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FOOD ADULTERATION: A SOCIO-LEGAL PROBLEM

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Abstract

"We are what we eat" is an old saying. Our nutritional status, health, bodily and intellectual abilities depend upon what we consume and the way we consume it. Since the dawn of mankind, access to high quality food has been a major concern. However, adulteration of food products is one of the major challenges in today's society.Nearly every possible food product, from milk to fruits, vegetables to grains, is contaminated to some extent. It is estimated that around 22% of foods are adulterated every year. Besides cheating consumers and constituting a considerable economic problem, adulteration of food poses a serious health risk for consumers. Over 200 acute and chronic disorders, ranging from cancer to digestive tract infections, are known to be brought on by food-borne risks.Adulteration of food thus adversely affects the quality of life and its control demands a strong food-defence strategy that addresses the entire food-supply chain. The paper aims to highlight the problem of food adulteration, its modes andimpacts on producers, consumers and food enterprises and to suggest some safety measures to prevent adulteration of food items.

Key Words: Food Adulteration, Consumer, Health, Diseases, Life, Food-defenceStrategy

Introduction

Since ancient times, it has been believed that the three most crucial human needs are food, clothes, and shelter. A quality divergence in the three needs of clothing, shelter, and food would be more detrimental than one in the other two.[1] "We are what we eat" is an old saying. Our dietary requirement, health, bodily and intellectual abilities depend upon what we consume and the way we consume it. Since the dawn of mankind, access to high quality food has been a major concern of mankind. Sufficient amounts of safe and nutritious food are essential for supporting

[1]TanushreeKakkar, *Role of judiciary in implementation of food adulteration laws*, 16 (Unpublished LL.M. Dissertation), Bharti Vidyapeeth Deemed University, Pune

life and maintaining good health. If the quality of food is not good it becomes a root cause of many diseases in human body.[2]Consumption of food that fails to meet minimum safety requirements may endanger one's life.Food that isn't healthy to eat can't adequately absorb nutrients, rendering it unfit for ingestion and perhaps resulting in long-term growth and developmental impairments in children. People who eat poorly are more likely to get sick.[3]

Food contaminated is a socially malicious and serious issue of the general public. Food adulteration is a widespread issue in many developing nations, including Pakistan, China, Afghanistan,Bangladesh, Ethiopia, and India.About 22% of foods are allegedly contaminated annually, according to estimates.[4]Milk and dairy products are at the top of the most adulterated items. In India, over 80% of milk is reported to be contaminated with several harmful substances with around 8 to 13% contamination in rural areas and about 60 to 68% in cities.[5]Besides cheating consumers and constituting a considerable economic problem, adulteration of food poses a serious health risk for consumers. The consumption of polluted and tainted food causes health problems in around 57% of persons worldwide. 33 million disability-adjusted life years (DALYs) were caused by hazardous food in 2010, 40% of which were caused by children under the age of five.[6]

With increased international commerce, food safety has arisen as a critical worldwide concernwith deep societal impacts. The protection of people's health has been acknowledged in India as being largely dependent on guaranteeing food safety.The "Prevention of Food Adulteration Act, 1954", was created by the Indian government to address the widespread issue

[2]L. R. Chitlange, *To study awareness about prevention of food adulteration Act-1954 among working women of washim and their attitude towards seeking legal remedy in case of food adulteration*, 2 The International Journal of Science and Technology 68, 68 (2014), available at https://www.researchgate.net/publication/267848417_THE_INTERNATIONAL_JOURNAL_OF_SCIENCE_TECHNOLEDGE_To_Study_Awareness_about_Prevention_of_Food_Adulteration_Act-1954_PFA-1954_among_Working_Women_of_Washim_and_their_Attitude_towards_Seeking_Legal_Remed, Last seen on 11/12/2022.

[3]*The Future of Food Safety*, Food and Agricultural Organization of United Nations, 6 & 7 (2019), available at https://www.fao.org/3/ca4289en/CA4289EN.pdf, last seen 12/12/2022.

