

From the August 2009 Issue

## Industry loses Katzen, a cellulosic ethanol visionary

by Hope Deutscher

*Report posted July 16, 2009, at 1:13 p.m. CST*

On July 12, Dr. Raphael "Ray" Katzen passed away at the age of 93. Katzen was an ethanol pioneer who dedicated his life to competitively producing cellulosic ethanol from a variety of feedstock sources.

While working at a defense plant under federal government contract during World War II, Katzen saw the potential for cellulosic ethanol technologies. In 1955, he founded Raphael Katzen Associates International, a U.S.-based technology company with projects all across the globe. In the 1970s, when the U.S. DOE was interested in helping to develop a U.S. fuel ethanol industry based on corn, the department turned to Katzen and his company.

In 1997, Katzen and his wife Selma sold their interest in his company, which is now called Katzen International Inc.; they started a small but active consulting company in Bonita Springs, Fla., where they resided at the time of his death.

Katzen International includes a group of highly experienced chemical and mechanical engineers, biologists and designers who are active in a wide variety of chemical and related process industries. Throughout the years, Katzen International has helped build and design about 140 major ethanol plants in 34 countries.

Phil Madson serves as Katzen International's president. In an interview with EPM, he shared memories of Katzen, who he called his mentor. "I joined this company in 1981 and very quickly came to realize that Ray Katzen's vision of a non-hydrocarbon world was right on track; it was just where it should have been and I've never looked back, never," Madson said. "His vision was very pure and very honorable. He visualized and taught that vision of where we are today in the world where ethanol from starches, grains and sugars are the first major step; he envisioned the size of what the industry could be and the progress that it would make and the technological breakthroughs that would occur, he visualized all of those and in fact, listening to many of his stories over the years, he actually visualized this in the 1940s. Where the world is today with ethanol was very clear in his mind in the 1940s."

Through economic ups and downs, changes in the technical and scientific community, Katzen never wavered from his target goal of producing 20 billion gallons of cellulosic ethanol by 2020.

"I think he has challenged more people in this field – scientists, engineers, owners, bankers, lawyers, and government officials – than any other one person has ever challenged the industry," Madson recalled. "When Ray would go to conferences, he was always the first to the microphone after a speech to raise the really challenging question. And when you would watch this in various settings – from the Fuel Ethanol Workshop to the Society for Industrial Biology that is dominated by true dedicated scientists – he challenged everyone with the same amount of vigor and he didn't challenge them to accept his ideas but he challenged them to be very sure and very clear that their science was true, that their technology was true, that their economics were valid."

Katzen International was notified Monday morning of Katzen's passing. By Tuesday morning, Madson says the company had received many e-mails and calls from around the world expressing sympathy.

"He touched a lot of people...and he left some very, very big shoes to be filled by those of us who have tried to follow the path that he first visualized and created for our company," Madson said. "We believe, without any question, the basic principles that he believed in and created the company and I think one of the reasons of our longevity is that we do not challenge or alter the basic principles behind the creation of the company's original principals."

Katzen has received a number of awards throughout the years, including the inaugural Raphael Katzen Award by the Symposium on Biotechnology for Fuels and Chemicals, which recognizes outstanding individuals who have greatly contributed to the commercialization of biotechnology to produce fuels and chemicals.

"He will be known not just for his achievements, the ones that have his name on it, but he will be known for the achievements of hundreds, if not thousands of other people, who learned from him and accepted the challenge he presented," he added.

In later years, Katzen was retained as a consultant by Abengoa Bioenergy and provided the designs for its York, Neb., cellulosic ethanol pilot-scale plant.

"Ray Katzen is well known to the ethanol industry for the technology he commercialized and the passion he expressed when talking about the evolution of the worldwide ethanol industry," Renewable Fuels Association President Bob Dinneen said. "While he could have deservedly rested on his laurels in retirement, Ray never looked backwards; he always looked forward, challenging the industry to always work toward improvements and innovation in technology. Accompanied by his lovely wife, Selma, Ray was a presence at virtually every gathering of the industry, poised to question and comment, assuring the

industry kept its eye on the vast potential of cellulose. Ray Katzen will be sorely missed by a grateful industry, but his legacy of technology innovation and his commitment to the future will endure.”

In June, Ray and Selma Katzen celebrated their 71st wedding anniversary. They have one daughter, three grandchildren and seven great-grandchildren.

A graveside service will be held in Cincinnati, Ohio, on July 18. For more information contact Debbie with Katzen International at 513-351-7500.

EPM wrote about Katzen and his work several times over the years. In February 2006, Ron Kotrba interviewed Katzen and wrote a feature titled [“The Project of a Lifetime.”](#)

Kotrba shared his memories about Katzen in his weekly Biodiesel Magazine blog. Click here to read [“Goodbye Ray.”](#)

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