



## Twinkie, deconstructed

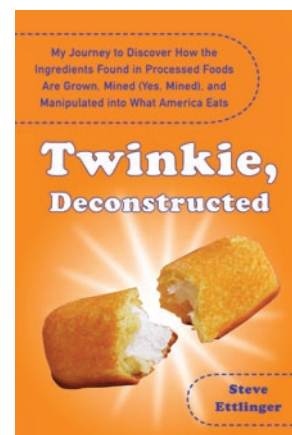
*My journey to discover how the ingredients found in processed foods are grown, mined (yes, mined), and manipulated into what America eats*

Steve Ettlinger

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In 2100, the opening of President Clinton's National Millennium Time Capsule will reveal what best reflected the USA at the close of the 20th century. Alongside Louis Armstrong's trumpet, a piece of the Berlin Wall, and a CD containing the sequence of the human genome lies another cultural icon — the Twinkie. In *Twinkie, deconstructed*, Steve Ettlinger investigates the molecular slicing and dicing behind today's \$3.2 trillion processed food industry by tracing the sometimes surprising origins of the Twinkie's 39 ingredients. As he plainly states in the opening chapter, "If you are what you eat, then it behooves you to know exactly what you are eating."

This humble snack cake was born in the Depression when James Dewar of Chicago's Continental Bakery Co. sought an alternate use for shortcake pans that lay idle when not needed to bake the summertime treat Little Shortbread Fingers. The cakes he baked in these pans were filled with banana cream and named after an advertisement for "Twinkle-Toe" shoes. A banana shortage during World War II forced a change to vanilla filling, and over 60 years later the look, texture, and taste of the Twinkie remains largely unchanged, unlike the recipe.

Processed foods have been part of our food chain since the times of drying, salting, or smoking of food to extend its shelf life. The Twinkie's initial shelf life, just 2–3 days, was extended thanks to postwar innovation that saw the chemical industry flourish. Owing to a recipe that contains no dairy-based ingredients, which can quickly spoil, the Twinkie's average shelf life now approximates 25 days (not years, as urban legend claims), making one question the rationale for its inclusion in Clinton's 100-year time capsule.

Chapter by chapter, Ettlinger examines the Twinkie ingredient list in order of promi-

nence on the label. For consumers who have pondered what polysorbate 60, cellulose gum, and high-fructose corn syrup (HFCS) actually are, where they come from, and why they appear in our food, this light-hearted and entertaining tome dishes up some answers. Ettlinger begins in the wheat flour fields of Maryland, where the Twinkie's main ingredient is processed, bleached, and vitamin enriched. Sugar, comprising almost half the Twinkie's weight, provides color, retains moisture, and adds flavor. Eight of the 39 ingredients are made from corn, of which corn syrup and HFCS represent the third and fifth ingredients (water is the fourth). Corn thickeners keep the cake springy, while the aforementioned polysorbate 60, cellulose gum, and mono- and diglycerides serve as emulsifiers in place of real cream and eggs. Sixteen-hundred feet below ground in Wyoming, phosphate rock, trona, and calcium-rich limestone are mined to provide leavening agents. Artificial flavors (butter and vanillin) and colors (Yellow No. 5 and Red No. 40) round out the major ingredients and give the Twinkie its sweet vanilla cream taste and dark orange color. Much controversy surrounds the use of HFCS as a low-cost sugar alternative. This sweetener aids browning during baking, soaks up moisture, and retards bacterial growth. However, some reports suggest that HFCS negatively affects triglyceride and insulin levels and even propose a link to obesity and diabetes. That a direct link exists is unclear. Regardless, society today consumes more processed foods, in larger portions, than ever before.

Ettlinger successfully translates an appreciation for the considerable degree of automation of the food processing industry. The large, nondescript buildings of unnamed chemical conglomerates that he tours are likened to industrial cafes; engineers and "fla-

vorists" akin to chefs keep a watchful eye over a whirring, high-speed jungle of centrifuges, silos, and stainless steel pipes. It is here that ingredients are crushed, refined, fractionated, dried, burned, fermented, aspirated, isomerized, and deodorized. One questions why such enormous effort is expended toward creating artificial replacements for relatively unprocessed foods. It is of course to meet an increasing demand for more food choices with longer shelf life and better taste and texture, all for less money. Quite unexpectedly, many of these same ingredients can also be found in plastics, adhesives, paint, fire retardants, antifreeze, concrete, and explosives. Yum. Yet somehow (a well-guarded proprietary secret, Ettlinger muses), via a marriage with toxic and volatile compounds like chlorine gas, lye, and liquid hexane, this 150-calorie delectable delight is formed.

Beyond a superficial journey to the delicious center of one of America's favorite snacks, *Twinkie, deconstructed* makes an insightful link between the Twinkie and global commerce. With annual sales of approximately \$200 million, Twinkies are made from 14 of the top 20 chemicals manufactured in the USA (excluding salt and petroleum), and many of its ingredients are also sourced from countries including China, the Dominican Republic, Germany, Japan, Malaysia, Mexico, and Switzerland. As Ettlinger draws to a close, he makes the point that, globally, different marketplace policies exist regarding the use of genetically modified foods and trans fats — the latter believed to contribute to increased cholesterol levels. As the boundaries of what societies find acceptable in the food chain continue to change and we give more thought to food miles and the carbon footprint of what we consume, this book provides some interesting food for thought (pun intended).