[4] M. Pal, Mahendra& M. Mahinder, *Food adulteration: A global public health concern*, 1(3) Food & Drink Industry 38, 38(2020) available at https://www.researchgate.net/publication/340730788_Food_adulteration_A_global_public_health_concern, last seen on 10/12/2022.

[5] Ibid, at 39.

[6]*Food Safety*, World Health Organization, available at https://www.who.int/news-room/fact-sheets/detail/food-safety, last seen on 10/12/2022.

ISSN PRINT 2319 1775 Online 2320 7876
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of food adulteration in the nation. Its objectives were to improve food quality for consumer health outcomes and boost Indian competitiveness in global food markets.The long-term goal of India is to establish a robust and proactive system of food quality assurance built upon the three pillars of self-regulation, consumer education, and, when necessary, legal enforcement. The "Food Safety and Standards Act, 2006", a specific law controlling food safety in India, was passed to replace the Act and ensure that all processed, imported, manufactured, or distributed food adhered to national standards for food safety. A paradigm shift occurred from a fragmented to a unified food regulatory ecosystem with a more comprehensive approach to assuring safe and wholesome food as opposed to only prevention of adulteration with the establishment of the "Food Safety and Standards Authority of India" (FSSAI) in 2008 under the Act.

Defining Food and its Adulteration

Food is described as *"any substance, whether processed, semi processed or raw, which is intending for human consumption and includes drinks, chewing gums, and any substance which has been used in the manufacture, preparation or treatment of food.*"[7]

For the existence of life on earth, food is essential and it derives its importance from the fact that it provides the ingredients like carbohydrates, fats, fiber, proteins, vitamins, minerals, etc. that stimulate appetite and provide a variety of energies, promotes growth and helps prevent and treat illnesses.Therefore, when we use the term "food", it always means something for human consumption and it ought to be safe, nutritious and standard as per the recognized norms of the law.

Food adulteration is the activity of lowering or degrading the quality of food by either extracting certain important elements from it or by adding hazardous or inferior-quality material to it, rendering it unfit for human consumption. The harmful substances so added are collectively called as adulterants. Adulterants are dangerous in all shapes and sizes and have the potential to reduce the potency of the food product to which they are added. Even if the adulterant is not dangerous, its presence degrades the food's natural quality and significantly lowers its nutritional

[7]*Aquaculture Development: Good aquaculture feed manufacturing practice,* Food and Agriculture Organization of the United Nations,(2001).

value. When exposed to adulterants for a longer time, several of them have also been found to be fatal or carcinogenic.

Adulteration of Food is illegal, and it is considered to have occurred when the food does not adhere to the government's legal criteria. The term "adulterated food" used to refer to any food product with lowered or degraded quality, but under new rules like the Food Safety and Standards Act of 2006 (FSS Act), the term has also been referred to as "Substandard Food, Unsafe Food, or Food containing the extraneous matter."

What causes food adulteration?

The practice of adulteration is not a new trend. It has been in society from a long time. Since ancient times, humans have instinctively meddled with the original state of food through defilement and additives. However, due to modest scale and minimal impact, it went unnoticed. But economic adulteration has recently emerged as a long-term issue affecting the food business at its most drastic level.[8] Today, food adulteration has become so widespread that customers are having difficulty in purchasing pure food. Food and beverages are generally contaminated for the following reasons:

- **Greed for higher profit margins:**It has been observed that certain unscrupulous manufacturers, importers, distributors, and retailers purposefully practice food adulteration as a part of a business strategy in order to maximise profits with minimal expenditure and by cheaper means. Thus, raising the financial income by increasing its volume is one of the major motivations for practicing adulteration.[9]
- **Lack of manpower and accidental quality evaluation:**Another significant factor contributing to food adulteration is a lack of qualified personnel employing out-of-date food processing methods and a lack of unintentional quality testing on questionable items.[10]

