



# HEALTH IMPLICATION OF PARTIALLY HYDROGENATED AND TRANS FATS IN FOODS

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## INTRODUCTION

Full hydrogenation of edible oils leads to the formation of saturated fatty acids that are important for texturing certain processed foods, such as pastries. However, incomplete hydrogenation can lead to the formation of partially hydrogenated oils (PHOs), sometime referred to as “trans fatty acids”. With their double bonds in the trans (E) configuration, PHOs have been associated with adverse health effects. Epidemiological and other evidence has accumulated that trans-fatty acids are metabolized by the body by a pathway that is detrimental to health. One source of trans fats is commercially processed foods, which are often labelled as containing “partially hydrogenated oils”. Restaurants, snack shop, street-food vendors and even consumers in the home may use PHOs for deep frying and cooking. Trans fats raise levels of low-density lipoprotein (LDL), which is commonly called bad cholesterol, and lower levels of high-density lipoprotein (HDL) levels, which is called good cholesterol. LDL is associated with higher risk of stroke and as well as type 2 diabetes.

## ADVERSE HEALTH EFFECTS OF PARTIALLY HYDROGENATED AND TRANS FATS

Trans fats raise levels of low-density lipoprotein (LDL), which is commonly called bad cholesterol, and lower levels of high-density lipoprotein (HDL), which is called good cholesterol. LDL is associated with higher risk of stroke and as well as type 2 diabetes. The European Food Authority has concluded from controlled intervention studies and prospective cohort studies, that consumption of diets containing trans fatty acids has adverse effects on blood lipids that predict an increase in coronary heart disease risk compared with diets containing cis fatty acids and recommended that dietary intakes of trans fatty acids should be as low as possible. The World Health Organizations (WHO) estimates the consumption of PHOs causes more than 500,000 deaths from cardiovascular disease a year, mostly in low- and middle-income countries.

## USES IN FOOD

In the early part of the 20th century, PHOs from vegetable oils were used to make margarine and later they were used in commercial baked goods and snacks. In countries that have not restricted PHOs, they may be found in many foods – especially fried foods but also in baked goods such as, pies, cakes, frozen pizza, cookies, crackers, and in margarines and butter-like spreads. In particular,, PHOs are often used for deep-frying in restaurants as they can be used for longer periods than most conventional oils before becoming rancid. Various studies have shown that the trans-fat contents in various foods and even within the same food can be highly variable. For example, the percentage of trans fat (g/100 g) has been estimated for shortenings, 10-33% ; margarine and spreads, 0.2-26%; butter,2-7%; whole milk, 0.07-0.1%; breads/cake products, 0.1-10%; cookies and crackers, 1-8%; salty snacks, 0-4%; cake frostings and sweets, 0.1-7%; animal fat, 0-5%; and ground beef, 1%.

## REDUCING PHOS IN THE FOOD SUPPLY

Policy actions implemented by various countries as well as local jurisdictions have demonstrated that implementation of strategic actions can effectively eliminate PHOs from the food supply. While global food companies have greatly reduced PHOs in developed countries, greater efforts are needed for countries of Asia and Africa to address this problem. To this end, WHO initiated a campaign that advocates the elimination of industrially-made trans fats by 2023 throughout the world. The initiative calls on international policymakers to follow the recommendations outlined in “REPLACE” — an acronym for Review, Promote, Legislate, Assess, Create and Enforce.

## REFERENCES

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