



that may be full of cholesterol-raising TFA, even if the establishment's advertising claims that it uses 100% vegetable oil for

cooking. The real irony is consumers are unable to recognize foods containing TFA or how much harmful it is to their heart.

One practical difficulty is putting the correct information about TFA on the nutrition label, as different batches of hydrogenated oils may contain different amounts of TFA.



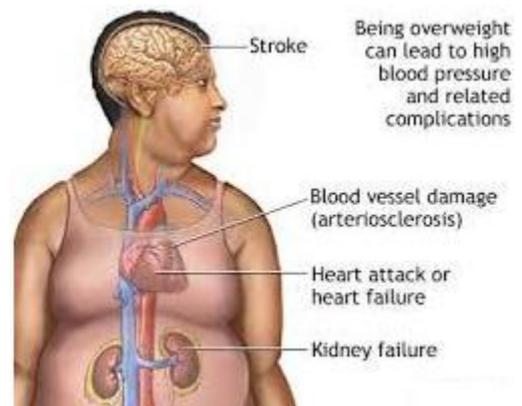
Consumers are likely to get accurate information only when food processors and hydrogenated oils manufacturers standardize the hydrogenation process and the oils they use to make them. Foods made with hydrogenated fats are cheaper and last longer, but in the end, it is expensive to consumers as TFA provide little nutritional benefit to the body. Short-term boon is a long-term bane. The food industry loves TFA, but our hearts and blood vessels do not.

Chemically change of foods cause, unanticipated problems that are especially true in case of hydrogenated oils / fats.

- TFA can elevate blood cholesterol levels, similar to the cholesterol-raising effects of saturated fats.
- TFA raise the levels of **Low-density lipoprotein (LDL)**. LDL, or "bad", cholesterol transports cholesterol throughout our body. LDL cholesterol, when elevated, builds up in the walls of our arteries, making them hard and narrow. If the arteries that supply our heart with blood (coronary arteries) are affected, we may have chest pain and other

symptoms of coronary artery disease. **Increases Lp(a) lipoprotein.** Lp(a) is a type of LDL cholesterol found in varying levels in our blood, depending on our genetic makeup. TFA make Lp(a) into smaller and denser lipid particles, which promote a buildup of plaques in our arteries. Plaques, can reduce blood flow through our arteries. If plaques tear or rupture, a blood clot may form, blocking the flow of blood or breaking free and plugging an artery downstream. If the blood flow to one part of our heart stops, we will suffer a heart attack. If blood flow to a part of our brain stops, a stroke occurs. A high LDL cholesterol level is a major risk factor for heart disease.

- TFA reduce levels **High-density lipoprotein (HDL)**. HDL or "good" cholesterol picks up excess cholesterol and takes it back to our liver.
- Raising the bad cholesterol and lowering the good cholesterol in the blood is double trouble.
- TFA **increases triglycerides**. Triglycerides are a type of fat found in our blood. A high triglyceride level may contribute to hardening of the arteries (atherosclerosis) or thickening of the artery walls, which increases the risk of stroke, diabetes, heart attack, and heart disease.



- **TFA cause more inflammation.** Trans fat may increase inflammation, which is a process by which our body responds to injury. Researchers believe that inflammation plays a key role in the formation of fatty blockages in heart blood vessels. TFA appears to damage the cells lining blood vessels, leading to inflammation. Studies show that TFA decrease the body's ability to produce natural anti-inflammatory prostaglandins.
- TFA or hydrogenated fats may interfere with the ability of the cells of the body to metabolize the fats that are good, damaging cell membranes of the brain and nerve cells leading to chronic, degenerative diseases.
- Human brain and placenta have a biochemical way of filtering most trans fatty acids that occur naturally in

some foods (meat and dairy products) by metabolizing these fats as energy sources before they have a chance to do any cellular damage, and then use the good fats (the essential fatty acids) as healthy nutrients for the cells. However, this protection is incomplete if the diet is overwhelmed with TFA.

- Eating a diet high in nutritionally worthless hydrogenated fats lessens a person's daily intake of essential fatty acids that are important for growth and function of vital organs, like



the brain. This is especially true in case of children whose daily diet is high in processed and deep fat-fried foods and snacks.



- TFAs links to other health problems as well, including decreased testosterone, abnormal sperm production, and prostate disease in men; overweight to obesity, immune system depression, and diabetes.

Studies carried out by National Institute of Nutrition (NIN) to evaluate the effects of TFA from Indian Vanaspathi in rats show that both saturated fatty acids and TFA increase insulin resistance. Moreover, TFA intake by mothers increases the susceptibility to biochemical / metabolic alterations increasing the risk of diet related chronic diseases.

