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ANALYSIS OF FOOD LAWS FOR FOODADULTERATION IN INDIAN POINT OF VIEW

Vaishali,
Research Scholar, Dept. of Home Science,
Monad University

Dr. Ritu,
Professor, Dept. of Home Science,
Monad University

Abstract
The issue of food adulteration in India is a complex socio-legal challenge that requires a comprehensive examination to understand its implications on public health and the legal frameworks in place to address this menace. Food adulteration, the act of introducing impurities or contaminants into food products, poses serious threats to the well-being of the population. In the Indian context, this issue has been a longstanding concern, prompting the enactment of various laws and regulations to safeguard consumers. At the forefront of the legal battle against food adulteration in India is the Prevention of Food Adulteration Act, 1954, which was later replaced by the Food Safety and Standards Act, 2006. The latter seeks to regulate the manufacture, distribution, and sale of food products to ensure their safety and prevent adulteration. The socio-legal study of these legislations reveals a multifaceted approach that combines punitive measures with preventive strategies. From a socio-legal perspective, one must recognize the intricate interplay between the legal provisions and their impact on the social fabric of the country. The prevalence of food adulteration often disproportionately affects vulnerable populations, exacerbating existing socio-economic disparities. This necessitates a holistic understanding of the socio-legal dynamics to address the root causes and consequences of this issue. The legal framework empowers regulatory authorities such as the Food Safety and Standards Authority of India (FSSAI) to enforce standards and monitor compliance across the food supply chain. However, the effectiveness of these measures hinges on the collaborative efforts of law enforcement agencies, the judiciary, and civil society. The purpose of this study is to create awareness of food adulteration among the consumer and the factors influence by the consumers to consume adulterated food.

Keywords: Food Adulteration, food products and Food Safety

Introduction

India ranks second in global food production, behind only China. There will likely be a meteoric growth in India's food production over the next decade. There has been a lot of talk about food quality and safety issues, both in India and abroad. The most recent census took place in 2011, and the total population of Uttar Pradesh (U.P.) was 16,60,52,859 individuals. Of this number, men made up 52.67 percent, or 8,74,66,301, and women 47.33 percent, or 7,85,86,558. U.P., of which Saharanpur is a part, is a massive state with a rapidly expanding population compared to others in India. The state accounts for 16.17% of the total population of the country. Everyone should have access to affordable, healthy food that is also of good quality and safety. As a result of global warming, India's food security challenges have grown in severity. Most studies ignore the interconnected nature of climate change and food security in favor of focusing on the availability of food. The impact of climate change on food security in India is examined via three lenses: availability, access, and absorption. It finds that keeping food security in the face of climate change will be very challenging and recommends a number of solutions, including the following: the adoption of sustainable agricultural methods; increased focus on public health and urban food security; the provision of livelihood security; and the implementation of long-term relief measures in the event of natural disasters.

One of the biggest environmental issues the world is currently facing is the emission of greenhouse gases, which lead to the phenomenon known as global warming. Everyone already knows that it might seriously compromise our ecosystem's stability and human well-being. There is now evidence and widespread agreement among experts that human actions are a major factor in the current climate crisis. One NASA scientist, James Hansen, stated with absolute certainty that he was "99 percent certain" that burning fossil fuels was the primary cause of the global warming.

The World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. Other notable global events that have been linked to global warming include the UN Framework Convention on Climate Change (1992), the Kyoto Protocol (1997), the publication of the IPCC's Second and Third Assessment Reports (1995 and 2001, respectively), Hurricane Katrina (2005), and Al Gore's "An Inconvenient Truth" (2006).

Climate change might have catastrophic effects due to increased climatic variability caused by increased quantities of greenhouse gases, according to the scientific community. As a result of these climatic changes, natural calamities occur. Rapid transformation is taking place in Earth's air supply system. The already precarious atmospheric gas balance is about to be even more jeopardized, threatening the world's water supply system. The seas and all the marine life that inhabits them have taken a heavy toll. Up to 90% of fishing resources have been depleted. All ecosystems, from forests to farms, would be under risk from climate change due to increased temperatures and changes to the water cycle. Environmental, social, and critical economic interests across the board will be negatively impacted by these consequences, which will affect nearly every part of human society.

