



Getting Rid of Trans Fat: Policies, Incentives, and Progress

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Background

- Partially hydrogenated soybean oil used in margarine, processed products as sub for sat fats from animal, palm
 - Push to replace tropical oils in 1980s
- Provides stability, texture, flavor in many uses similar to sat fats
- Nutrition science suggesting negative health impact coalesced in early 1990s



Summary of Health Impacts

- Trans fats
 - Raise LDL and lower HDL cholesterol
 - Increase risk of CHD and type 2 diabetes
 - “Worse than saturated fat” according to 2006 NEJM review article
 - Estimated 30,000 deaths per year
- IOM in 2002 – low as possible
- Dietary guidelines in 2005– less than 1%



How do we consume trans fats?

- Estimates of trans fat consumption vary, as the same food item may have widely varying amounts of trans fats
- Dietary estimates agree that fried fast foods, pastries, margarine, snacks are greatest sources of artificial trans fats



Three Kinds of “Push”

- Mandatory disclosure in nutrition label on packaged foods
 - 1994 CSPI petition to FDA; amended 1998
 - 1999 preliminary rule
 - 2003 final rule
 - Jan 1, 2006 implementation
- Creates incentives to reformulate to retain consumers seeking low or no trans



Three Kinds of “Push”

- Liability– lawsuits filed against
 - Kraft in 2003
 - McD’s in 2005
 - KFC in 2006
- Creates incentives to reformulate, even if legal claim not fully validated, to avoid negative publicity



Three Kinds of “Push”

- Banning transfats
 - Danish example in 2004
 - NYC ban passed in late 2006 for full implementation in 2008
 - CSPI pending petition to FDA to remove from GRAS list (de facto national ban)
 - Several states, other cities considering ban
- Creates incentives for food service to find substitutes to avoid differentiating for major market(s)



What is the food industry response?

- Which companies, markets responded?
 - Will overall trans fat cons decline?
- What substitutes?
 - Substituting sat fat for trans fat?
- What additional costs?
 - Will healthier food be more expensive?
- What time lag?
 - Do we have less healthy in short run and more healthy in long run?



Preliminary Answers

- Sources of Information
 - Trade news
 - Secondary sources, eg. regulatory analysis
 - Productscan new product label data
 - Industry interviews
- 3 stories to tell



Story #1: Food Service Replaces Frying Oils

- Major food services announce intentions to replace trans fats
 - Wendy's in 2005
 - Taco Bell, KFC, McD, BK in 2006
 - Disney by 2008
- Most activity after NY ban; demonstration effect evident, eg. BK announce within days of McD
- Testing alternatives has been underway for 4-5 yrs; complete substitutions will take another 3 yrs to implement

There are wide international variations in trans fat in fast food, suggesting that reductions are possible

