



# Availability of Trans Fat Alternatives

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## Amount of Trans Fat in U.S. Diet

- Allison (1999) evaluated 1989-91 data to estimate mean intake of adults to be 2.6% of calories.
- Harnack (2003) found intake in Minneapolis/St. Paul area in 1995-97 to be 2.2% of calories.
- Current intake likely to be less than 2% of calories due to significant food reformulation in recent years.



# U. S. Diet Sources of Trans Fats

- 80-85% - hydrogenation of vegetable oils
- 15-20% - tissue of ruminant animals



# Trans Fat Alternatives

- Naturally stable oils
- Trait enhanced oils
- Blends of more stable oils with less stable oils
- Interesterification of blends
- Modification of processing methods
- Jells and texture building agents



# Naturally Stable Oils

- Palm
- Palm Kernel
- Coconut
- Cottonseed
- Corn
- Peanut
- Rice bran
- High oleic sunflower
- Low linolenic soy
- High oleic canola



# Trait Enhanced Oilseed Varieties

- Low Linolenic Soy )  
) currently available
- High Oleic Canola )
- Mid and High Oleic Soy )
- Low Lin, Low Saturate Soy ) available in future
- High Stearic Soy & Canola )



## Blends of More Stable Oils With Less Stable Oils

- 15% fully hydrogenated hardstock (no trans fat) mixed with 85% unhydrogenated liquid oil.
- Interesterification process to rearrange fatty acids on glycerin molecule resulting in customized melt points.



# Modification of Hydrogenation Process To Reduce Trans Fat Formation

- Time length of process
- Temperature
- Pressure
- Catalyst (platinum)



# Partially Hydrogenated Oils Subject to Replacement

<u>Application</u>	<u>Amount (Billions lbs.)</u>
Food service (deep frying, spray)	4
Food processor (bakery, snack foods)	<u>4</u>
Total:	8



## Low Linolenic Soy Acreage/Oil Production Estimates (2006)

<u>Seed Developer</u>	<u>Acres</u>	<u>Oil (M lbs.)</u>
Pioneer (Treus™)	200,000	100
Monsanto (Vistive™)	500,000	250
Iowa State (Asoyia™)	40,000	<u>20</u>
		370



## Low Linolenic Soy Acreage/Oil Production Estimates (2007)

<u>Seed Developer</u>	<u>Acres</u>	<u>Oil (M lbs.)</u>
Pioneer (Treus™)	250,000	125
Monsanto (Vistive™)	1,500,000	750
Iowa State (Asoyia™)	50,000	<u>25</u>
		900



# Canadian High Oleic Canola Acreage/Oil Production Estimates

	<u>Acres (M)</u>	<u>Oil (lbs.)*</u>
2004	1.0	624M
2005	1.5	936M
2006	1.6	1.0B
2007	2.0	1.25B

\*Assumptions:

(0.66 ton/acre, 43% oil content)



# U.S. Palm Oil Imports

<u>Year</u>	<u>(Pounds)</u>
2004	623M
2005	725M
2006	1.25B
2007	1.75B



# Supply and Demand of Major Trans Fat Alternatives

- Demand = 8 billion pounds (partially hydrogenated oil subject to replacement)

## Billions lbs.

- Supply =
  - 0.9 low lin soy
  - 1.25 high oleic canola
  - 1.3 palm
  - 0.6 other stable oils
  - 4.0 total



# Summary

- Wide variety of trans fat alternatives available and more available in near future.
- Demand for certain trans fat alternatives greater than supply in the short term.
- If entire nation were to have to switch today, these certain trans fat alternatives would not keep up with the demand.