By establishing the United Nations Framework Convention on Climate Change, the goal was to reach the first ever global agreement on reducing emissions of greenhouse gases. At first glance, this task appears simple, but it becomes more complicated when considering that different nations produce varying amounts of carbon dioxide. Burning fossil fuels is the primary source of carbon dioxide since it is used in energy generation, industrial processes, and transportation, which contribute significantly to the gas's overall amount. Because industries are not evenly distributed across the globe, any deal would have a greater effect on the economies of some nations than others. Consequently, reducing carbon dioxide emissions to about 22 billion tons per year is mostly the responsibility of the developed nations at the present time (see Figure 4a). The industrialized nations of Asia, Europe, and North America account for about 90% of the world's total carbon dioxide emissions. Not to mention that industrialized nations have a considerably higher emission history compared to less developed nations.

The second most important factor influencing CO_2 emissions is the transformation of land use. Deforestation for road construction, city planning, and agricultural purposes is the primary driver of these pollution levels. After being removed for development, large expanses of rainforest sometimes transform into grasslands that are less productive and have significantly less capacity to store carbon dioxide. Carbon dioxide emissions follow a distinct pattern in this instance; the continents of South America, Asia, and Africa are responsible for more than 90% of the world's present land-use change emissions, or 4 billion tonnes of carbon tons per year. But this must be weighed against the historical reality that by the beginning of the twentieth century, the landscapes of both North America and Europe had changed. The amount of carbon dioxide released by industrial operations far outweighs the impact of land-use changes.

Many scientists believe that the human-caused greenhouse effect will cause climate change to happen in the near future. Although it may have little impact, natural climate change does occur on human timeframes, according to some global warming skeptics, who also argue that people should be prepared to adapt.

Some potential manifestations of climate change include changes in regional and global temperatures, shifts in the patterns of precipitation, changes in the size and shape of ice sheets, and variations in sea levels. Changes in the climate, both locally and globally, are responses to both natural and man-made factors. One example of an external forcing mechanism is the long-term oscillations in Earth's orbit around the sun, while one example of an internal forcing mechanism is variations in the carbon dioxide level of the atmosphere that influence the

greenhouse effect.

Food Adulteration

Food adulteration is a growing menace that unscrupulous traders and manufacture all over the world indulge in toexploit gullible consumers to make quick and easy money. It is very difficult for the consumer to select one food item because of misleading advertisements, improper media emphasis and food adulteration. As a result of these malpractices, the ultimate victim is a consumer, who innocently takes adulterated foods and suffers. In all free market societies where legal control is poor or nonexistent with respect to monitoring of food quality by authorities, usage of adulterants is common and rampant. Every nation on earth has suffered cases of adulteration at one time or other. Government authorities with great efforts have succeeded in reducing the recurrent occurrences; but have not been able to eliminate it. Only an aware and an informed consumer will be able to eliminate it conclusively by continuous routine monitoring. The dictionary defines food adulteration as an act of intentionally debasing the quality of food offered for sale by either the admixture or substitution of inferior substances or by the removal of some valuable ingredient.

An adulterant is a chemical substance which should not be contained within other substance. The addition, replacement and removal of adulterant/other ingredient is called adulteration the usage of adulterants has been common in societies with few legal controls on food quality and poor /nonexistent monitoring by authorities, dangerous chemicals and poisons. Food additives are not adulterants, if present within the specific limits. And exceeded limits they become significant adulterants and can cause serious health hazards to the consumer's .food adulteration are chemical substance added to processed foods (i) to enhance /retain quality attributes such as texture, physical properties, taste, flavor etc. (ii) to control the spoilage and enhance shelf life of the processed foods. First category of food additives include Antioxidants, emulsifiers/ stabilizers, preservatives, anti caking agents, artificial sweeteners, bulking agents, acid regulators, leavening agents, flavoring agents, glazing agents.

Existing and Emerging Food Safety Problems

A variety of chemical, biological and physical hazards are the major causes of food safety problems. Among these the bacterial contaminants, environmental contaminants including pesticide residues, mycotoxins and adulterants have been reported to be responsible for causing large-scale outbreaks of food poisoning and smaller incidents. These include various "food poisonings" reported in newspapers in India from time to time, outbreaks of Lathyrism, epidemic dropsy, venoocclusive disease, various mycotoxicoses and food borne disease due to chemical toxins(2). Although not all food incidents are injurious to health, nevertheless they undermine consumer confidence in food safety and are costly to individual companies and national economies. Novel foods,such of unapproved varieties of genetically modified foods (e.g. star link variety of maize) have in the past posedproblems of food allergenicity.

Reasons of food adulterations

A food article (product) would be considered adulterate due to any one from the following reasons-

- If the product sold by a vendor is not of the nature, substance or quality demanded by the purchaser or which it purports to be.
- If the product offered contains any substance or if it is so processed as to injuriously affect its nature, substance, or quality.
- If any inferior or cheaper substance has been substituted wholly or partly in the product, or any natural constituent has been wholly or partly abstracted from it, to affect its quality.
- If the product had been prepared, packed, or kept under unsanitary conditions, has become contaminated, injurious to health or is unfit for human consumption.
- If the container of the product is composed of any poisonous or deleterious substance which renders its contents injurious to health.
- If the product contains any prohibited colouring matter, preservatives, or contains any permitted colouring matter or preservative in excess of the prescribed limits.

- If the quality or purity of the product falls below the prescribed standard, or its constituents are present in proportions other than those prescribed, whether or not rendering it injurious to health.

Thus to put it in perspective we can say that adulteration is "The act of intentionally debasing the quality of food offered for sale either by the admixture or substitution by inferior substances or by the removal of some valuable ingredient".

Another reason for food adulteration

The causes of adulteration may be, In general, following are the reasons for adulteration

- Increase the value of commercial attributes/characteristics of the products Sometimes adulteration, even though not hazardous, may lead to severe contamination issues, e.g. spraying ofwater on dry chilies to cope with excess weight loss may lead to Aflatoxins.
- Blending is not adulteration, unless origin of the product is significant
- When supply is less than demand, to earn more profits.
- Shortage of authentic ingredients at affordable prices
- vi. Inadequate knowledge on the consequences and associated food safety risks.
- Availability of too many products in the market
- xi) Poor buying practices of consumers.
- Consumer mentality of bargaining,
- Consumer psyche.
- Availability of adulterants.

It is true that, adulteration primarily thrives in a period of shortages. The consumer's real income is falling due to rising prices of even essential commodities. Psychologically, consumers pay less attention to the quality of products during this period. He/she is facing disadvantages in the form of adulteration. Now a day, "Adulteration is health menace". Thus, food adulteration takes many forms: mixing, substitution, abstraction, concealing the quality sale of decomposed foods and using false labels. The pity is that the so-called modernization has brought with it, the evils of adulteration. Somehow, the Indian consumer has become accustomed to live with adulteration. Even educated consumers do not pay attention to the menace of adulteration. Many of the spices, ready to eat ground masalas and commonly used products are found contaminated/adulterated. The adulteration problem in India has attained massive dimensions.

Recent major Incidence of adulteration Incidence in India

2009 Sep 20 8 kg spurious desi ghee ghee and adulterated garam masala with other material from varanasi in Shivpur. People used to prepare desi ghee by mixing hydrogenated (vanaspati) ghee and chemicals. Besides, they also used to make adulterated garam masala. (Source: Times of India)

2009, 26 October varanasi: in collection of food samples as per norm is evident, especially from Varanasi Nagar indicate that as many as 58 food samples (90 per cent of them being dairy products), which failed food analysis test, have been registered under PFA Act and the number of failed samples can be close to 100, (till the month of September) this year have failed the food analysis test, showing signs of adulteration, while over 450 cases have been pending for the past five years. Another interesting revelation of the cases of food adulteration registered under PFA

Act in the city is the fact that almost three-fourth (75 per cent) of these cases belong to adulteration of milk products, including khoya, sweetened curd and even cream, in different parts of the city. Similarly, areas that have registered maximum number of samples of food adulteration include Sigra, Luxa and Nadesar while trans-Varuna areas include Pandeypur and Bhojubir.

