



New York to Trans Fats: You're Out!

Susan Okie, M.D.

Ferrara Café in Manhattan's Little Italy is a century-old bakery steeped in tradition, but executive pastry chef Dennis Canciello has recently been tinkering with the recipes of two of the café's sig-

nature pastries: cheesecake and cannoli. Like other cooks in the city's restaurants, bakeries, and fast-food outlets, Canciello faces an impending deadline for conforming to an unusual mandate from the New York City Board of Health. Beginning July 1, 2007, most foods prepared in the city's 22,000 restaurants will no longer be permitted to contain more than half a gram per serving of artificial trans fats — a type of fat, found chiefly in partially hydrogenated vegetable oils used for frying and baking, in shortenings, and in margarines, that has more unhealthy effects on blood lipids than any other kind. Bakers, as well as purveyors of deep-fried cake or dough products such as doughnuts, for whom finding a suitable alternative is particularly challenging, have until July 1,

2008, to stop using such ingredients. Faced with predictions that banishing artificial trans fats from restaurant foods would reduce the rate of heart attacks and save the lives of several hundred New Yorkers annually, the powerful board of health voted unanimously last December to eliminate what health commissioner Thomas Frieden calls a "hazardous substance" from the city's cuisine. "The sweet spot of public health," Frieden told me, "is when you do something that makes the default setting a healthy choice."

The ingredient that Canciello has decided to substitute — palm oil — is a highly saturated fat and by no means healthful, but he says he needs a fat that is semi-solid at room temperature to fry the crisp pastry tubes for his ricotta-filled cannoli and bake the

firm base of his cheesecake. "You can't fry in an unsaturated fat," said Canciello, who began working in the café three decades ago, when he was 14. "The food industry is a constant cycle," he said. Twenty years ago, "I baked with saturated fat, so I'm just going to go back."

Cooks and managers at other Manhattan eateries offered varied responses to the new rules. At the Tick Tock Diner near Madison Square Garden (motto: "Eat Heavy"), manager Tommy Lazarakis said his cooks would comply but added, "I don't know what the oil will be — whatever the board of health wants." At Papaya Dog on West 4th Street, the two cooks on duty gave me blank looks when asked whether they would be switching to a new oil for frying french fries. At the upscale Magnolia Bakery on Bleecker Street, popular for cupcakes, a manager said, "Thank God, it doesn't affect us, because we only use butter."

The health department will offer education and technical assis-

tance to cooks to encourage them to switch to polyunsaturated or monounsaturated oils, and restaurant inspectors will be trained to enforce the rules by examining ingredient lists on oil and shortening labels. Frieden says he isn't worried that a large-scale increase in the use of saturated fats will negate the beneficial effects of reducing trans fat intake. "Of course we want people to change to healthier oils, and it's easy, for most food items, to convert" to alternatives like canola oil, olive oil, or soy oil, he said. "But trans fat is clearly worse than saturated. Even if you switch to suet, you do better."

New York is not the first jurisdiction to legally limit the use of artificial trans fats — Denmark did so in 2004 (see timeline) — but the city's move has already had a national impact: its deadline lit a fire under the country's two largest restaurant chains, McDonald's and Burger King, which had been moving slowly on their promise to eliminate artificial trans fats from their menus. McDonald's spokesman Walt Riker confirmed that, for frying, the