[8] A. Choudhary, N. Gupta, F. Hameed & S. Choton, *An overview of food adulteration: Concept, sources, impact, challenges and detection*, 8 International Journal of Chemical Studies 2564, 2565 (2020), available at https://www.chemijournal.com/archives/2020/vol8issue1/PartAM/8-1-257-299.pdf, last seen on 11/12/2022.
[9] A. Afzal A, M.S. Mahmood, I. Hussain, M. Akhtar, *Adulteration and Microbiological Quality of Milk (A Review)*, 10 Pakistan Journal of Nutrition 1195, 1196 (2011), available at https://www.researchgate.net/publication/267566928_Adulteration_and_Microbiological_Quality_of_Milk_A_Review, last seen on 12/12/2020.
[10] A. Asrat, Y. Zelalem, N. Ajebu, *Quality of fresh whole milk produced in and around Boditti, Wolaita, South Ethiopia,* 7 African Journal Animal and Biomedical Sciences, 97 (2012).

ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12, Iss 3, 2023

- **Rising food consumption due to a rapidly expanding population:** The issue of food adulteration is greatly exacerbated by the expanding population.With the tremendous rise of the population and their purchasing power, demand for food supplies is also expanding rapidly. To accommodate this rising demand, adulteration has become a typical practice.
- **Lack of awareness consumer awareness:**Food adulteration is prevalent largely due to lack of proper knowledge and awareness among common peopleconcerning proper food consumption, health hazards or disease outbreaks brought on by adulterated food products.
- **Common man's inability to afford food items made from their original ingredients**: The vendor is forced to provide a food product of lower quality when the price of the food item is more than the price that the buyer is willing to pay.
- **Inefficient government initiatives to control adulteration:** the lack of an efficientfood law to deter the adulterants and lack of government initiatives creates an ample room for food adulteration.

Modes of Food Adulteration

Although there are several ways to adulterate food, there are primarily two categories. One is accidental, unintentional, or incidental adulterations, and the other is intentional, deliberate, or knowingly adulterations.

- **Intentional or Deliberate Adulteration:** When inferior substances that have characteristics comparable to the foods to which they are added are consciously added, the food product is considered to be intentionally adulterated. It is therefore difficult to locate them. Organic or physical substances could be the adulterant. By adding ingredients like starch, flour, cane sugar, vegetable oils, water, skim milk, molasses, stone, brick powder, ergot, chicory, roasted barley powder, ground papaya seeds, and other ingredients after reducing a certain quantity to increase their profitability through chemicals like urea and melamine, it aims to increase their volume.[11]

  Removal of an amount of valuable nutrients in certain food and addition of some extraneous substances to it makes it the most hazardous type of adulteration and those engaged in this practice put their financial interests ahead of humanity. According to an

[11] Supra 8, at 2565-2566.

analysis of the first public database created in the US to gather information on risk factors for food fraud, orange juice, olive oil, milk, honey, saffron, coffee, and apple juice are the seven food ingredients most likely to be the targets of intentional or financially motivated food adulteration, or food fraud. The findings of this investigation were reported in the "Journal of Food Science."[12]

- **Unintentional or Accidental Adulteration:** Unintentional food adulteration can be attributed to someone's ignorance, negligence, or lack of infrastructure or sanitary conditions to preserve food's quality from the manufacturing site to the consumption table.[13] Food goods may get accidentally contaminated when being grown, harvested, processed, packed, stored, transported, or distributed.

Pesticides, DDT, and residues on the plant product are the most typical unintentional adulterants. Accidental metal contamination with arsenic, lead, or mercury is another possibility. For instance, if vegetables are grown in locations with high levels of industrial pollution, including heavy metals, compared to other vegetables, they could collect more heavy metals.[14]

Common foods and their adulterants

There are several foods and beverages that are susceptible to adulteration. Table 1 lists a few adulterants that have been added to food items based on accounts from various writers in various locations.

