

Annual eBeam Workshop Gives Attendees Access to Technology

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The National Center for Electron Beam Research at Texas A&M University in College Station hosted its seventh annual workshop recently to address the needs of the food, phytosanitary, agribusiness, cosmetic and pharmaceutical industries.

More than 30 attendees from five countries, including China, **Mexico**, France, Canada and Switzerland, attended the 2016 workshop.

Electron Beam, or eBeam, technology uses electrons from commercial electricity for a variety of purposes that could have paradigm-shifting applications in numerous areas, according to the center's website. Some of these include public health, agriculture, medicine, environment and defense and aerospace industries.

The center's week-long workshop gave people interested in the technology access and knowledge about the mechanics and possible applications. Participants attended morning lectures and afternoon labs where they were given hands-on instruction.

Dr. Suresh Pillai, director of the center's eBeam food research, said the annual workshop is a chance to inform entrepreneurs and industry professionals about the practical commercial uses of eBeam technology.

"There is a great deal of interest about the technology because much of the existing technology is limited," he said.



David Dominguez, of Becton-Dickinson, a medical device company based in New Jersey (center), participates in a dose mapping trial at the National Center for Electron Beam Research at Texas A&M University in College Station seventh annual workshop as center staff look on. (Texas A&M AgriLife Extension photo by Adam Russell)

Electron beam technology has been used in the United States for decades by plastic manufacturers and food producers to medical providers and pharmaceutical companies. Hospitals use it to sterilize medical equipment. Low doses can delay maturation in fruits and vegetables for producers who export products. High doses can harden plastics and make them more durable. The diversity of uses has increased its interest globally, Pillai said, noting eBeam technology is used extensively in China and is growing rapidly in India.

Pillai said there is growing interest in the technologies application in various fields and industry because it can be plugged into a standard electrical outlet and used.

Other technology, such as Cobalt 60, which is used in the medical industry to sterilize equipment, is becoming cost prohibitive, produces radioactive waste and could be a security concern because the material could be used for harm.

Mickey Speakmon, the eBeam facility manager, said much of the technology's use is focused in the medical industry. The food industry has eased into using the technology because marketing "irradiated" products can be tricky.

"People associate that word with radiation and isotopes but it's 100 percent electrons and 100 percent electrical," he said. "It's controllable and can't be used as a detrimental object, but getting that across to consumers with take education about the technology."

David Dominguez, of Becton-Dickinson, a medical device company based in New Jersey, attended the workshop and said his company is looking at the feasibility of eBeam technology for sterilization of its products. He said the workshop had been very informative about the process.

There are eight ongoing programs at the eBeam center that focus on applications such as sterilization and pasteurization, vaccine development, environmental treatment, phytosanitary as well as consumers and marketing.

Studies at the center have shown the technology eliminates a variety of pathogens in a variety of foods effectively, and Speakmon said it is the premier emerging

technology in the fight against pathogens such as E. coli and salmonella. One center study showed eBeam treated tomatoes' appearance and odor were preferred by consumers while treated grapes' flavor was preferred over non-treated.

Attendees were given a taste-test at the workshop – slices of treated and untreated hamburger patties. The eBeam patties were more flavorful and moist by many accounts.

Additionally, Dominguez and other attendees participated in a dose-mapping trial on various medical supplies, from latex gloves to tracheal tubes, to determine the distribution of doses on a medical device and to demonstrate how eBeam doses, if not adequately optimized, could have an adverse effect on the product, such as change its color or make it brittle.

Dominguez said the technology could make his company's sterilization operations more efficient and effective.

"It's definitely something we're interested in," Dominguez said.

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