FOOD SAFETY
IMPROVING FOOD PRODUCTS WITH PALM OIL

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**Food safety issues in Vegetable oil Industry**

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Tools For Food Safety

Tools For Managing Food Safety Issues

- HACCP based Food Safety Management Systems
- ISO 22000:2005 based Food Safety Management Systems
- Nutrition labeling
Major Food Safety Hazards

Major Food Safety Hazards In Oils And Fats

- Pesticide residues – PAHs, PCBs, Dioxins etc
- Heavy metals – Fe, Cu, Hg, Pb
- Mycotoxins & Allergens–like aflatoxins, etc

► GMO issue (Genetically Modified Oils)
Food safety & security systems in Vegetable Oil Industry

Adequate measures taken across the entire supply chain i.e.

- Sourcing of raw oils from mills, its transportation in dedicated tankers
- Storage and handling to avoid any contamination
- Refining process
- Storage & transportation of finished (refined) oil
Sourcing of Raw Oils

Raw oil sourced must:

- Comply with purchase specifications & legislation
- Be free from adulterants
- GLC tested (GLC- Gas Liquid Chromatography)
Refining process

Refining process to ensure:

- Retention of beneficial micronutrients like tocopherols, tocotrienols, phytosterols, oryzanol etc
- Minimal transformation in refined oils/ hydrogenated products
- Effective removal of pesticides and heavy metals
Storage and Transportation

Measures adopted during storage, loading and transportation of finished products:

- $N_2$ sparging immediately after deodorization and $N_2$ blanketing where ever required.
- Correct storage temperature to be maintained
- Tank farm and tanker loading- GMP to be practiced.
- Tamper evident sealing practices to ensure security.
**Government Regulations**

- The development of effective food safety management system depends on various factors like government regulations and policies, upgradation of existing food laws, agricultural support etc.

- Globalization and modern food retailing has given prominence to quality and food safety awareness

- Joint efforts by the government and the private sector would be required for the effective implementation of food safety

- Prevention of Food Adulteration Act (PFA) being replaced by **Food Safety Standards Act** (FSSA-under implementation) which is in line with Codex.
Nutritional Labeling

• With the growing consumer awareness towards health and nutrition, appropriate packaging and nutritional labeling have become important.

• PFA has made it mandatory to declare the nutritional facts on the label for all food products including SAFA, MUFA, PUFA and Trans if a nutrition claim is made like ‘low in trans’ or ‘free of trans’
Where Do We Stand

- **Food Safety Standards Act (FSSA)** presently being reformulated comprehensively to address all safety concerns so as to provide consumers healthy & safe food products.

- **FSSA** to be implemented from Jan 2010.

- Indian vegetable oil industry is all geared up to meet its customers expectations globally.
Food safety issues in Vegetable oil Industry

Palm oil and its significance

Products from Palm oil and its application

Palm Oil in India (Vanaspati industry)
Palm Oil And Its Significance

- Balanced oil (50% saturates and 50% unsaturates)
- Exhaustive range of products (including low trans or no trans)
- Cost effective food formulations
- Nutritional value
Palm Oil And Its Significance

Products from Palm oil:

- Palmolein
- Superolein
- Mid fractions (PMF)
- Stearine
Food safety issues in Vegetable oil Industry

Palm oil and its significance

Products from Palm oil and its application

Palm Oil in India (Vanaspati industry)
Products from Palm Oil And Its Applications

PALM OIL
- Bakery industry (trans free biscuits/cookies)
- Shortening, Margarine, Fat spreads and Vanaspati
- Frying oil for snack food industry
- Icecreams / Frozen desserts

OLEINS: PALMOLEIN
- Widely used as Frying oil for snack food industry
- Bakery industry
OLEINS: SUPEROLEIN (IV:63-70)

- Cooking oil, frying oil, salad oil—does not solidify at lower temp.
- Ready to eat foods
- Frozen Foods
- Carrier oil for flavours and oleoresins
- Confectionery oil
- Mayonnaise
MID-FRACTIONS
- Widely used in Confectionery

STEARINE
- Shortening, Vanaspati, Margarine
  (Globally stearine is widely used in the blend to give trans free products)
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Palm oil and its significance

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Palm Oil in India (Vanaspati industry)
Vanaspati Industry- Current Scenario

- Current scenario – As per PFA same upper limit of m.p. in case of Vanaspati, Bakery shortenings and Bakery margarines

Application/usage

- Vanaspati – meant for household cooking/frying
- Bakery Shortenings/Margarines - for industrial use by bakery & confectionery industry
Palm Oil in Vanaspati Industry- Current Scenario

- Oils used for the manufacture - different permitted vegetable oils as per guidance of VOP Directorate based on price, seasonality, regiospecificity.

- Palm oil forms the major part and local oils form the minor portion.

- Palm oil on fractionation yields Palmolein (mp:19-24 deg C) and Stearin having mp 52-54 deg C which has been classified as edible fat by CODEX.
Palm Oil in Vanaspati Industry- Current Scenario

- M.P. of imported palm oil received is 37 deg C and as per PFA, the max limit specified for Vanaspati is 41 deg C

- To maintain 41deg C or less, no other option but further selective hydrogenation to get hardness and grainy texture leading to high trans fatty acids (TFA) formation.

- Government of India is trying to put a limit to trans fat content in foods in the near future
Vanaspatti Industry- Way Ahead

- There is cohesive move by industry and government to produce products having reduced TFA.

- Melting point and TFA content are inter related issues and not to be seen in isolation.

- Higher saturates are better than higher trans. There has to be a balance of SAFA, MUFA and PUFA in our diet.
Hydrogenated Vegetable Oils/ Fats- Global Scenario

- At present – no upper limit fixed for m.p of HVO by Codex. Earlier it was fixed at 44C max, but dropped subsequently.

- Globally Bakery shortenings/ Margarines are available having m.p. 45-50C

- No upper limit has been specified on trans content in HVO by USFDA. It recommends to reduce the TFA content in the diet and minimum is desirable.
Low / No Trans Products

Low trans or No trans can be achieved by the following:

- Proper selection of the raw material i.e. oils (preferably palm oil)
- Modifying the Hydrogenation parameters
- Fractionation & Blending
- Interesterification (Enzymatic/Chemical)
Conclusion

- Government of India and the industry are cohesively working towards production of low TFA containing products in line with CODEX and global practices.

- Low Trans products can be produced using palm oil and its fractions along with indigenous oils by hydrogenation and blending/ interesterification techniques and still meet customer expectations of functional/nutritional requirements.

- However Government must remove the present cap on mp of 41 deg C max and truly align with CODEX standard to make industry globally competitive.
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FOR YOUR ATTENTION