Table 1

Food Item	Adulterants
Milk and dairy products	Unhygienic water, chalk powder, soap powder, urea, starch, caustic soda
Fats and Edible oils	Mineral oil, castor oil, karanja oil, argemone oil, and synthetic hues
Ghee, Cheese, and Butter	Vanaspati, mashed potatoes, and starch powder.
Tea	Foreign leaves, used tea leaves, and coloured sawdust were all used.
Coffee	Chicory, mustard, and tamarind seeds

[12] V. Lakshmi, *Food adulteration*, 1 International Journal of Science Inventions Toady 106, 110 (2012), available at ijsit.com/admin/ijsit_files/FOOD%20ADULTERATION_1.2.4.pdf, last seen on 12/12/2022.
[13] Supra 8, at 2566.
[14] S. Manwani, C.R. Vanisree, V.Jaiman, K. K. Awasthi, C.S.Yadav, M.S. Sankhla, P.P. Pandit & G. Awasth, *Heavy Metal Contamination in Vegetables and Their Toxic Effects on Human Health*, in *Sustainable Crop Production - Recent Advances*, (V.S. Meena, M. Choudhary, M, R.P. Yadav & S.K. Meena, 2022).

ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12, Iss 3, 2023

Food grains, pulses etc	Sand, dust, marble chips, stones, filth, weed seeds, Lead chromate, dyes, and chemicals
Poppy seed, Cumin seed,black pepper	coloured artificially by alien seeds
Turmeric Powder	Chemical residues from pesticides, sawdust, chalk dust, industrial colours, yellow aniline dye, arsenic, and lead metal
Sugar	Chalk powder, washing soda, and urea
Coriander powder and Chilli	Dung powder, soluble salts, artificial colours that dissolve in water, redbrick powder, rhodamine B dye, red lead, soluble salts, and other common salts.
Honey	Molasses, dextrose, sugar, and corn syrups
Juice,Jam and Candies	Metanil Yellow and other synthetic food colours are among the prohibited hues.
Jaggery	Washing soda, chalk powder
Vegetables and Fruits	Malachite green, wax, copper sulphate, calcium carbide, oxytocin saccharin, and arsenic.

Impacts of Food Adulteration

Generally speaking, food adulteration has a very negative effect on consumers,farmers, and manufacturers and the overall socio-economic development of a country.

- **Impacts on food industries/business:** Food adulteration can have serious effects for local food companies, such as product recalls, loss of consumer confidence, lost sales, and/or drastically lowered food prices for domestic and international markets. A mistake from a supplier can damage the reputation of that business in the media.[15]Their products may even be automatically prohibited or thrown resulting in huge economic losses. In 2005, the popular Maggie incident in India where the FSSAI discovered high measures of lead in Maggi lead to country wide prohibition. Just about 3800 tons of Maggie was obliterated which was worth 320 crore.[16]
- **Impacts on farmers/producers:**Along with having an impact on large corporations, adulteration may have an affect on farmers or producers of goods like dairy, honey, coffee, wheat, etc. Numerous farmers encountered severe losses, cost increases due to rising feed prices, milk cow shortages brought on by frenzied sales or slaughter during

[15]A. Ayaz & E. Belete, *Food Adulteration: Its Challenges and Impacts, 41* Food Science and Quality Management 50, 54 (2015), available at https://www.academia.edu/78550517/Food_Adulteration_Its_Challenges_and_Impacts, last seen on 12/12/2022.
[16]K. Choudhruy, *Food Adulteration in India: Problems and Legal Response*,All India Legal Forum, available at https://allindialegalforum.com/2021/07/10/food-adulteration-in-india-problems-and-legal-response/, last seen on 12/12/2022.

ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12, Iss 3, 2023

the crisis, as in the case of the China dairy scandal, and low consumer demand for their products.[17]

- **Impacts on consumers:**Consumers may experience serious health problems as a result of food adulteration, which is a significant economic problem. Contaminated food lacks nutrition and has an unnatural flavor and consumption of such foods results in nutritional insufficiency in our bodies and poses a long-term threat to our health. Adulterants like Sudan dye and melamine have been shown to be fatal or cancer-causing, while others can induce paralysis and yet others cause discomfort in the body. Some adulterants have exceptionally high levels of toxicity, which makes them exceedingly dangerous when taken and gives them the ability to induce kidney illnesses, liver disorders, heart failure, and other health issues. Diarrhoea, stomach disorder, lathyrism, cancer, vomiting, dysentery, joint pain, food poisoning, abdominal discomfort, motion sickness, nausea, headache, anaemia, sleeplessness, brain damage, muscle paralysis, dropsy, respiratory difficulty, edoema, cardiac arrest, and glaucoma carcinogenic effects, digestive system disorders, etc. are some other chronic diseases linked to consumption of adulterated food.[18]
- **Impact on socio-economic development**: The tremendous costs of eating food that is unsafe have effects that reach well beyond human suffering. Food contamination hinders socioeconomic progress, puts a burden on healthcare systems, and restricts commerce and economic expansion. The annual lost output from unsafe food costs low- and middle-income economies alone roughly US$ 95 billion. Countries that don't adhere to international norms for food safety lose out on business prospects in the increasingly globalised food sector. By interfering with or limiting international and regional agri-food trade, food safety risks devastate economies by wasting natural resources, losing food, and generating associated income.[19]

Magnitude of Food Adulteration in India

With regards to the impact and magnitude of the permeation of contaminated and defiled substances are used for food adulteration, the "Annual Public Laboratory Testing Report for

[17]Supra 15.
[18]Supra 8, at 2567-2568.
[19]Supra 3, at 6.

2014-15" by the "Food Safety and Standards Authority of India (FSSAI)" had specified that from the 49,290 samples of food items that it run it's testing on, at least 8,469, items, of them nearly 1/5, were found to be misbranded and adulterated.[20]Table 2 shows that during the year financial year 2018-19, the FSSAI examined a total of 1,06,459 samples across the country and found over 15.8 percent food samples as sub-standard, 3.7 percent unsafe, and nine percent mislabeled.[21]

Table 2- Progress on Enforcement Metrics
FY-2018-19

S. No.	Enforcement Metric	2018-19
1	AnalysedFood Samples	1,06, 459
2	"Samples Found Non-Conforming" "Unsafe" "Sub-Standard" "Labeling/Misleading etc."	30,415 3,900 16,870 9,645

Source: FASSAI Annual Report 2018-19

Table 3 and 4 shows a consistent increase in food adulteration cases in the country.

Table 3
Progress on Enforcement Metrics
FY-2019-20

S. No.	Enforcement Metric	2019-20
1	AnalysedFood Samples	1,18,775
2	"Samples Found Non-Conforming" "Unsafe" "Sub-Standard" "Labeling/Misleading etc."	29,192 4,526 15,671 8,995

Source: FASSAI Annual Report 2019-20

Table 4
Progress on Enforcement Metrics
FY- 2020-21

S. No.	Enforcement Metric	2020-21
1	AnalysedFood Samples	1,07,829
2	"Samples Found Non-Conforming" "Unsafe" "Sub-Standard" "Labeling/Misleading etc."	28,347 5,220 13,394 9,733

Source: FASSAI Annual Report 2020-21

[20]R. Menon, *Food Adulteration in India is Endangering Health and Boosting Business*, The Leaflet (05/12/2020), available athttps://www.theleaflet.in/food-adulteration-in-india-is-endangering-health-and-boosting-business/, last seen on 12/12/2022.
[21]*Simple tips to identify adulterated and fake food items*, (24/10/2020), available at https://indianexpress.com/article/lifestyle/food-wine/simple-tips-how-to-identify-adulterated-fake-food-items-6724742/, last seen on 12/12/2022.

