Trans-Fats

WHAT ARE TRANS-FATS?

“Trans-Fats” is actually short for trans-fatty-acids. Unsaturated fats can be in either the “cis” or the “trans” chemical formation. The “trans” term refers specifically to the position of hydrogen bonds in saturated fatty-acid. The rotation of these hydration around the double bond between two carbons, gives trans-fatty acids a much straighter, more linear looking structure than cis-fats. Unlike other types of fats, trans-fats are rarely found in nature. Naturally occurring trans-fat can be produced in the gut of some grazing (or ruminant) animals. That’s why small quantities of trans-fat can be found in animal products like milk, milk products and meat. However, the overwhelming majority of trans-fat in our diet comes from partially hydrogenated oils (PHOs), which are artificially created and used by food manufacturers to improve the shelf life, texture and flavor stability of foods.

HOW ARE TRANS-FATS MADE?

Artificial trans-fats are created by a chemical process called “hydrogenation.” Lab scientists can add an extra hydrogen to a vegetable oil (which is a polyunsaturated fat), which will convert the oil to a partially saturated fat. This partial saturation increases the melting point of the oil to a state where it will now be solid, or semi-solid, at room temperature (picture margarine). This process of partial-hydrogenation also converts the fatty-acids from the cis-formation to the trans-configurations. See diagram above.

WHY ARE TRANS-FATS BAD FOR ME?

The most important health effect of trans-fats is they have been shown to increase low-density lipoprotein (LDL) cholesterol. When too much LDL circulates in the blood, it can slowly build up in the inner walls of the arteries that support the heart and brain. This build up can eventually form plaque, a thick, hard deposit on the walls of the vessels that can narrow the arteries and make them less flexible. This condition is known as atherosclerosis and can lead to heart attacks, strokes and other types of heart disease. The Centers for Disease Control and Prevention (CDC) estimates that eliminating intake of trans-fat from partially hydrogenated oils could prevent up to 20,000 cases of coronary heart disease and up to 7,000 deaths each year.

Some evidence suggests that trans-fats may cause other adverse health effects, including lowering high-density lipoprotein (HDL) cholesterol… that’s the good cholesterol! Because of this, the Institutes of Medicine (IOM) suggests there is no safe level of consumption of artificial trans-fat. The IOM, in addition to the 2010 Dietary Guidelines for Americans recommends that consumption of trans-fat be kept low as possible in a healthful diet.

Foods Containing Large Amounts Of Trans-Fats Include:

- Crackers, cookies, cakes, pies, and baked goods
- Snack foods (microwave popcorn)
- Frozen pizza
- Fast food
- Vegetable shortenings and stick margarines
- Coffee creamer
- Refrigerated dough products (biscuits and cinnamon rolls)
- Ready-to-use frostings
- Deep fried foods (fries, chicken, etc)

**TIP:** Look for the words “Partially Hydrogenated Oil” on the ingredients label!
HOW DO I KNOW IF THE FOOD I AM EATING CONTAINS TRANS-FATS?

Although the trans-fatty acids are chemically "monounsaturated" or "polyunsaturated," they are considered to be so different from the cis-mono/polyunsaturated fatty acids that the FDA does not allow them to be designated as “unsaturated” on food labels. In fact, foods containing more than 0.5 grams of trans-fats (i.e. partially hydrogenated oils) must list trans-fat on the product’s food label.

**Disclaimer:** Products listed as “0 g trans-fat” contain 0 to less than 0.5 g/serving trans-fats. This means that foods labeled “0 g trans-fat” may still contain some artificial trans-fat. The **ingredient list** will provide information on whether the product contains partially hydrogenated oils.

NEW REGULATION FROM THE FDA

In November, 2013, the Food and Drug Administration (FDA) announced a preliminary determination that *partially hydrogenated oils* (PHOs) should no longer be designated “Generally Recognized As Safe” or “GRAS” as a food additive. Remember: These PHOs are the main source of trans-fats in the standard American’s diet. If FDA makes a final determination that partially hydrogenated oils are not GRAS, a company will not be able to use PHOs in food without special approval from the FDA… which will likely be very difficult to obtain. This will effectively eliminate artificial trans-fats from the US food supply.

**Why were trans-fats ever deemed to be GRAS in the first place?**

Believe it or not, the knowledge that trans-fats are bad for us is relatively new. Many American kitchens were first introduced to partially hydrogenated vegetable oil in 1911 with the product Crisco®. During World War II, PHOs gained widespread popularity where people began turning to margarine and shortening as alternatives to rationed butter. Following the low-fat craze in the 1950s-1980s, consumer advocacy groups began to petition fast-food restaurants to stop using saturated fats to deep-fry foods. As a result, fast-food chains began using PHOs in their deep-fryers. Throughout the 1990s, numerous studies revealed correlations between the consumption of artificial trans-fatty acids and increased LDL cholesterol and heart disease. It wasn’t until 2003 that the FDA was able to pass a law mandating companies label trans-fats on the Nutrition Facts label; companies had 3 years to comply. Companies have been labeling trans-fats in foods since 2006.

Policy often lags behind the science. This is because scientific process, as well as the legislative process, is slow moving. But as, you can see, eventually the policy side catches up to the science… it just takes a few years to happen. It may be awhile before the effective ban of trans-fats will take place so, until then, seek to eat a diet that is rich in healthy fats, like monounsaturated and polyunsaturated fats. These types of fats are actually *good* for your heart and can be find in foods, like nuts, fish and certain oils, like olive, canola, and other plant-based oils.

References:

