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DuPont Tate & Lyle celebrates biotech ingredient milestone



By Deanna Utroske
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Cosmetics Design Senior Correspondent Deanna Utroske on tour at the DuPont Tate & Lyle facility in Tennessee

Related tags: Propanediol, DuPont Tate & Lyle, Zemea, Biotech, Bio-based, Ingredient

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The two companies formed a joint venture ten years ago and this month in Tennessee brought together partners, distributors, customers, local officials, employees, and the press to mark the anniversary and imagine the future.

Specialty ingredients made at the company's facility in Loudon, Tennessee, find their way into textiles and carpeting, food flavoring, personal care, and more. Which is precisely the scope of industry influence that the team set out to wield in 2007. Speaking at the 10th anniversary event, Todd Sutton, president of the DuPont Tate & Lyle Bio Products Company, acknowledged that "when we began, our mission was to play a significant role in this green economy."

The plant

A highlight of the 10th anniversary celebration was a full tour of the DuPont Tate & Lyle facility.



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Guests, including Cosmetics Design, were shown how dextrose arrives from the adjacent Tate & Lyle site, where the ingredient production, monitoring, and quality control take place, as well as where the intermediate ingredient produced is contained and shipped to customers. Tate & Lyle on its own has been in operation on the Tennessee site for some 35 years.

On the surface, it's a very conventional chemical production facility complete with industrial-sized manufacturing capabilities, tidy laboratories, and a fraternal control room—all of which are apparently maintained and operated up to OSHA standards. Indeed the site is so well run that several speakers boasted about how the DuPont Tate & Lyle facility has gone for its full 10 years of operation without a single incident.

This may be why Michael A. Saltzberg, global business director for biomaterials at DuPont Industrial Biosciences, used his time at the podium to thank the dedicated employees of DuPont Tate & Lyle. *"Bringing a new technology to market is one of the hardest things to do,"* Saltzberg acknowledged, adding that *"people overcome obstacles."* And as he sees it, *"10 years is really just the beginning."*

The process

The bio mechanism behind the company's production of propanediol, or as it's known in the personal care industry, Zemea, is a bacteria; one that has been engineered or modified to generate the molecule in question.

Dextrose, extracted from corn is fed to the bacteria in carefully regulated fermentation tanks. The facility is in fact home to the largest known industrial aerobic fermenters. The waste from this process is shuttled off to the University of Tennessee extension office, where agricultural professionals are experimenting to determine its viability as a crop fertilizer.

After fermentation, the material of value goes through separation, then through filtration (courtesy of membrane technology from Hydranautics, a Nittro Group Company), and finally through four phases of distillation to become virtually pure propanediol.

The product

So far as the personal care market is concerned, Zemea is the resulting intermediate, a three-carbon diol that is the building block for many things.

Steve Schnittger, global vice president of microbiology for Estée Lauder, spoke at the celebration by way of video. He confirmed that the DuPont Tate & Lyle bio-based ingredient known as Zemea is used in 2%, 4%, or 5% concentration in formulas across all brands in his company's cosmetic and personal care product portfolio. In general, he said, the ingredient was used to replace butylene glycol in existing formulations.

On the DuPont Tate & Lyle side of it, Sutton tells Cosmetics Design that a *"significant percentage of the company's business"* is done with the cosmetics and personal care industry—with Estée Lauder and other well-regarded beauty brands.

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The image is a promotional banner for the 'in-cosmetics® global' event. It features a stylized profile of a human head in shades of pink and purple, filled with various chemical structures and molecular models. The text 'in-cosmetics® global' is at the top in a bold, pink font. Below it, 'London • ExCeL • 4-6 April 2017' is written in a smaller, black font. At the bottom, a pink banner contains the text 'Visit the global launchpad of personal care innovation' in white.

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