The FSSAI conducted a PAN-India Edible Oil Quality Survey between August 25 and August 27, 2020, to evaluate the quality of edible vegetable oils in the nation and to pinpoint the hotspots of adulteration in order to solve the issue of adulteration of edible oils. 4,461 oil samples were analysed in total, and 1,371 of those samples (or over 30%) failed at least one of the 161 examined criterion. The States with the highest sample failure rates were Uttar Pradesh (289), Tamil Nadu (174), Telangana (115), Chhattisgarh (88), and Karnataka (84). Mustard Oil (379) was the worst-performing oil type in the survey, followed by Soybean Oil (168), Blended Oil (134), Groundnut Oil (132), and Palm Oil (137). (118). Additionally, it was discovered that the majority of samples of oils (regardless of the State) failed the chemical tests, followed by the fatty acid profiles and incorrect labelling.[22]

Similarly, FASSAI performed a PAN-India Milk Products Survey-2020 on November 12–13, 2020, to evaluate the quality and safety of milk products offered throughout the festival season throughout India and to pinpoint hotspots of adulteration. According to the study, the majority of the samples did not meet the general hygienic and sanitary standards outlined in Schedule IV of the 2011 FSS (Licensing and Registration of Food Businesses) Regulations and the 2011 FSS (Packaging and Labelling) Regulations for packaged goods. For hygiene indicators in microbiological parameters, 93% failures were noted. 57% of failures in the non-compliant samples were attributable to adulterants. The percentage of Chhena, Paneer, and Khoya samples that had Aflatoxin M1 levels above 0.5 ppb was about 16%.[23]

Safety Measures to Prevent Adulteration of Food

The prevention of food and food product adulteration is not just the government's responsibility but also a moral obligation of society at large. From the initial point of production or manufacture until the point at which the items are ultimately supplied to customers, adulteration can occur. Several safety precautions implemented by all stakeholders will go a long way toward preventing food adulteration.

[22]Food Safety and Standards Authority of India (FASSAI), *Annual Report 2020-21*, available at https://fssai.gov.in/upload/uploadfiles/files/FSSAI_Annual_Report_2020_21_Eng_01_08_2022.pdf, last seen on 12/12/2022.
[23]Ibid.

ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12, Iss 3, 2023

- **At the Level of Production /Manufacture:** A change towards Good Agricultural Practices (GAP), including integrated pest control, is required to reduce food contamination of agricultural produce before and after harvest. Applications of safe and advised pesticides should be made rather than excessive and indiscriminate volumes of synthetic fertilisers and pesticides. These techniques would support the overall reduction of chemical use as well as aflatoxin control in particular.[24]Spraying leaves with water extract (5%) of henna,neem, or turmeric (Curcuma longa) powder reduces the severity of a fungal infection.[25]

  The best practical way to avoid coming into touch with chemicals at production facilities is to wear gloves and personal protection gear and to wash your complete body after working hours. Additionally, the recommended safe period prior to crop harvest must be adhered to strictly, and the necessary criteria, including antidotes and preventative measures, must be observed.[26]It is necessary to stop the discharge of harmful effluents into industrial zones.Strict control over diverse sources of contamination, routine authority monitoring of specified food standards, and labelling are further protective measures. In case of any doubt, basic chemical tests can verify the presence of pollutants.[27] The Codex Alimentarius Commission (CAC), the supreme authority of FAO and WHO, has set the maximum residue limit (MRL) for each crop or food product in order to protect consumers from chemical residues both locally and worldwide.
- **At the Level of Consumption:**A consumer needs adopt some safety measures right from sale of food items to its consumption. By employing straightforward techniques at home, notifying the necessary authorities, and being cautious while purchasing food, additives can be avoided. Before making a purchase, it is recommended to inspect the food's quality, and only branded and ISI-designated products should be preferred. In case of

[24]G.D.S. Kumar, M.N. Popat, *Farmers' perceptions, knowledge and management of aflatoxins in groundnuts (Arachis hypogaea L.) in India*, 29 Crop Protection 1534, (2010), available at https://www.sciencedirect.com/science/article/pii/S0261219410002632, last seen on 12/12/2022.

