



FOOD; MEDICINE OR POISON ROLE OF LAW IN ENSURING FOOD QUALITY, MAKING FOOD MORE OF MEDICINE AND LESS OF POISON

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INTRODUCTION

People eat to survive but many survive to eat. It's an age old fact from our forefathers that healthy food is the medicine for majority of diseases and enhances immunity. But the main question is whether the food available is in its purest form or is it chemicals in disguise. Earlier when subsistence farming was undertaken, food produced and prepared was a blessing in disguise but now with the growth of commercial farming, escalated demand in food products and cropping up of fast food and tinned food, it has become a recipe of disaster. Money has blinded many people urging them to adulterate food products making many food items unsafe for consumption. Adulterated Food lacks in quality as a medicine and in reality is a slow poison making human body vulnerable to existing and new diseases. Hence it's advised to have only home cooked food and not restaurant-made or packed food but can we make sure that the rice, dal, vegetables, milk, chilli-powder etc used for cooking is free from adulteration.

FOOD; CURRENT SCENARIO

Food products are either directly or indirectly reaped from plants or animals. These produce are either victims of adulteration and or improper packaging which causes various health issues.

Foods That Can Be Adulterated and Their Effects

Adulteration is the act of intentionally or deliberately adding chemicals or other unwanted substances to food products so as to enhance the appearance of the products, to increase shelf life and or to increase its quantity thus degrading its quality with the aim of earning increased profits. One of the major causes of adulteration is to increase the shelf life of food articles. Adulterants for every food item from A to z have already been discovered and or invented. Most food items except that are grown organically in one's house is subject to adulteration. Only a handful of producers or manufacturers with service motive provide adulteration free food to the public. Most of the food products are made available to the general public after it has crossed the stage of adulteration.

There are 3 major types of adulterants; they are intentional adulterants, incidental adulterants and metallic adulterants. Intentional adulterants are those inferior materials that are added premeditatedly to improve appearance and quantity to earn higher profits. They include sand, chalk-powder, stones etc. Incidental adulterants are added as a result of negligence, ignorance or lack of standard facilities. Some of the common incidental adulterants are pesticide residues, larvae in food etc. Whereas metallic adulterants are metallic substances like arsenic, lead from water etc.

Few among the many foods that are adulterated:

Milk: milk is a storehouse of nutrients and can be consumed by anyone from just born babies to age old (senile) parents. It can be consumed by babies even before they could digest other food; hence milk is a primary source of nutrition for babies. Despite their immense importance milk is one of the most



adulterated food item in this world. Milk instead of being a chest of nutrients like calcium, protein, fat, carbohydrate, mineral it has become a casket of chemicals. In 1850 swill milk scandal occurred at New York which recorded the death of nearly 8000 infants in an year as a result of adulterated milk. Some of the chemicals used as milk adulterants are water, melamine, urea, caustic soda, formalin, ammonium sulphate, boric acid, benzoic acid, salicylic acid, hydrogen peroxide, sugar and maltodextrin.

- Melamine: when milk is adulterated with water to increase its quantity, the natural protein level in milk reduces. Thus melamine, a chemical is added to increase the protein count. In 2008 china witnessed a major milk scandal where an estimate of 300,000 became victims due to adulteration of milk by melamine.
- Formalin: it is a chemical which is 37% aqueous solution of pungent gas formaldehyde. Formalin is used in mortuaries to preserve dead bodies and a major cancer causing agent when consumed. Such a dangerous chemical that causes various health problems when inhaled or comes in contact with human body is extensively used in food industry to preserve perishable goods i.e. increase the shelf life of such goods.
- Urea and ammonium sulphate: urea is added to increase SNF value in synthetic milk and ammonium sulphate is added to milk to increase the lactometer reading by maintaining the density of milk as milk loses its density with dilution using water. The maximum limit of urea approved by FSSAI in India is 70mg/100ml as urea is a natural constituent of raw milk but this level is mostly exceeded by adding commercial

urea so as to increase non-protein nitrogen content.

- Water: milk is diluted using water thus reducing the nutrient content in milk. Moreover when milk is diluted using unhygienic or polluted water it further makes human body prone to various diseases.
- Acids: acids like boric acid, benzoic acid, salicylic acid, hydrogen peroxide are used as preservatives.
- Caustic soda: caustic soda is used in the manufacture of soaps and detergents. It's used in milk to create a foamy texture. As fat in milk is expensive, it is removed and compensated by adding non milk vegetable fat and oil. Detergents perform the function of emulsification and dissolving the oil in water resulting in a frothy solution.
- Maltodextrin: is used to improve the taste, flavor, solubility and dispersibility of dairy products.

Health issues: adulterated milk can impair the normal working of various organs in the body making way for cancer, heart problems and even death. Some of the health issues caused by various adulterants are; formalin is a deadly weapon that causes various health complications like biological mutation and reproduction complication, tumors, CNS disorders etc. High intakes of formalin leads to fatal diseases like cancer and may even lead to coma. Excessive urea may cause nausea, vomiting, headache, redness in skin or eye, respiratory and kidney problems such as asthma, cough, and other lung damage, etc. melamine may cause renal failure and death in infants. Detergents and peroxides in milk may lead to gastro-intestinal complications. Hydrogen peroxide (H₂O₂) may even lead to damage of DNA cells leading to premature aging etc.



Vegetables and fruits: Glossy polished vegetables and fruits have been flooding the markets in the recent times. To bring out the shiny effect they are smeared with either wax or malachite green or rhodamine B or copper sulphate. Further vegetables and fruits become prey of oxytocin hormone and calcium carbide.

- **Malachite green:** $C_{23}H_{25}N_2$, chemical dye used as dyeing agent for paper, leather and silk is widely used to dye green vegetables and fruits such as peas, gourds etc. Malachite green is known to have carcinogenic properties i.e. likely to cause cancer.
- **Oxytocin:** It is a reproductive hormone found in mammals that is injected into the roots of plants so as to produce bigger fruits and vegetables and also to increase their production. Oxytocin taken via vegetables and fruits are known to have inverse and irreparable damage on human body.
- **Copper sulphate:** This blue coloured chemical is used on green vegetables like green peas, gourds and cucumber to give a fresh green look. According to FOTRC, copper sulphate results in severe gastrointestinal infections. The use of copper sulphate is regulated by the Insecticides Act, 1968¹ as copper sulphate comes under the ambit of the definition of insecticides.
- **Wax:** Natural wax in fruits and vegetables are removed by washing and artificial wax is applied so as to prevent enormous loss of moisture content in fruits and vegetables as water is a major constituent in fruits and vegetables and also to prevent bruising and

decay to lengthen its shelf life. This process is called fruit waxing.

- **Calcium carbide:** Farmers harvest fruits and vegetables before they ripen so as to facilitate long distance transportation as they would get spoilt if they are harvested in a ripe stage and transported. Fruits produce ethylene to ripen. Calcium carbide is a chemical used in the production of calcium cyanamide for fertilizers. Calcium carbide produces acetylene when it comes in contact with moisture or water. Acetylene functions similar to ethylene and hastens ripening of several fruits. It results in mouth ulcers, gastric problems, diarrhea and onset of cancer, heart diseases, stroke, arthritis and causes miscarriage or developmental abnormalities when consumed by pregnant women. Moreover industrial grade calcium-carbide has traces of toxic chemicals like arsenic and phosphorus which causes various health issues.

Oil: Oil is a major component of cooking and of a balanced diet. Due to their nutritional values and great demand in both national and international markets they become a potential point of adulteration. Oil can be obtained from different sources such as from coconut, sesame, olives, mustard, and sunflower. Two major types of edible oil adulteration are mixing cold-press oil with refined oil and substitution of expensive oil by cheaper ones. Demand for cold press oil is on the rise as it simply involves extracting of oil by cold pressing and simple filtration without any refining using chemicals. Since cold-press oil is expensive, dishonest traders mix it with refined oil so as to increase profits by

¹The Insecticides Act, 1968. sec 3 e "Insecticide" means i. any substance specified in the schedule



increasing quantity. Another type is replacing expensive oil by cheaper oil. For example: edible oil is adulterated with argemone oil (leads to loss of eyesight, heart diseases, tumor), mineral oil (damage to liver, carcinogenic effects), karanja oil (heart problems, liver damage), castor oil (stomach problems). But the 'never use oil' is refined oil; oil that is 'purified' by chemicals. Chemicals used in the oil treatment do no good to human body but on the other hand reduces the life span of a human. One of the most dangerous products in the market is partially hydrogenated oil that is made by forcing hydrogen gas into oil at high pressure due to which healthy fats are converted into trans-fat that has highly adverse effects on humans.

