical Society. At this meeting, the recipient will deliver an address, preferably upon the subject of the work being recognized by the award. Subsequently, that address will be published.

Eligibility

To be eligible for the award, a candidate must be a citizen of the United States and must have done the work for which he or she qualified as a candidate within the United States. The candidate need not be a member of the American Chemical Society. A candidate’s work, whether it is done in education, industry or research, should have meritoriously contributed to the advancement of agricultural and food chemistry.

Method of Nomination

The Kansas City section shall communicate a request for nominations. A nomination form, instructions and schedule can be downloaded from http://cas.umkc.edu/chem/kcacs. A call for nominations letter will be published in C & E News to notify the membership at large of the American Chemical Society.
Nominations

The nomination shall include a biographical sketch of the nominee containing minimum vital statistics, education and professional experience; a list of published papers and patents; a specific identifying statement of the work on which the nomination is based; and an evaluation and appraisal of the nominee’s accomplishments with special emphasis on the work to be recognized by the award. These nominations must be sent to:

Chair, Kenneth A. Spencer Award Committee
American Chemical Society, Kansas City Section
Department of Chemistry
University of Missouri-Kansas City
5100 Rockhill Road
Kansas City, MO 64110

Selection of Award Winner

The Executive Committee of the Kansas City Section will select a jury of 12 people from the membership at large of the American Chemical Society. The jury will fairly represent industry, education and research and will be selected on a nationwide basis. The jury shall have the prerogative of determining that no award should be made if the qualifications of the candidates do not meet the standards established by the jury.
Winners of the Kenneth A. Spencer Award for Meritorious Achievement in Agricultural and Food Chemistry

1955  Dr. Ralph M. Hixon, Dean of the Graduate College
      Iowa State University

1956  Dr. Conrad A. Elvehjem, President
      University of Wisconsin

1957  Dr. Williams C. Rose, Professor Emeritus
      University of Wisconsin

1958  Dr. E.V. McCollum, Professor Emeritus
      Johns Hopkins University

1959  Dr. Karl Folkers, Executive Director of
      Fundamental Research
      Merck, Sharpe and Dohme Research Laboratories

1960  Dr. C.H. Bailey, Dean and Professor Emeritus
      University of Minnesota

1961  Dr. H.L. Haller, Assistant to Administrator
      Agricultural Research Service
      U.S. Department of Agriculture

1962  Dr. A.K. Balls, Professor Emeritus and Collaborator
      U.S. Department of Agriculture

1963  Dr. C.G. King, Special Lecturer and Associate Director
      Institute of Nutrition Science, Columbia University
      Consultant, Rockefeller Foundation

1964  Dr. Daniel Swern, Senior Research Investigator
      Fels Research Institute, School of Medicine
      Professor of Chemistry
      College of Liberal Arts, Temple University
1965  Dr. Aaron M. Altschul, Chief Research Chemist  
Seed Protein Pioneering Research Laboratory  
U.S. Department of Agriculture

1966  Dr. Robert L. Metcalf, Chairman  
Department of Entomology, Citrus Experimental Station  
University of California

1967  Melville L. Wolfson, Regents’ Professor of Chemistry  
Ohio State University

1968  Dr. Hervert E. Carter, Vice-Chancellor for  
Academic Affairs, University of Illinois

1969  Dr. Edwin T. Mertz, Professor of Biochemistry  
Purdue University

1970  Dr. Lyle D. Goodhue, Former Technical Manager  
Phillips Petroleum Company

1971  Dr. William J. Darby, President  
The Nutrition Foundation, Inc.  
Professor of Biochemistry in Nutrition  
Vanderbilt University School of Medicine

1972  Dr. Emil M. Mrak, Chancellor Emeritus  
University of California

1973  Dr. Esmond E. Snell, Professor of Biochemistry  
University of California

1974  Dr. Roy L. Whistler, Chairman  
Institute for Agricultural Utilization Research  
and Professor of Biochemistry, Purdue University

1975  Dr. Thomas Hughes Jukes, Professor in Residence  
Medical Physics, University of California

1976  Dr. E. Irvine Liener, Professor of Biochemistry  
University of Minnesota
1977  Dr. N. Edward Tolbert, Professor of Biochemistry  
       Michigan State University

1978  Dr. John F. Casida, Professor of Biochemistry  
       University of California

1979  Dr. Charles W. Gehrke, Professor of Biochemistry  
       University of Missouri

1980  Dr. George K. Davis  
       Institute of Food and Agricultural Chemistry  
       University of Florida

1981  Dr. John Speziale, Former Director, Research  
       Monsanto Agricultural Products Co.

1982  Dr. Howard L. Bachrach, Research Chemist  
       Plum Island Animal Disease Center (USDA)

1983  Dr. Peter Albersheim, Professor of Biochemistry and of  
       Molecular, Cellular and Development biology  
       University of Colorado

1984  Dr. Richard H. Hageman, Professor of Agronomy  
       University of Illinois

1985  Dr. Bruce Nathan Ames, Professor of Biochemistry  
       and Department Chairman  
       University of California

1986  Dr. John M. Brenner, Curtiss Distinguished Professor in  
       Agriculture, Professor of Agronomy and Biochemistry  
       Iowa State University

1987  Dr. Hector F. Deluca, Professor of Biochemistry  
       University of Wisconsin

1988  Dr. Boyd L. O’Dell, Professor Emeritus  
       Department of Agricultural Chemistry  
       University of Missouri
1989 Dr. Robert H. Burris, Professor Emeritus  
Department of Biochemistry  
University of Wisconsin

1990 Dr. John E. Kinsella, Dean of the College of Agricultural  
and Environmental Sciences  
University of California

1991 Dr. George Levitt, Research Associate  
Agricultural Products, DuPont Experimental Station

1992 Dr. Clarence A. Ryan Jr., Charlotte Y. Martin Professor  
Institute of Biological Chemistry  
Washington State University

1993 Dr. Bruce Hammock, Professor  
Departments of Entomology and  
Environmental Toxicology  
University of California

1994 Dr. William S. Bowers, Professor  
Department of Entomology and Chemical Ecology  
University of Arizona

1995 Dr. Robert T. Fraley, President  
Ceregen, A Unit of Monsanto Company

1996 Dr. James N. BeMiller, Professor and Director  
Whistler Center for Carbohydrate Research  
Purdue University

1997 Dr. William M. Doane  
U.S. Department of Agriculture

1998 Dr. Mendel Friedman  
U.S. Department of Agriculture

1999 Dr. James A. Sikorski  
Science Fellow  
Monsanto Company
2000  **Dr. Wendell Roelofs**  
Entomology Department  
Cornell University

2001  **Dr. James H. Tumlinson**  
U.S. Department of Agriculture

2002  **Dr. Daniel W. Armstrong**  
Caldwell Professor of Chemistry  
Iowa State University

2003  **Dr. Eric Block**  
Distinguished Professor of Chemistry  
University at Albany, State University of New York

2004  **Dr. Steven D. Aust**  
Department of Chemistry and Biochemistry  
Utah State University

2005  **Dr. Don R. Baker**  
Berkeley Discovery Inc.  
Orinda, Calif.

2006  **Dr. Russel J. Molyneux**  
Western Regional Research Center  
United States Department of Agriculture

2007  **Dr. David A. Schooley**  
Department of Chemistry  
University of Nevada - Reno

2008  **Dr. Ron G. Buttery**  
U.S. Department of Agriculture  
Western Regional Research Center

2009  **Dr. George P. Lahm**  
Principal Research Investigator - Dupont Fellow  
DuPont