[25]Supra 8, at 2568.

[26]R.T. Gahukar,*Food adulteration and contamination in India: occurrence, implication and safety measures*,3 International Journal of Basic and Applied Sciences 47, 50 (2013), available at https://www.researchgate.net/publication/292149293_1727-5751-1-PB, last seen on 12/12/2022.

[27]*Assuring food safety and quality: Guidelines for Strengthening National Food Control Systems*, FAO,WHO, (2003).

ISSN PRINT 2319 1775 Online 2320 7876
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fruits and vegetables, proper washing and peeling might remove wax layer carrying hazardous chemical contaminants deposited on them. Nuts and Food grainsshould be dried immediately following the crop harvest and kept in clean, dry and cold environment to avoid the growth of mould.

The consumer education initiatives are crucial in educating people on how to buy and eat safe foods, mail samples of food to nearby testing facilities, and file complaints with local governments or civil authorities.By punishing defaulters, we can inspire others to avoid adulteration and contamination. Additionally, a robust enforcement system, the efficacy of civil society organizations, and good coordination between municipal and state entities can make it easier to monitor the uniform application of food regulations. This can be improved with a national consumer movement that is active, notably from NGOs, women's groups, and senior citizens.[28]

- **At Administrative Level:** The Supreme Court of India in "*Centre for Public Interest Litigation v. Union of India &Ors"*,[29] held that "a paramount duty is cast on the States and its authorities to achieve an appropriate level of protection to human life and health which is a fundamental right guaranteed to the citizens under Article 21 read with Article 47 of the Constitution of India. The right to life and human dignity under Article 21 of the Constitution also incorporates the right to have food articles and beverages which are free from harmful residues such as pesticides and insecticides. The Apex Court said that food articles which are harmful and injurious to public health had the potential of striking at the fundamental right to life guaranteed by the Constitution and it was the government's responsibility to take steps for protection of life and health."The safety measures at administrative levelincludes:
    - Regular Market surveillance and Monitoring by competent food safety authorities.
    - Regular food inspection and testing by drawing random food samples from all sources viz. Wholesalers, manufacturers and retailers and sent to the recommended laboratories.
    - Proper enforcement of the regulations and a strong machinery to conduct checks on malicious activities from time to time.

[28]Supra 8, at 2569.
[29] Writ Petition (Civil) No. 681 of 2004

ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 12, Iss 3, 2023

- Taking strict action against the offenders under the provisions of concerned legislation.
- Introducing food safety programs focusing on a "farm to table/farm to fork" approach to reduce food-borne diseases.
- Preserving knowledge about synchronised food transportation, supply-demand matching, cooperative forecasting, financial flow management, and information sharing.
- Modern laboratory facilities with pollution control techniques, food quality monitoring, inspection and management (including treatment, packaging, and preservation) are available for the aim of identifying contamination of the microorganism-caused food-borne disorders.
- Proper certification and regulation laying down the quality standards for all consumer goods.

Conclusion

People throughout the world are exposed to a wide range of possible food quality and safety issues as food is produced and processed in greater quantities and transported over longer distances than ever before. Numerous individuals become ill every day from eating food that was produced in unhygienic settings, from not knowing enough about hygiene, from using dirty water, from improper storage, from lack of washing, or from combining chemicals with food.Unsafe and adulterated food not only affects the human health but also the progress and development of overall nation.Food safety is thus a shared responsibility that necessitates widespreadcontributions and collaboration from all actors involved in the food supply chain. However, the food sector is primarily responsible for meeting regulatory food quality and safety standards. Food industry has a part to play in ensuring quality and safety of food by implementing quality assurance and risk-based food safety systems founded on the most up-to-date scientific knowledge. Governments everywhere must work to increase people's understanding of and adherence to safe food practises in order to combat the rising incidence of foodborne illnesses. Both developed and developing nations must prioritise the prevention of foodborne infections as a top priority.