Honey: Honey is a natural sweet mixture produced by bees from the nectar of flowers. Honey is used as sweeteners and is used extensively in Ayurveda. Due to its unparalleled taste and medicinal advantages, honey is always on demand. This makes honey one of the most adulterated foods in this world. Honey can be either directly or indirectly adulterated. Direct adulteration is by adding sulphite-ammonia caramel, corn sugar or cane sugar or rice syrup or molasses sugar or other sugars directly to the honey whereas indirect adulteration is when honeybees are fed with industrial sugars at the stage when broods become naturally available. Such adulteration causes various stomach and blood related disorders.

Coffee and tea: Tea is adulterated with used tea leaves that are processed and coloured which causes liver problems. Whereas coffee with byproducts of coffee processing such as coffee husks, sticks. Also it is masked with brown sugar, tamarind seeds, date seed

powder which leads to diarrhea. Coffee is mainly adulterated with chicory which causes stomach disorder, giddiness and joint pains.

Wheat and other food granules: Wheat is commonly adulterated with ergot which is a poisonous fungus that grows on rye and other grasses. Ergot is highly poisonous and may be lethal. Symptoms of early stages of poisoning are vomiting, nausea, muscle pain, numbness, itching, rapid or slow heartbeat and may progress to gangrene, vision problems, confusions, convulsions, unconsciousness and death.

Dal: Bengal gram dhal & thoor dhal are adulterated with kesari dhal which leads to lathyrism and Arhar dal with metanil yellow that is highly carcinogenic.

Spices & condiments: The distinctive feature in Indian cuisine is spices. No Indian dish is completed without some or the other spice. Nearly all the spices available in this world have their respective adulterants. For

Turmeric: A miracle spice of India is adulterated by adding non-permitted colorants like metanil yellow and other yellow aniline dyes that is highly carcinogenic and Lead chromate which impairs neuro-developmental growth in children and exposes one to heart and brain impairment.

Chilli powder: Brick powder, sawdust that causes stomach problems and artificial colours that causes cancer are used.

Black pepper: Papaya seeds, light black berries which causes stomach and liver problems are used as an alternate for black pepper.

Common salt: Chalk powder is used that causes stomach ailments.



Cloves: Exhausted cloves i.e. have most of the oil removed are substituted with fresh cloves.

Cinnamon: Adulterated using cassia barks that when consumed in large quantities can be fatal and may lead to liver disorders.

Mustard seeds: Argemone seeds are used that causes epidemic dropsy and glaucoma.

Saffron: World's most expensive spice is replaced by coloured tendrils of maize cob.

Fish: Formalin, a lethal cancer causing weapon is injected to fish so as to preserve fish and increase shelf life as fishes are highly perishable in nature and get spoiled if it isn't maintained at a temperature of 5°C. Fishes are laced with formalin mainly when the point of sale is far from the point of catch. Moreover Ammonium is mixed with the water that gets converted to ice and used to preserve fish so as to keep the fish fresh.

Packaging risks: Food articles are packed in various materials like aluminium, tin, paper, plastics and glasses. But aluminium reacts with heat. So when hot foods are packed in aluminium foils it tends to react and aluminium seeks to seep into the food. Excessive intake of aluminium may result in Alzheimer's. Glass is comparatively better material for packaging but is generally avoided as glass tends to break easily and moreover aluminium and tin have become costlier. Hence cheaper materials are adopted for packaging such as papers, waxed paper cartons, cardboards etc. But ink in newspapers and recycled paper cartons react with the food that is packed and is highly toxic when that food is consumed. Moreover conventional packaging techniques such as plastics that are synthetically produced have emerged. Some of the plastics used for packaging are polystyrene, polyvinyls,

polyvinylidene and derivatives, vinyl acetate, poly ethylene, polypropylene and polyesters. But these plastics also react with food which when consumed causes irreparable damage to human health.

Food at restaurants: Restaurant food is generally tasty and loved by all. But is it good to have restaurant food on a daily basis? Though some restaurants prepare food in a hygienic manner many restaurants don't. Reusing of oil is a major drawback seen in many restaurants. Total polar compounds (TPC) are formed when oil is repeatedly used. High rates of TPC's have negative impact on health leading to hypertension, liver diseases, cholesterol and other health problems. But FSSAI announced that restaurants will no longer be able to use cooking oil multiple times, with effect from March 3rd 2019. As notified in Food Safety and Standards (Licensing and Registration) First Amendment Regulation, 2017 on 24th October, 2017 the maximum limit for TPC is 25% beyond which vegetable oil is not fit for consumption. Last but not the least, many restaurants add monosodium glutamate to enhance taste of food but it is said to have inverse effects on human body as it is associated with various forms of toxicity. Another problem faced by restaurants is storage as rodents and other insects like cockroaches feed on the food if stored improperly.