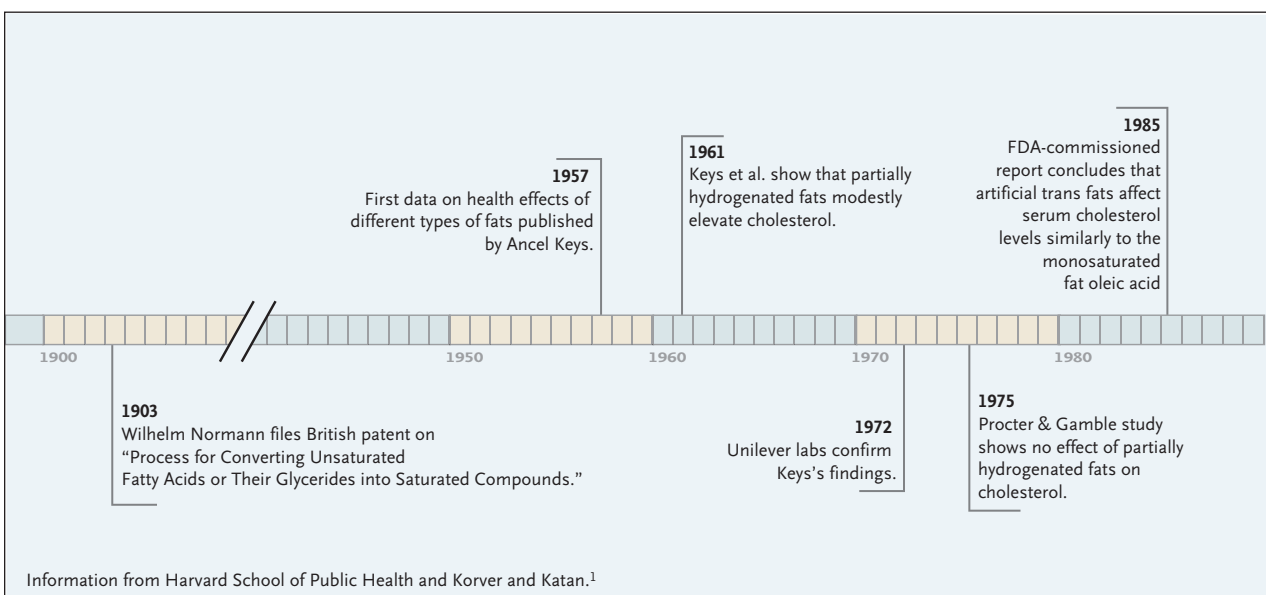
company will switch to a blend of nonhydrogenated soybean, corn, and canola oils in its New York City locations by July 1 and that it hopes to complete a nationwide changeover to eliminate oil and shortening containing artificial trans fats in its 13,000 restaurants by the end of 2008. As of mid-March, about 3500 had already made the switch.

"New York is critical," said Michael Jacobson, executive director of the Center for Science in the Public Interest (CSPI), a Washington-based advocacy group that has been urging restaurants and manufacturers to eschew artificial trans fats since the early 1990s. "What [the restaurant chains] do in New York, they're going to do throughout the United States." New York, home to 3% of the U.S. population, is also an economic and cultural trendsetter. The health board's decision has received widespread media coverage and spawned similar efforts in other cities, counties, and states.

Trans fats — fats containing fatty acids with at least one double bond in the trans configuration (see diagram) — make up

2.6% of the average American's daily calorie intake, or about 6 g daily for a person consuming 2000 calories per day. About 80% of calories from trans fats come from partially hydrogenated vegetable oils and 20% from naturally occurring trans fats in dairy products and meats (see bar graph). Partially hydrogenated vegetable oils were developed early in the 20th century as a cheaper alternative to animal fats; they are stable during frying, have a long shelf life, and can be used to make margarine or shortening with a consistency, melting point, and "mouth feel" similar to those of butter. In the 1980s, doctors and nutrition experts concerned about the role of dietary saturated fat in increasing cardiac risk urged consumers to switch from butter and animal fat to margarine, and CSPI led a successful campaign to get McDonald's to switch from beef tallow to vegetable oil for frying its french fries.

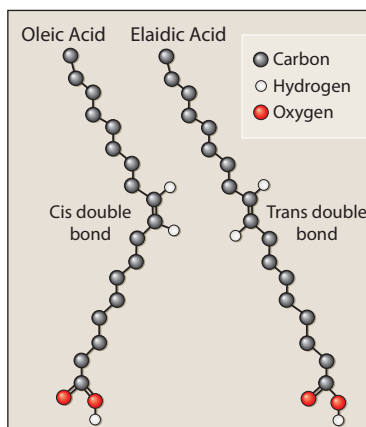
Meanwhile, however, studies began to raise concerns about the health effects of artificial trans fats, and by the 1990s, both controlled feeding trials and prospec-



tive epidemiologic studies had implicated them in causing undesirable changes in blood lipid levels and raising cardiac risk. Increasing the dietary intake of either trans fats or saturated fats raises the serum level of low-density lipoprotein (LDL) cholesterol — but increasing trans fat intake also reduces the serum level of high-density lipoprotein (HDL) cholesterol, resulting in a bigger increase in the LDL:HDL ratio. On the basis of this effect alone, trans fat intake has been estimated to cause about 6% of coronary events in the United States, including about 27,000 deaths per year nationwide and about 1400 per year in New York City. Since New Yorkers, like other Americans, get roughly one third of their daily calories from restaurant food, Frieden estimates that eliminating artificial trans fats from the city's menus should save between 200 and 500 lives per year, depending on the mix of fats that are substituted.