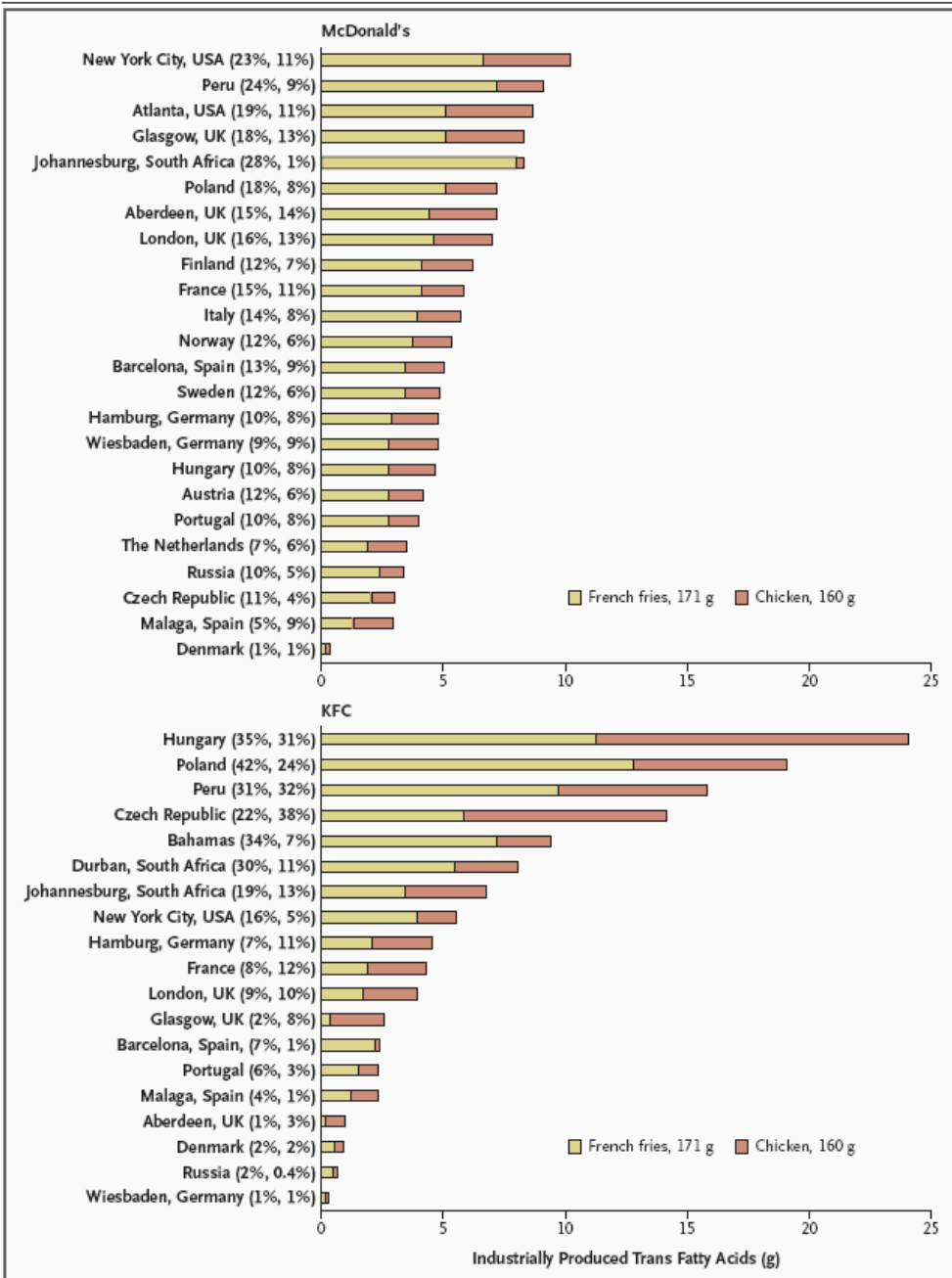


Figure 1. A Comparison of the Amounts of Industrially Produced Trans Fatty Acids in a Large Serving of Fast Food from Two Outlets in Various Countries.

The values in parentheses on the y axis are trans fatty acids as a percentage of the total fat found in 43 servings of french fries and chicken nuggets purchased at McDonald's or KFC.



Food Service Fry Oils

- Substitution possibilities include blends of conventional oils (eg., cottonseed, sunflower) and development of enhanced oils, eg., low lino soy
- Exact blend must meet specific product taste / sensory requirements (fries differ from nuggets)
- Estimate that oil must be changed out twice as often– cost increase for fast food operators



Story #2: Packaged Foods Reformulated

- Announcements from major brands
 - Unilever in 1990s
 - Nestle in 2002
 - Kraft in 2003 (Oreos)
 - Campbell's in 2004 (Goldfish)
 - Kellogg's in 2005 (Keeblers)
 - Frito-Lay's in 2006 (chips)
- Substitutions complex; require testing, new equipment; long lead time.

Trans Content of a Crunchy Corn Puff Snack Before and After Reformulation

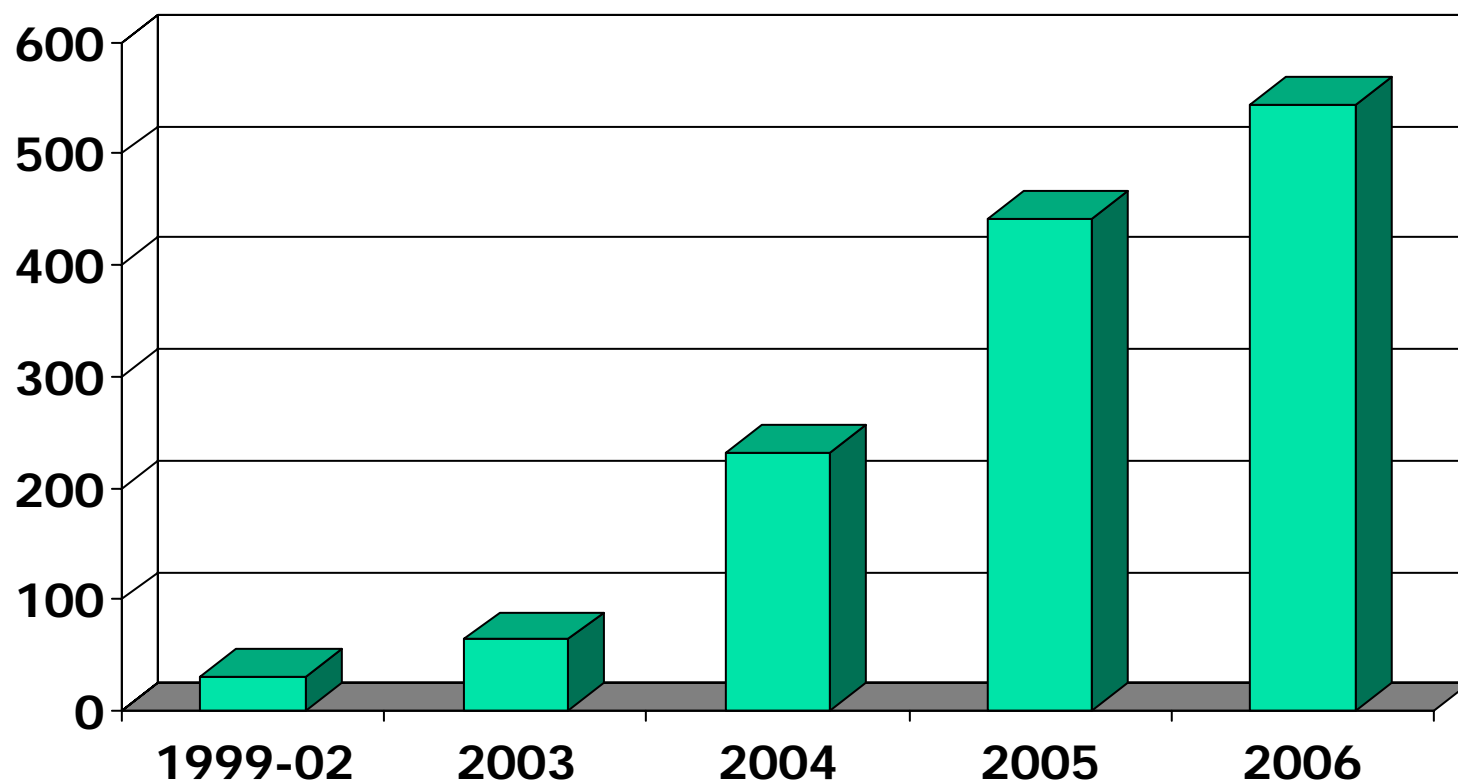


| Total <i>trans</i> g/100 g | | Total <i>trans</i> g/28g | Total <i>trans</i> g/28g |
|-------------------------------|-------|-----------------------------|-----------------------------|
| Before | After | Before | After |
| 10.8 | 0.84 | 3.024 | 0.03 |



Source: David Klurfeld, USDA/ARS

Packaged Foods with "No Trans Fat" Label Claim



Number of new products claiming "No Trans Fats"
These were 10% of all food product introductions in 2005-06



Packaged Foods: Which Product Categories?