ADULTERATION IN INDIA

India has witnessed various adulteration scandals and cases in the recent times.

According to a report by Times of India dated September 17 2019 ten most commonly adulterated foods in India are

- milk
- tea/coffee



- wheat and other grains
- vegetables
- sweets
- honey
- dal
- spices
- butter and cream
- ice cream.

Some of the major adulteration cases in India are:

1. In 1998 Delhi witnessed death of nearly 60 people and illness of more than 3000 as a result of edible mustard oil adulteration with white oil, a petroleum product.
2. In kollam district on june 2018 Nearly 9600kg of formalin laced fishes were confiscated as a part of operation sagar rani out of which 7000kg were prawns and 2600kg of other species.
3. On dec 10 2019, 30000kg of fake cumin seeds made out of coconut broom bits, molasses, grass and stone powder which was mixed with original cumin seeds were recovered by the police in Rea Bareilly Uttar Pradhesh.

FOOD LAWS IN INDIA:

Food industry commonly known as sunrise industry in India comes under the purview of concurrent list (Schedule 7 list III) as item No.18² and No.33 (b)³. Prior to 2006 the core act that regulates all food related activities in India was Prevention of Food Adulteration Act, 1954 but it was repealed and replaced by **Food safety and Standards Act 2006** (hereafter referred to as FSS Act) under the Ministry of Health and Family Welfare, Govt. of India. Eight legislations namely

- The Prevention of Food Adulteration Act, 1954
- The Fruit Products Order, 1955
- The Meat Food Products Order, 1973
- The Vegetable Oil Products (Control) Order, 1947
- The Edible Oils Packaging (Regulation) Order, 1998
- The Solvent Extracted Oil, De oiled Meal, and Edible Flour (Control) Order, 1967
- The Milk and Milk Products Order, 1992
- Essential Commodities Act, 1955 (related to food)

were in force prior to the FSS Act which was repealed and replaced. There was a need to consolidate all acts and orders so as to facilitate easy legislation in the field of food. FSS Act provides for regulation regarding manufacture, storage, distribution, sale and import, lays scientific standards for food articles to ensure availability of safe and wholesome food for human consumption.

Registration and licensing:

Compulsory registration and licensing of food business is a method by which food safety is ensured and regulated legally.

Sec 31(1) of FSS Act states that “No person shall commence or carry on any food business except under a license” and **31(2)** states that 31(1) shall not apply to a petty manufacturer who manufactures and sells food articles himself, hawkers, itinerant vendor or small scale or temporary stall holder or cottage or other tiny food business operators but its mandatory for them to

² Adulteration of foodstuffs and other goods

³ Trade and commerce in, and the production, supply and distribution of foodstuffs, including edible oilseeds and oils.



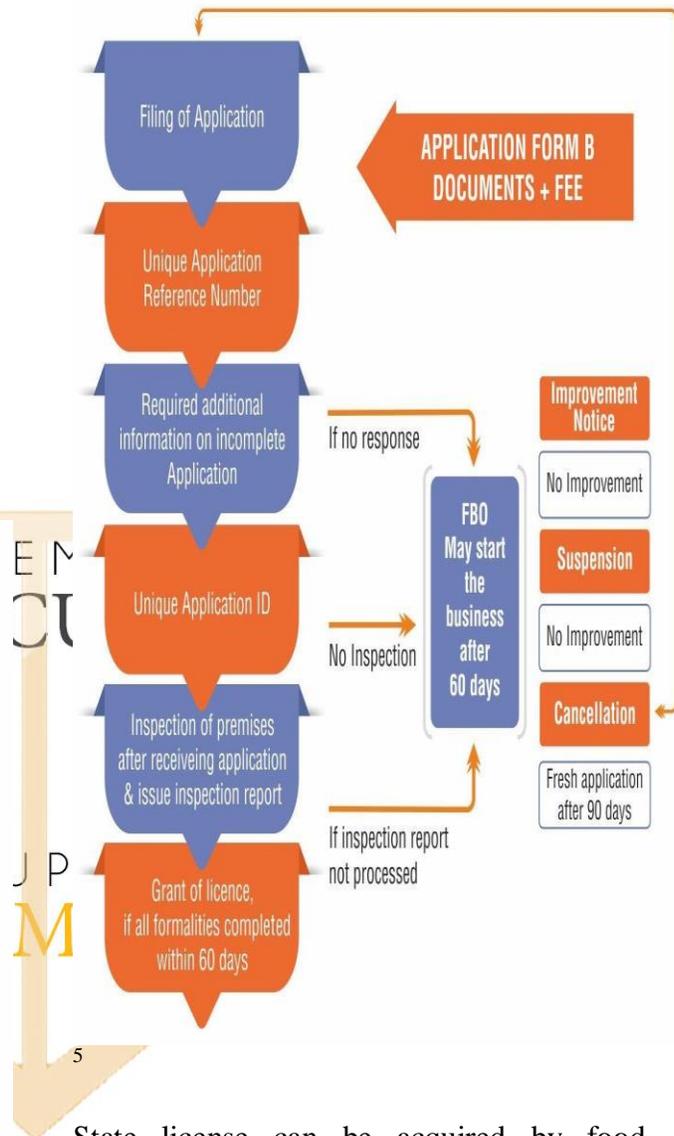
register with such authority and manner as specified by regulations.