The benefits could be considerably greater. Prospective cohort studies suggest that a high trans fat intake is associated with a

much greater increase in heart disease rates than would be expected from the fats' effect on serum lipids alone, and trans fats are thought to contribute to the



Cis and Trans Double Bonds.

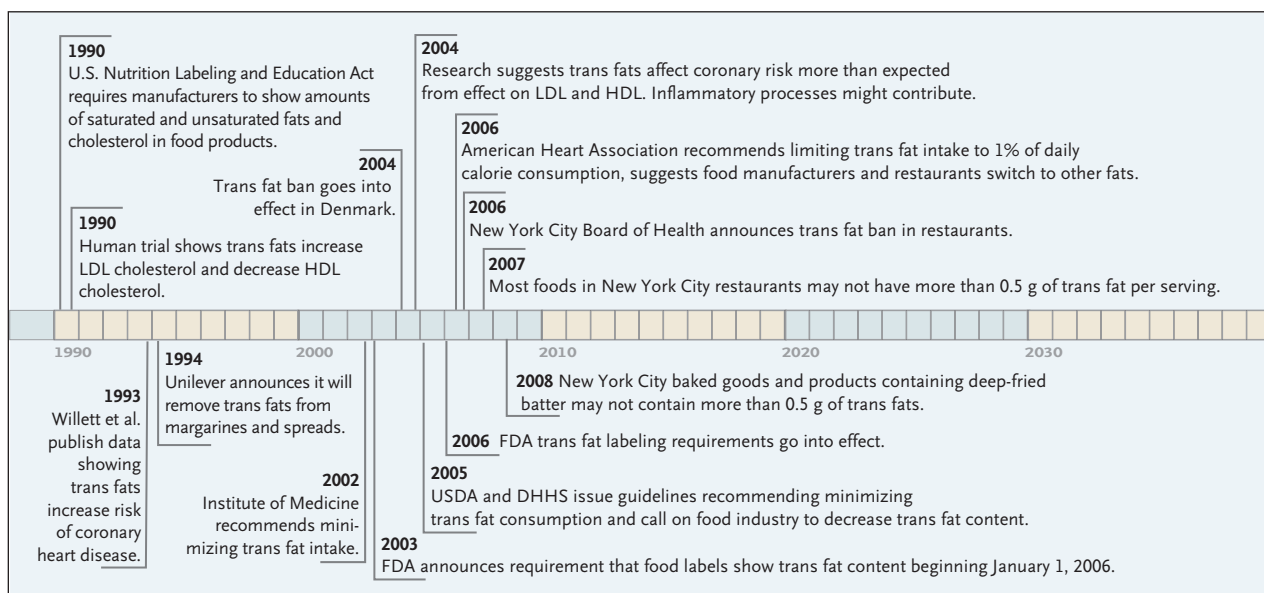
Not all hydrogens are shown.

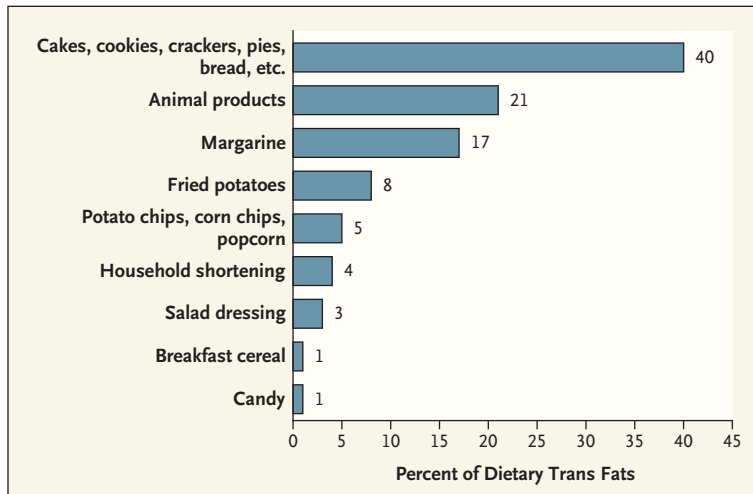
development of heart disease by additional mechanisms, such as promoting inflammation and producing endothelial-cell dysfunction. It was recently estimated that completely replacing artificial trans fats with more healthful unsaturated fats might avert 12 to 22% of myocardial infarctions and deaths due to coronary disease.²

In New York, Frieden and his staff will attempt to study the ef-

fects of the new trans fat rules by keeping track of the fats that restaurants are substituting and possibly chemically analyzing some menu items to measure their trans fat levels. They may also measure levels of trans fatty acids in the serum of volunteers and compare them with levels in stored serum samples from a 2004 New York City Health and Nutrition Examination Survey. Because the trans fat content of supermarket foods is being reduced as well, however, it will be hard to assess how much change is attributable to the restaurant rules.

Given such developments in the food industry, some nutrition experts believe that artificial trans fats could be nearly eliminated from the average American diet. After an Institute of Medicine panel recommended that trans fatty acid consumption be kept as low as possible,³ the Food and Drug Administration (FDA) announced in 2003 that it would require trans-fat content to be listed on nutrition labeling of packaged foods beginning in 2006 — though foods containing less than 0.5 g of trans fat per serving may claim





Sources of Trans Fat in the U.S. Diet.

Data are from the FDA.

to have 0 g on their “nutrition facts” panel. According to Walter Willett, a professor of nutrition science and policy at the Harvard School of Public Health, companies “did marketing research and found that most Americans had heard of trans fats” and knew they were considered unhealthy, so the labeling requirement “motivated them to get rid of them.” Fear of lawsuits was probably another motivation. Beginning in 2003, manufacturers such as Frito-Lay, Kraft, and Campbell’s reformulated popular brands of chips, cookies, and crackers, and in 2004, some restaurant chains announced that they had stopped cooking with partially hydrogenated vegetable oils. In a recent CSPI survey of the 50 largest U.S. restaurant chains, 33 reported either that they had already stopped using the oils or that they were in the process of switching to alternatives for some or all menu items.

The rush to remove trans fats from foods has boosted demand for new varieties of oil, including soybean oil low in linolenic acid (a fatty acid vulnerable to oxidation, which can change the taste and reduce the shelf life of ordi-

nary soybean oil). Walter Fehr, a plant breeder and geneticist at Iowa State University who spent decades developing an ultra-low-linolenic soybean strain, said food companies showed no interest in his beans until the FDA announced that it would require trans fat labeling. Now, there’s a market for as much low-linolenic soybean oil as processors can produce, which depends on how many acres of the special soybean strains U.S. farmers decide to grow. “There’s been a major effort under way to sign up as many acres as possible,” Fehr said.

Despite the eagerness for trans fat-free oils, however, not everyone is equally optimistic about the likely effect on rates of illness and mortality. “I think any time we’ve focused on one single dietary component, we’ve been disappointed,” said Alice Lichtenstein, a professor of nutrition science and policy at Tufts University. “It’s one part of overall dietary modifications that we need to make.” Faced with national epidemics of obesity and diabetes, said Lichtenstein, “we have to look at the big gorilla in the room, which is total calories” and to re-

duce saturated fat intake as well. Marion Nestle, a professor of nutrition, food studies, and public health at New York University, agrees — and she worries that manufacturers’ aggressive marketing of products that contain “0 grams trans fat” leads consumers to think that they can eat them with impunity. Most people “have no clue that this has nothing to do with calories,” said Nestle. “Guess what? Nobody’s going to lose weight.”

Frieden has a strategy for addressing that problem, too. Last December, his board of health also approved new rules requiring restaurants that voluntarily publish calorie information (on Web sites or tray liners, for example) to post it alongside menu prices so that it’s visible at the time of purchase. These rules, also scheduled to go into effect July 1, 2007, will apply only to restaurants with standardized menus that already provide calorie data somewhere — only about 10% of the city’s restaurants. Some evidence suggests that providing such information can change behavior: about half of Americans report that reading food labels has changed their buying habits. A recent study found that restaurant customers grossly underestimate the calorie and fat content of menu items and that offering point-of-purchase nutrition information significantly influenced consumer choice.⁴

Nestle believes that the calorie rules could have a greater effect on public health than the trans fat rules — but the restaurant industry is fighting them harder. Wendy’s removed calorie information from its Web site before the March 1 deadline to avoid having to post it on menus. As of late March, the New York

City Council was preparing to consider a restaurant industry–supported bill that would overturn the calorie rules.⁵ Frieden predicted that the industry might also challenge the rules in court.