Number of products in each category claiming “no trans fat”

| 2004 | 2005 | 2006 |
|-----------------|-----------------|-----------------|
| Snack bars (26) | Snack bars (68) | Chips (65) |
| Cookies (26) | Cookies (46) | Snacks (59) |
| Breads (24) | Breads (42) | Cookies (54) |
| Chips (19) | Snacks (33) | Breads (50) |
| Crackers (18) | Crackers (31) | Meals (45) |
| Snacks (16) | Sandwiches (26) | Snack Bars (41) |
| Pastry (14) | Pastry (16) | Crackers (23) |
| 32 categories | 39 categories | 48 categories |

Pastry category has seen limited introductions relative to its importance as a source of trans fats.

| <u>Dietary Sources of Transfats</u> | <u>Grams Trans Fat</u> | <u>2004-06 New Products</u> | |
|-------------------------------------|------------------------|-----------------------------|---------------|
| | | <u>Percent</u> | <u>Number</u> |
| Cake, doughnuts, pastry | 1.391 | 7.4 | 88 |
| Margarine | 0.967 | 1.1 | 13 |
| Cookies and Crackers | 0.571 | 36.3 | 434 |
| French-fried potatoes | 0.486 | 0.0 | 0 |
| Yeast bread | 0.404 | 9.7 | 116 |
| Potato Chips, Corn Chips, Popcorn | 0.281 | 11.8 | 141 |
| Household shortening | 0.250 | 2.0 | 24 |
| Salad dressing | 0.159 | 1.8 | 21 |
| Breakfast cereal | 0.084 | 2.6 | 31 |
| Candy | 0.044 | 3.2 | 38 |
| Uncategorized | | 24.3 | 291 |



Packaged Foods: Which Companies?

Number of products claiming "no trans fat"

| 2004 | 2005 | 2006 |
|-------------------|----------------|---------------|
| Hain (16) | Altria (28) | PepsiCo (23) |
| Altria (11) | Hain (13) | Nestle (15) |
| Kellogg (7) | Conifer (12) | Altria (14) |
| Atkins (7) | PepsiCo (11) | Snyder's (9) |
| HealthHandful (6) | NaturesPath(8) | ConAgra (8) |
| PepsiCo (5) | Kellogg (7) | Hain (6) |
| ClifBar (5) | Campbells (7) | Campbells (6) |
| 139 companies | 262 companies | 318 companies |

Packaged Foods: What ingredients?

Palm oil and butter are important but not dominant; use of part hydrogenated reflects 0.5 gm/serving allowed under regulation.

| Oil Ingredient | Percent of 2005-06 "No Trans Fat" Products Using |
|-----------------------------|--|
| Canola Oil | 15 |
| Soybean Oil | 14 |
| Sunflower Oil | 12 |
| Palm Oil | 12 |
| Corn/Cottonseed/Safflower | 11 |
| Partially Hydrogenated Oils | 9 |
| Olive Oil | 8 |
| Butter | 8 |
| High Oleic | 4 |



Cookies: Before and After

| All New Cookies in 2001-02 | |
|----------------------------|---------------------|
| Ingredient | % of Products Using |
| Part Hydrog Oils | 35 |
| Veg oils | 16 |
| Butter | 15 |
| Palm or Coconut | 12 |

| "No Trans fat" Cookies in 2005-06 | |
|-----------------------------------|---------------------|
| Ingredient | % of Products Using |
| Palm Oil | 29 |
| Butter | 37 |
| Canola Oil | 27 |
| Soybean Oil | 22 |

Palm oil and Butter are more often used for this category, suggesting that saturated fat has replaced partially hydrogenated oils. Pastry was another category that used palm oil and butter in no trans fat products.