FSS Act makes it compulsory for food business to acquire license/register as prescribed by law to commence their business thus ensuring quality of food in India. Registration is for food business with a turnover of not more than ₹12lakh and business which exceeds that limit must take a license. Registration and licensing in India is regulated by Food Safety and Standards (Licensing and Registration of food Business) Regulations, 2011. The registration and licensing procedure is as follows:



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⁴ Registration process



EMCT

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State license can be acquired by food business with an annual turnover of between ₹12lakh to ₹20lakh or all grain, cereal and pulses milling units irrespective of turnover. Whereas central license can be acquired when the annual turnover exceeds ₹20lakh or the firm operates in two or more states or Food business covered under Schedule 1 of FSS (Licensing and Registration of Food Businesses) Regulations.

⁵ Licensing procedure



Food Safety & Standards Authority of India:

Food Safety & Standards Authority of India is a statutory authority which ensures that the food produced, manufactured, sold or distributed is free from adulteration.

Sec 4 of FSS Act provides for the establishment of Food Safety and Standards Authority of India with its headquarters at Delhi to perform functions specified in Sec 16 of the Act.

Sec 16: duties and functions of FSSAI are:

- (1) To regulate and monitor the manufacture, processing, distribution, sale and import of food so as to ensure safe and wholesome food.
- (2) FSSAI by regulations specify the
 - (a) standards and guidelines in relation to food articles.
 - (b) limitation for use of chemicals like food additives, crop contaminated, pesticide, heavy metals etc.
 - (c) guidelines and mechanism for accreditation of certification bodies engaged in certification of food safety management and of laboratories(16(2)(e)).
 - (d) procedure and enforcement of quality control of food items
 - (f) method of sampling, analysis and exchange of information between authorities
 - (g) Conduct survey on enforcement and administration of the act
 - (h) Food labeling standards
 - (i) Manner of risk analysis, assessment, communication and management.

Some of the other functions of FSSAI as in **Sec 16(3)** are: Provide scientific advice and technical support to Central and State Govt. in matters pertaining to food. Collect data

regarding food consumption, contaminants in food and residues of various contaminants in food etc. Create an information network so as to provide rapid and reliable information about food safety and issues of concern to public, consumers, panchayats etc to receive. Provide training to people involved in the food business. Contribute to the progress of international technical standards for food, sanitary and phyto-sanitary standards. Improve consistency between international and domestic food standards as well as making certain that the level of protection adopted in the country isn't reduced. And promote general awareness regarding food safety and standards.

Sec 11 states that FSSAI can establish a Central Advisory Committee by a notification.

Sec 12 provides the functions of the committee which are: to ensure a close cooperation between food authority and its respective enforcement agencies and advice food authority on matters such as drawing up of proposal for the Food Authority's work programme, prioritisation of work, identifying potential risks, pooling of knowledge, and such other functions as specified by the regulations.

Sec 13 states that Scientific Panels with independent scientific experts shall be established by the food authority such as panels for food additives, flavourings, processing aids and materials in contact with food, pesticides and antibiotics residues, genetically modified organisms and foods etc.

Sec 14 states that the food authority shall constitute a Scientific Committee responsible for providing the scientific opinions to the Food Authority and other functions as specified by the Act.



These duties and functions of FSSAI along with those of Central Advisory Committee, Scientific Panel and Scientific Committee reduces the risk of adulterated, misbranded, substandard foods reaching the doorsteps of consumers.

Definition of food and adulterant as per FSS Act:

Sec 3(j)⁶ defines food as any substance whether partially or completely processed or unprocessed for human consumption and **Sec 3(a)**⁷ defines adulterant as any material employed for making food unsafe or sub-standard or mis-branded or containing any extraneous matter.

Moreover FSS Act states various deeds related to food that cannot be undertaken and their respective penalties/punishments.

Sec 19 states that unless in accordance with the provisions of this Act, no article of food shall contain any food additive or processing aid.

Sec 20 states that “no food article can contain any contaminant beyond quantities specified by the regulations, whether the contaminant is naturally occurring toxic substances, toxins, hormone or heavy metals.”

Sec 21(1) states that “no food article can contain pesticide residues or insecticides, veterinary drugs residues, solvent residues, antibiotic residues, pharmacological active substances and micro-biological counts beyond the limits specified by the regulation.

(2) states that no insecticide other than fumigants registered & approved under

insecticides Act can be used directly on any food article.

Sec 22 prohibits any person to manufacture, sell, import or distribute any novel food, organic foods, genetically modified food articles, foods for special dietary uses, irradiated food, functional foods, nutraceuticals, health supplements, proprietary foods and such other articles of food which the Central Government may notify in this behalf; until and unless provided by the Act.

Sec 23 states that no person shall manufacture, distribute, sell or expose any food which is not marked and labeled as per law, to any agent or broker for the purpose or sale. Provided that the information on the label is not false or misleading

Sec 24 provides for prohibition of unfair trade practices and lays restrictions on advertisement. (1) states that no advertisement regarding food that is misleading or deceiving or contravenes the provision of the Act can be made. (2) states that no person shall engage in any unscrupulous trade practices for promoting sale, supply, use or consumption of that food article.

Penalties as provided in the Act are:

Section	Provision	Punishment/Penalty
50	Selling food not in	Penalty of not exceeding

⁶ “Food” means any substance, whether processed, partially processed or unprocessed, which is intended for human consumption and includes primary food to the extent defined in clause (zk), genetically modified or engineered food or food containing such ingredients, infant food, packaged drinking water, alcoholic drink, chewing gum, and any substance, including water used into the food during its manufacture, preparation or treatment but does not

include any animal feed, live animals unless they are prepared or processed for placing on the market for human consumption, plants, prior to harvesting, drugs and medicinal products, cosmetics, narcotic or psychotropic substances.

⁷ “adulterant” means any material which is or could be employed for making the food unsafe or sub-standard or mis-branded or containing extraneous matter



	compliance with the Act or not of the nature/substance quality demanded	₹5,00,000 and not exceeding ₹25,000 if belong to category of persons under sec 31(2).			exceeding ₹10,00,000	
51	Substandard goods	Penalty which may extend up to ₹5,00,000		59	Punishment for unsafe food	When it results in injury: imprisonment for a term which may extend to six months and also with fine which may extend to ₹1,00,000 non-grievous injury: imprisonment for a term which may extend to one year and also with fine which may extend to ₹3,00,000 grievous injury: imprisonment for a term which may extend to six years and also with fine which may extend to ₹5,00,000 death: imprisonment for a term which shall not be less than seven years but which may extend to imprisonment for life and shall also be liable to pay fine which shall not be less than ₹10,00,000
52	Misbranded food	Penalty which may extend up to ₹3,00,000				
53	Publishing or part of publishing misleading advertisement.	Penalty which may extend up to ₹10,00,000				
54	Food containing extraneous matter	Penalty which may extend to ₹1,00,000				
55	Failure to comply with the directions of Food Safety Officer	Penalty which may extend to ₹2,00,000				
56	Unhygienic or unsanitary processing or manufacturing of food	Penalty which may extend to ₹1,00,000				
57	possessing adulterant	Adulterant is not injurious to health, to a penalty not exceeding ₹2,00,000 adulterant is injurious to health, to a penalty not				



61	Punishment for false information	imprisonment for a term which may extend to three months and also with fine which may extend to ₹2,00,000
63	Punishment for carrying out a business without licence	imprisonment for a term which may extend to six months and also with a fine which may extend to ₹5,00,000

Regulations:

Sec 92(1) of FSS Act empowers the food authority with the previous approval of Central govt. and after previous publication, to make regulations consistent with this Act and rules to carry out the provisions of the Act, by a notification.