What is good about Trans Fatty Acids?

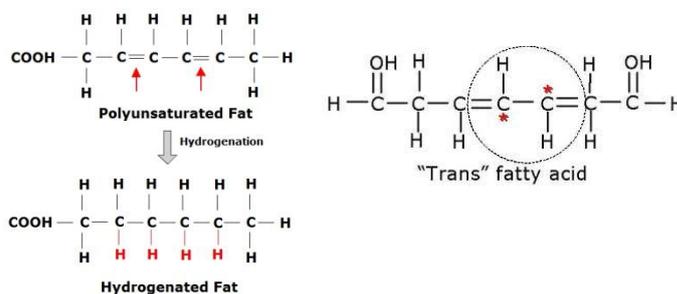
Natural TFAs are created in the stomachs of animals such as cattle, sheep, and goats and are stored in their fat cells. Products such as milk, yogurt, cheese, and meat from these animals, therefore, contain TFA in the form of conjugated linoleic acid or CLA. Natural TFA may have either a neutral effect or a moderating effect on LDL and no effect on HDL cholesterol or triglycerides. In addition to not being harmful, naturally occurring TFAs may actually be good for us.



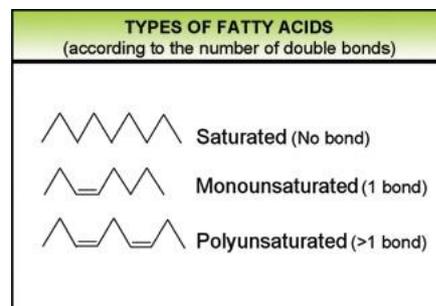
Suggestions & Recommendations

The Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) suggest that diets should provide a very low intake of TFAs. In practice, this implies an intake of less than 1% of daily energy intake. As for saturated fats and total fats, the FAO and WHO recommend an intake of less than 7-10 % and 15-30% of daily energy intake respectively. An individual with a daily energy intake of 2000 kilocalories should limit the daily intake of TFA to less than 2 grams, saturated fats to less than 20 grams and total fats to less than 60 grams.

Studies confirm that rural India consumes 20 grams Vanaspathi fat daily and urban India around 30 g. Considering that only 10% TFA is available in Vanaspathi, still the person will derive 0.9 and 1.35 % energy from the TFA exceeding the 1% energy, limit for TFA recommended by WHO.



Exposing liquid oils rich in unsaturated fats to hydrogen gas for a longer time (higher degree of hydrogenation) yields a more solid / hard, waxy, fully hydrogenated fat. In principle, fully hydrogenated oil should contain no TFAs since all the double bonds will be saturated. As the oil becomes very hard producers tend partially hydrogenate the oil giving rise to harmful TFA. However, complete hydrogenation will result in elevated melting point and Saturated Fatty Acid (SFA) content. Higher SFAs in Vanaspathi would result in increase in % of energy derived from SFAs. Increase in intake of SFAs will lead to increase in serum cholesterol levels and Low Density Lipoprotein (LDL), which are potential risk factors for CHD. **Blending unprocessed liquid vegetable oil with fully hydrogenated vegetable oils could yield a semi-soft fat that is Trans Fats Free, a good option for cooking oil.**



As consumers what can we do?

- **Avoid hydrogenated fats, foods containing "hydrogenated" or "partially hydrogenated" oil.**

- Remember terms like "vegetable oil" or "cholesterol free" tell us nothing about the amount of TFA in food.



- Using butter and ghee is one option but since these are higher in saturated fat and cholesterol, it is

better to avoid, even though it is a shade better than artificially created hydrogenated vegetable oil / fats.

- Look for labels that mean "saturated-fat free" or "contains no trans fatty acids" or "TFA 0%", etc.
- Avoid eating commercially prepared baked foods, snack foods, and processed foods, including fast foods. To be on the safe side, assume that all such products contain TFA unless known otherwise.
- Avoid deep-fried foods, especially at fast-food restaurants. Cooked in "100 % vegetable oil" could camouflage a lot of hydrogenated fat.
- When eating in a restaurant ask the type of oil used, & check if it contains TFA. Choose a better option.
- So are foods that are free of TFA automatically good? No! Tropical oils, like coconut, palm kernel, and palm oils, contain a lot of saturated fat that also raises our LDL cholesterol.
- Recent evidence indicates that coconut oil strongly increases HDL cholesterol, which may make it a good choice when a bit of hard fat is essential.
- A healthy diet should include some fat, but there is a limit. Fat is a major source of energy for the body and aids in the absorption of vitamins A, D, E, and K. Fat is also important for proper growth, development, and maintenance of good health.
- 25-35 % of our total daily calories can come from fat but saturated fat should account only for less than 10% of our total daily calories. **Aim for consuming less than 7% of fat calories from saturated fats.**
- Polyunsaturated fatty acids viz., alpha-linolenic (Omega 3) and linoleic (Omega 6) acids are important components of cholesterol lowering healthy diet. However, the benefits depend on the consumption of an appropriate balance of these fatty acids. Replacing