Chips: Before and After

| All New Chips, 2001-02 | |
|-----------------------------|---------------------|
| Ingredient | % of Products Using |
| Partially Hydrogenated Oils | 37 |
| Corn Oil | 21 |
| Sunflower Oil | 20 |
| Vegetable Oil | 19 |

| No Trans Fat Chips, 2005-06 | |
|-----------------------------|---------------------|
| Ingredient | % of Products Using |
| Sunflower Oil | 37 |
| Corn Oil | 23 |
| Canola Oil | 21 |
| Vegetable Oil | 20 |

Sunflower, corn, and canola are most often used in place of partially hydrogenated oils. Breads are another category that used mainly healthy oils in no trans products.



Story #2: Summary of Product Introductions

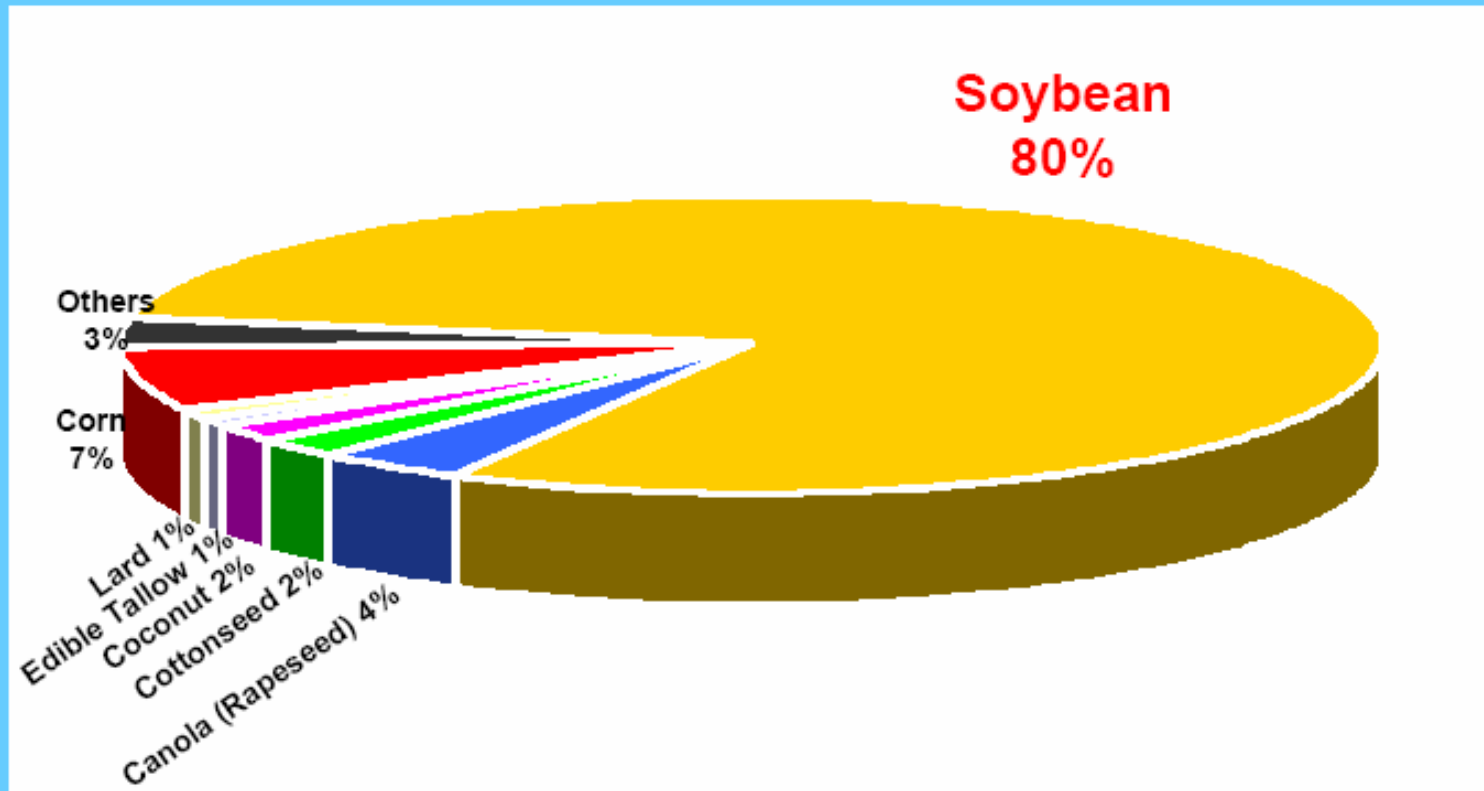
- Big surge in new products claiming “no trans fat” since the final rule
- Lag in addressing some sources of trans fat, eg., pastry
- Substitute oils vary by product category with some (chips) using healthier oils but others (cookies) not