Various food safety and standards regulations are enacted are

1. Food Safety and Standards (Licensing and Registration of Food Businesses) Regulation, 2011
2. Food Safety and Standards (Food Products Standards and Food Additives) Regulation, 2011
3. Food Safety and Standards (Prohibition and Restriction of Sales) Regulation, 2011
4. Food Safety and Standards (Packaging and Labelling) Regulation, 2011
5. Food Safety and Standards (Contaminants, Toxins and Residues) Regulation, 2011
6. Food Safety and Standards (Laboratory and Sampling Analysis) Regulation, 2011
7. Food Safety and Standards (Food or Health Supplements, Nutraceuticals, Food for Special Dietary Purpose, Functional Food and Novel Food) Regulation, 2016
8. Food Safety and Standards (Food Recall Procedure) Regulation, 2017
9. Food Safety and Standards (Import) Regulation, 2017
10. Food Safety and Standards (Approval for Non-Specific Food and Food Ingredients) Regulation, 2017
11. Food Safety and Standards (Organic Food) Regulation, 2017
12. Food Safety and Standards (Alcoholic Beverages) Regulation, 2018
13. Food Safety and Standards (Fortification of Food) Regulation, 2018

Furthermore food business firms should also be socially responsible to the general public and should withhold from indulging in unfair practices just for profits.

Sec 26 states “the responsibilities of the businesses operating in the field of food.” It states that every food business operator shall comply with the rules and regulations mentioned in the Act and doesn’t sell or manufacture or store or distribute any food that’s unsafe or misbranded or substandard or contains any extraneous matter and shall not employ any person suffering from any infectious or contagious diseases.

FSS Act also empowers consumers to analyse whether the food article is free from adulteration. As a result food firms are made accountable to the general public. Being accountable ensures food produced is safe.

Sec 40 states that any person even if he/she isn’t a Food Safety Officer can get any food article analysed by a Food Analyst and if the food analyst finds the food not in compliance with the act shall forward the report to the designated officer as per rules mentioned in the Act.



14. Food Safety and Standards (Food Safety Auditing) Regulation, 2018
15. Food Safety and Standards (Recognition and Notification of Laboratories) Regulation, 2018
16. Food Safety and Standards (Advertising and Claims) Regulation, 2018
17. Food Safety and Standards (Packaging) Regulation, 2018
18. Food Safety and Standards (Recovery and Distribution of Surplus food) Regulation, 2019

Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011⁸ and **Food Safety and Standards (Contaminants, Toxins and Residues) Regulation, 2011** are important regulations that provides maximum limit up to which a particular additive or chemical can be present in a particular food article. With various amendments to the regulations, government is stiffening the rules and laws reducing adulterants in food to a great extent.

Various amendments were made for example 14th amendment to Food Safety And Standards (Food Products Standards And Food Additives) Regulations, 2011 regards to standards for date paste, Fermented Soybean Paste, Cocoa mass or Cocoa/Chocolate Liquor and Cocoa Cake, Vegetable Protein Products, Thermally Processed Fruit Salad/Cocktail/Mix, HARRISA (Red Hot Pepper Paste), Cocoa Powder, Quick Frozen French Fried Potatoes, Canned Chestnuts and Canned chestnut Puree, Edible Fungus

Products, Ginger (Sonth, adrak), Ginger (Sonth, adrak) Powder, Tomato Ketchup and Tomato Sauce.

Import:

FSS Act not only ensures that the domestically manufactured or prepared or sold food is free from adulteration but also makes sure that the food imported complies with the rules and regulations of the Act, thus providing safe imported food to the general public.

Sec 25 states that all imports related to food must comply with the rules and regulations of the Act. And no person can import any misbranded or substandard or unsafe food or food containing extraneous matter.

Some of the other laws that can be activated against food adulteration are:

A consumer of any food or allied product can also seek redressal through **The Consumer Protection Act, 2019**. This act provides various safeguards to protect the rights of a consumer.