Nonetheless, calorie counts on menus may be the wave of the future. Even the savviest consumers probably need frequent reminders that trans fats aren't the only obstacles to steering a healthy course through the U.S. diet. Frieden himself is a case in point: to celebrate the approval of the trans fat regulations, the lean and

fit health commissioner ordered doughnuts for his staff from Doughnut Planet, which has eliminated trans fat from its confections. “Oh, wow, those doughnuts are delicious,” he recalled wistfully. “They were so good I couldn't stop eating them.”

An interview with Dr. Thomas Frieden, commissioner of the New York City Department of Health, can be heard at www.nejm.org.

Dr. Okie is a contributing editor of the *Journal*.

1. Korver O, Katan MB. The elimination of trans fats from spreads: how science helped

to turn an industry around. *Nutr Rev* 2006; 64:275-9.

2. Mozaffarian D, Katan MB, Ascherio A, Stampfer MJ, Willett WC. Trans fatty acids and cardiovascular disease. *N Engl J Med* 2006;354:1601-13.

3. Letter report on dietary reference intakes for trans fatty acids. In: Institute of Medicine. Report on dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. 2002. Washington, DC: National Academies Press, 2002:14.

4. Burton S, Creyer EH, Kees J, Huggins K. Attacking the obesity epidemic: the potential health benefits of providing nutrition information in restaurants. *Am J Public Health* 2006;96:1669-75.

5. Rivera R. City council may rewrite calorie rules. *New York Times*. February 26, 2007:B1.

Copyright © 2007 Massachusetts Medical Society.

Prohibiting Genetic Discrimination

Kathy L. Hudson, Ph.D.

Even before the sequencing of the human genome began in earnest, Americans started worrying about how information about their genetic makeup might be used in harmful ways, and policymakers began considering legislation to prevent misuses of genetic information. The Genetic Information Nondiscrimination Act, which would prohibit health insurers and employers from asking or requiring a person to take a genetic test and from using genetic information in setting insurance rates or making employment decisions, passed unanimously in the Senate in 2003 and again in 2005. The bill remained stalled in the House of Representatives, however, apparently because the House leadership was sympathetic to the few employer and business groups that oppose the bill. This year, with its new Democratic majority in place, Congress has taken up the bill once again.

Enactment of this law would substantially enhance the current,

limited protections against the use of genetic information in health insurance and the workplace. The Health Insurance Portability and Accountability Act (HIPAA) of 1996 imposed some restrictions on the use of health-related information by group health insurers in determining eligibility for benefits and setting premiums. Congress specifically listed genetic information as protected health information and explicitly stated that a genetic risk factor for disease could not be considered a preexisting condition. Subsequently, in promulgating privacy regulations called for by HIPAA, the Department of Health and Human Services made clear that access to and disclosure of genetic information are protected. But though HIPAA restricted the ability of insurers to charge different premiums to persons within a group on the basis of genetic information, it did not limit their ability to use such information to raise the rates for the entire group. HIPAA also did

not address the use of genetic information for underwriting in the individual-insurance market.

As for the workplace, the Equal Employment Opportunity Commission has interpreted the Americans with Disabilities Act (ADA) as providing some protections against the use of genetic information by employers, but the extent of those protections is unclear and largely untested. The ADA prevents workplace discrimination based on a disability, the history of a disability, or a perceived disability. However, legal experts have concluded that additional clarification is needed to ensure that genetic information cannot be used to discriminate in employment decisions such as hiring, firing, job assignments, and promotions.¹

Many states have taken steps to limit the misuse of genetic information. Currently, 35 states have laws against genetic discrimination in employment, and 47 have laws against genetic discrimina-

CORRECTION

New York to Trans Fats: You're Out!

New York to Trans Fats: You're Out! . The entry for 1985 on the timeline (page 2018) should have read "FDA-commissioned report concludes that artificial trans fats affect serum cholesterol levels similarly to the monosaturated fat oleic acid" rather than "FDA-commissioned report concludes trans fats and saturated fats affect cholesterol similarly." The timeline has been corrected on the *Journal's* Web site at www.nejm.org.