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EASTMAN TRITAN

Returning to her desk after lunch, Debbie Crain, operations director at Eastman Chemical Company (Eastman), glanced at her calendar. It was June 15. Only four months until the 2007 International K Trade Fair, or "K show," the plastics industry's leading trade event—which occurred only once every three years—at which Eastman, a global specialty chemicals company based in Kingsport, Tennessee, was going to launch Tritan, a new copolyester and Eastman's latest specialty plastic.

Crain was in charge of the operations and launch phase for Tritan, a product Eastman was excited about because it demonstrated heat resistance and durability properties that might allow Eastman to compete in the lucrative polycarbonate plastics market. But Crain was nervous because Eastman had not yet decided which Tritan applications it would announce at the show. Given Eastman's current limited capacity to produce Tritan, it was important to be very selective in choosing its initial entrant markets.

Crain's Outlook calendar chimed, reminding her that it was time to meet with the specialty plastics team: Lucian Boldea, business unit director; Burt Capel, sales director; and Chris Killian, technology director. In this meeting, the Tritan leadership team was preparing recommendations for Eastman's top executives regarding market entrance, pricing, and capacity allocation. As she gathered her files for the meeting, she reflected on the importance of the team's recommendations, which could change Eastman's position within the plastics industry.

Chemical Industry

Chemical manufacturing was the largest U.S. manufacturing sector; total revenues in 2006 were $709 billion. The industry produced a wide array of materials ranging from consumer products such as pharmaceuticals and detergents to commodity chemicals sold to manufacturers of plastics, rubber, pesticides, textiles, and petroleum. Major U.S. players included Dow Chemical, DuPont, and ExxonMobil.

This field-based case was prepared by Allison Elias, Research Associate; Tim Kraft, Assistant Professor of Business Administration; and Gal Raz, Associate Professor of Business Administration, with support from Darden's Initiative for Business in Society (IBiS). Some product names have been disguised. The case was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation.

Because the chemical industry was so large, competition varied depending on product line and factors such as distribution costs, raw material availability, and technology requirements. Company performance depended less on conventional value-creation factors (e.g., scale, geography, market position, or focus) than on product portfolio. Diversified companies had performed well in the past, so Eastman and other companies avoided relying too heavily on sales from a single segment.[1] But creating new products and expanding into new markets required extensive up-front investments, and the R&D process to develop new chemicals could be lengthy, costly, and highly uncertain. In addition, manufacturing efficiency necessitated large plants and complex technology, so the industry was capital-intensive.

Eastman Chemical Company

In 1892, George Eastman founded Eastman Kodak Company (Kodak), which went on to revolutionize the photography industry. When World War I reduced the supply of raw materials available for import from Europe, he sought domestic chemical sources; in 1920, he bought a wood-distillation plant in Kingsport, Tennessee, ensuring that the firm would never lack materials such as methanol and acetone.

Eastman Chemical, as the new division became known, grew rapidly. In a little more than a decade, its sales to outside customers exceeded the value of materials it was supplying to Kodak.[2] By 1993, Eastman Chemical's internal sales to Kodak accounted for only 8% of the chemical division's total revenue. While Eastman Chemical was thriving, Kodak was suffering from low profit and high debt; as part of a corporate restructuring plan, Kodak spun off Eastman Chemical, which became a publicly traded company in January 1994. Eastman continued to grow over the following decade, and by 2005, its annual revenue was $7.1 billion (see **Exhibit 1** for Eastman's top markets by revenue); it employed 12,000 people and had expanded to 17 manufacturing sites in 10 countries.[3]

Eastman's Specialty Plastics

Two years after going public, Eastman suffered its first decline in sales growth in 11 years. This shift was due in part to its position as the world's largest producer of polyethylene terephthalate (PET) resin, a key component of plastic soda bottles. Throughout the industry, falling raw material prices caused PET overproduction and oversupply, resulting in a decrease in PET sales. Given the volatility of PET prices, Eastman's CEO, Earnest W. Deavenport Jr., told

[1] Thomas Augat, Eric Bartels, and Florian Budde, "Multiple Choice for the Chemical Industry," *McKinsey Quarterly* 3 (2003): 126–36.

[2] "Eastman History Timeline," http://www.eastman.com/Company/About_Eastman/History/ (accessed January 9, 2013); Bobby Duncan, "Eastman Chemical Company," Hoovers, Inc.

[3] Eastman annual report, 2005.

shareholders that his company was looking for "the right mix…that will help us achieve a more stable and predictable earnings pattern."[4] That meant that Eastman needed to further diversify its portfolio by investing more heavily in its copolyester lines.[5]

Copolyesters had higher initial R&D costs but, as specialized plastics, promised more stable profit margins.[6] Eastman already had copolyesters that were used to manufacture consumer packaging, appliance parts, display signs, building materials, and medical goods.[7] "Eastman was developing its copolyester platform in line with changing consumer demands," explained Boldea. Public interest in environmental sustainability meant that consumers were shifting from disposable to reusable bags, containers, and bottles. In addition, consumers were favoring aesthetically pleasing plastics that could remain visible in central living spaces.

In the late 1990s, Eastman copolyesters were competing with materials such as acrylic and vinyl, gaining market share through better performance. Yet Eastman wanted to gain traction in the polycarbonate market. Polycarbonate had been a common ingredient in many industrial and consumer plastics including optical media (CDs and DVDs), business equipment, and automotive parts (see **Exhibit 2**). Among all plastic resins, it ranked second in U.S. market demand.[8] Large global companies, including Bayer MaterialScience, General Electric Plastics (acquired by SABIC in 2007), and Dow Chemical, had produced much of the world's supply.[9]

Manufacturers used polycarbonate because it was cheap, clear, and fairly durable, but Eastman knew that in some applications copolyesters could outperform and potentially replace polycarbonates. Plastics manufacturers were reporting consumer dissatisfaction with polycarbonate food and drink containers, which over time could become hazy and crack, especially after repeated exposure to dishwasher soap. Copolyesters retained greater clarity and strength after repeated use but were less resistant to heat; Eastman estimated that if it could develop a copolyester with a higher glass transition (T_g) temperature—a measure of heat resistance—it could acquire almost 20% of the $1.8 billion global polycarbonate market at a premium price.[10] In the specialty plastics segment, this goal became one of the company's "holy grails."

[4] Eastman annual report, 1996.

[5] Copolyesters were one type of polymer. Polymers, composed of repeating chains of monomers, included a large group of natural and synthetic compounds. Copolyesters, polycarbonate, and PET are examples of polymers that were used to manufacture plastic.

[6] Richard O'Reilly, "Chemicals," *Standard & Poor's Industry Surveys*, July 12, 2007.

[7] Eastman annual report, 2002.

[8] The Freedonia Group, "Engineering Plastics: U.S. Industry Study with Forecasts," Study #2106, October 2006.

[9] "Product Focus: Polycarbonate," *Chemical Week* (February 22/March 1, 2006): 27.

[10] Burt Capel, Eastman Chemical Company, "HTM Corporate Growth Platform," presentation, July 28, 2005.