Atomic Energy (Radiation Protection) Rules, 2004

Sec 13⁹ of the Act restricts the practice of deliberate addition of radioactive substances in beverages and foodstuffs which is intended for ingestion or inhalation. Sale, import or export of such products is not permitted under law

The Insecticides Act, 1968 regulates the sale and manufacture of insecticides thus in turn

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https://fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Additives_Regulations_29_03_2019.pdf

⁹Sec 13. Restriction on certain practices:- (1) Practices such as deliberate addition of radioactive substances in foodstuffs, beverages, toys, personal ornaments, and cosmetics or any other commodity or product intended

for ingestion, inhalation or percutaneous intake by, or application to, a human being and sale, import or export of such products shall not be permitted. (2) Activation of the aforesaid products shall not be permitted



regulating the insecticides used on the food crops.

Agricultural Produce (Grading and Marking) Act, 1937

AGMARK; a certification mark for agricultural and allied products, was enforced under the Agricultural Produce (Grading and Marking) Act, 1937. AGMARK reassures that a product conforms to a set of standards approved by the *Directorate of Marketing and Inspection*. Nearly 205 commodities such as fruits, vegetables, cereals, pulses etc is covered under the standards of AGMARK thus ensuring delivery of quality products to the consumer.

Moreover **Sec 5A** of the Agricultural Produce (grading and marking) Act punishes whoever sells any article under the ambit of the act which is misgraded with imprisonment for a term not exceeding 6 months and fine not exceeding ₹5,000.

INTERNATIONAL ORGANISATIONS WORKING FOR FOOD SAFETY

Some of the organizations working to ensure food safety and security are:

- World Trade Organization (WTO)
- World Health Organization (WHO)
- Food And Agriculture Organization (FAO)
- Codex Alimentarius Commission (CAC) (under FAO/WHO)
- International organization for standardization (ISO)
- National advisory committee for microbiological criteria for food (NACMCF)
- International commission for microbiological specification for foods (ICMSF)

Food safety legislations in other countries:

Canada: two organizations responsible for maintaining food safety in Canada are

Health Canada—enacts policies and establishes standards for the safety and to maintain nutritional quality of food sold in Canada.

Canadian Food Inspection Agency (CFIA)—is responsible for food safety inspections and related activities and administration and enforcement of 14 Acts which are Agriculture and Agri-Food Administrative Monetary Penalties Act, Appropriation Acts, Canada Agricultural Products Act, Canadian Food Inspection Agency Act, Consumer Packaging and Labelling Act (as it relates to food), Feeds Act, Fertilizers Act, Fish Inspection Act, Food and Drugs Act (as it relates to food), Health of Animals Act, Meat Inspection Act, Plant Breeders' Rights Act, Plant Protection Act, Seeds Act.

Australia:

Food Standards Australia New Zealand (FSANZ), independent binational organization under the Australian government's health and ageing portfolio, is responsible for maintaining food standards and developing food security in Australia and New Zealand.

United Kingdom:

Food standards agency¹⁰ is an independent department of Government to protect public health and consumers' interest in food functioning across England, Wales and Northern Ireland.

Netherlands:

Food and Consumer Product Safety Authority¹¹ under the ministry of agriculture, nature and food quality is a key department to monitor food and consumer products with

¹⁰<https://www.food.gov.uk/>

¹¹ <https://english.nvwa.nl/>



the aim of protecting human and animal health.

Norway:

Norwegian Food Safety Authority¹² is a governmental body with the goal to provide safe and healthy food and water to consumers.

people. And food business operators should be more ethical and responsible to the society. Adulteration must be controlled before it's too long. Jai Hind.

CONCLUSION

“Food is our medicine” is an age old phrase taught to us by our forefathers but due to adulteration the true nature of food is lost. Government and various international organizations are striving to secure healthy food and provide adulteration free food to the public. DART an official website of FSSAI provides methods of rapid detection of adulterants in various food articles such as milk, spices etc.

Not all but many people are indulged in food adulteration. People adulterate food to earn profits as adulteration enhances the look, and increases shelf life of food articles. As stated in an English proverb “Don't judge a book by its cover” true to its meaning, we never know what is inside a shiny vegetable. Adulteration is prevalent in many parts of India despite strict laws due to corruption. Corruption is a major problem that hinders the implementation of various Acts in India.

Another reason for adulteration is unawareness of people. Many are unaware that such adulterants are toxic to human health. Moreover these adulterants are available at cheaper rates urging many manufacturers to use them. This problem of adulteration can be minimized only when people realize the implication of such adulterants on human body. Awareness about food adulteration must be promoted among

¹²<https://www.mattilsynet.no/language/english/>