trans saturated fats with mono unsaturated fats and maintaining adequate intake with an appropriate balance of Omega 6 and Omega 3 polyunsaturated fatty acids is necessary. Monounsaturated fat, found in virgin olive, groundnut, sunflower, etc., is a healthier option than saturated fat.

- Nuts, fish and other foods containing unsaturated omega-3 fatty acids are other good choices of foods with monounsaturated fats.



- Try baking, steaming, grilling, or broiling instead of frying.



- Eat plenty of foods that are naturally low in fat, such as whole grains, fruits, and vegetables.

No matter what, it is important to avoid hydrogenated fat and consume fats and oils in moderation

*Gist of letter to CEO, Food Safety & Standards Authority of India from CGSI,
7 Jan 2013*

Sub: Notification dated 29 Nov 2012. F.No. P 15014/1/2011-PFA/FSSAI on Trans Fat Acid (TFA) Content in Vanaspati

Please consider the following suggestion against the Draft Regulations on Vanaspati mentioned above.

In the interest of reducing the health hazard of consumers, CGSI recommends a limit of not more than 5% maximum by weight of TFA, 'Trans fatty acids', for Hydrogenated Vegetable Oils, identical to the limit followed by Danish Nutrition Council, Denmark.

Dr. Sitaram Dixit
Chairman CGSI

Dr. M. S. Kamath
Gen Secretary CGSI

Men or Women?

A college professor, who was previously a sailor, was well aware that we address ships as "she" and "her". He often wondered what gender we should address computers. To answer that question, he set up two groups of computer experts. The first group was composed of women, and the second of men. He asked each group to recommend as to how we should refer a computer, in the feminine gender, or the masculine gender with minimum four reasons for their recommendation.

The group of men reported that we should refer computers in the feminine gender because:

1. No one but the Creator understands their internal logic.
2. The native language they use to communicate with other computers is incomprehensible to everyone else.
3. Even your smallest mistakes are stored in long-term memory for later retrieval.
4. As soon as you make a commitment to one, you find yourself spending half your paycheck on accessories.

The women, on other hand concluded that we should refer computers in the masculine gender because:

1. In order to get their attention; you have to turn them on.
2. They have many data, but are still clueless.
3. They are supposed to help you solve problems, but half the time they are the problem.
4. As soon as you commit to one, you realize that, if you had waited a little longer, you could have had a better model.

Government is about principles and the principle is never to act on principle.

Civil servants should not discuss moral issues with politicians. It is a serious misuse of government time.

Ignoring corruption could never be government policy; it is merely a government practice.

Too much civil service work consists of circulating information that is not relevant about subjects that do not matter to people who are not interested.

Only totalitarian government suppresses facts. In this country, we simply take a democratic decision not to publish them.

Civil Service Language:

Sometimes one is forced to consider the possibility that affairs are being conducted in a manner which, all things, being considered and making all possible allowances is, not to put too fine a point on it, perhaps not entirely straightforward.

Translation: You are lying.

The first rule of politics:

Never believe anything until it has been officially denied.

If a job is worth doing, it is worth delegating

Every man should get married some time; after all, happiness is not the only thing in life! – Anonymous

Bachelors should be heavily taxed. It is not fair that some men should be happier than others. – Oscar Wilde

I do not worry about terrorism. I was married for two years. – Sam Kinison

It is not true that married men live longer than single men. It only seems longer. – Anonymous

A psychiatrist is a person who will give you expensive answers that your wife will give you free. – Anonymous

Bachelors know more about women than married men; if they didn't, they'd be married too – H. L. Mencken (HLM)

Men have a better time than women; for one thing, they marry later; for another thing, they die earlier. – HLM

"Women will never be equal to men until they can walk down the street bald and still think they are beautiful."

When newly married couple smiles, everyone knows why, when a ten-year married couple smiles, all wonder why.

Love is blind but marriage is an eye-opener.

The most effective way to remember your wife's birthday is just to forget it once.

When a man opens the door of his car for his wife, you can be sure of one thing: either the car is new or the wife.

When a man is single, he is incomplete. When he is married, he is finished.