Story #3: Supply Chain Response

- Use alternative oils or blends
 - Eg. cottonseed oil provides stability
- Develop soy/canola/sunflower with different profiles
 - Eg. low lino; hi oleic; hi stearic from Monsanto, Dupont, DowAgro, Cargill
- Process oils to provide different characteristics
 - Eg. interesterification: ADM “NovaLipid” oil

Edible Oil Use, United States



Total = 9.8 Million Metric Tons

Source: American Soybean Association, 2005



There are limited supplies of oils other than Soybeans in the U.S. in short run.



Low Lino Soy Example

- Low lino soy gene variant discovered in 1980s
- Low lino variety introduced by Pioneer in 1990s and finds no market
- Monsanto starts work in 2001 on low lino and releases *Vistive* in 2005 (similar varieties from other companies a little later)
- Development speeded by MAS technology but low lino trait not GM; variety has GM GR gene so that costs of production comparable to RoundupReady



Low Lino Soy Example

- Estimated 1.5 million acres in 2007; producing 1 billion lbs of oil
- Premium at 8% of market price
- 3 year horizon for meeting emerging demand– expanding rapidly
- Supply still small relative to the 3 billion lbs of hydrogenated oils that have been used in U.S. food service



Low Lino Soy Example

- Low lino has greater stability but not “drop in” solution; must try new blends for any specific application
- Early adopters include Kellogg’s, KFC
- Farmers contracted through cooperatively owned crushing mill and dedicated oil supplier



Lessons: What's Going Right

- Trans fats in diet are clearly being reduced by combined incentives
- Trans fats not replaced with saturated fat in many instances (eg., fry oils, chips)
- Label reg and publicity spurred innovation but also allows market to determine time required for adaptation



Lessons: What's Going Right

- Policies created market incentives that are reflected all the way back through the marketing chain
- Development of new varieties and use of modern biotechnology for public health benefit
- Positive example for other nutrition issues?



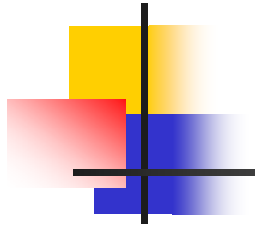
Lessons: What's Troubling

- Foods formerly containing trans fats are among those that should have limited intake; will “no trans” give illusion of health?
- Some trans fats replaced by sat fats; some new oils have unknown health effects (eg., Will hi stearic soy be better than palm?)



Lessons: What's Troubling

- Substitutions:
 - Increase cost (at least in short run)
 - Take time to fully implement
 - Lead to industry and consumer “fatigue”?
- Label regulation alone would not have accomplished as much– what are the lessons for future policy?



The cookie monster and I

Thank you!