2009, 16 September varanasi: As many as 10 food samples were collected from different parts of the city, including Visheshwarganj Mandi, and a number of samples of desi ghee and other milk products, including sweetmeat and dal, were collected. The health department of VNN had also collected a dozen food samples during surprise inspections. While two samples of desi ghee were collected from Vishesharganj Mandi, a prominent

market in the city, a number of samples of sweetmeats and dal were also collected from Bhelupur, Durgakund and Sarnath. The practice was believed to increase during the festive season.

Generally food security for the urban people is closely related to many factors like their age, religion, marital status, economical status, scarcity of clean water for cooking, drinking, washing lack hygienic aspects, due to lack of awareness and improper sanitation in food preparation has great impact on health. Beside this, bad practices, poor hygiene environments and lack of awareness lead to spread of various communicable diseases via the food system. Table 1 shows the common food adulteration found in different food commodities.

Table 1: FSSAI Laboratory Testing Reports on Food Adulteration

Sr. No	Year	Sample analysed	% adulterated/ Misbranded	No. of Cases Launched Criminal/ Civil	Penalties in (Rs lakhs)
1	2016-17	69949	14.8	5840	525
2	2017-18	72200	18.7	10235	734
3	2018-19	70688	19.7	13679	1099
4	2019-20	65057	21.79	14179	2101
5	2020-21	60671	23.28	14130	1480

Food Regulation in India and Hazard Analysis Critical Control Point (HACCP)

In India, quality control with regard to food products is being enforced through various Regulatory mechanisms like the Prevention of Food Adulteration Act (PFA), Agriculture

Grading and Marketing (AGMARK), Fruit Products Order (FPO), etc. The Bureau of Indian Standards (BIS) has recently launched a HACCP certification program for the food industry. The Mother Dairy of Delhi and the Punjab Cooperative Milk Federation has received HACCP certificates. The Agriculture and Processed Food Export Development Agency (APEDA) has helped mango processing units in Andhra Pradesh in implementation of HACCP. While efforts are being made to implement HACCP in the organised sector of the food industry, there is a need to implement HACCP in the unorganized sector also as it accounts for 70-80% of food produced and processed in India.

Various Laws on food Adulteration in India

Likewise there is multiplicity of laws, enforcement and standard setting agencies. following are the various food laws in India with their mode of implementation ,implementing ministry, area in food business and area of food commodities covered.

The Codex Alimentarius

The Codex Alimentarius is a Latin term that means “Food Law or Code”. It is a collection of international food standards adopted by the Codex Alimentarius Commission, which is an international body responsible for the execution of the Joint FAO/WHO Food Standards

Programme. FAO and WHO created the Commission in the year 1962.The programme is aimed at protecting the health of consumers and facilitating international trade in food. The standards in the Codex are for all principal foods, whether processed or semi-processed or raw. A country in any one of the ways may accept this standards. In the Preamble to the Code of ethics for international trade in Food, the right to standard of living adequate for the health and well being of the individual and his family is proclaimed in the universal declaration of human rights of the United Nations. Therefore, the major objective of the work of commission is to protect the health of consumer and ensure fair practices in the trade in food.

Food Safety Standards and Acts 2006 (34 of 2006), Rules 2008, Regulations 2011.

Food safety means assurance that food is acceptable for human consumption according to its intended use and there are certain standards that has been defined by the Food Safety and Standards Authority of India. Parliament of India has enacted the comprehensive legislation which considerable the laws relating to food. The new act

namely food safety and standards act 2006is based international legislative instrumenatalistics and codex Alimentaries commission which are related to find norms with the aims to establish Food Safety and Standards Authority of India(section 4). The Food Safety and Standards Authority of India (**FSSAI**) is laying down for science based standards of food articles and to regulate their manufacture like ensured availability of safe and wholesome foods for food safety and standards act 2006 .the new act has been introduced with the intention of providing safe, hygienic and wholesome food for the citizen's of the country. It also bestows responsibility on the manufacture and supply safe, hygienic food and wholesome food. It provides provision regarding food recall problems and improvement notice, compensation to the victim or the legal represented to be paid by vender or manufacturer. This law focuses on establishment of Food Safety and Standards Authority India, it composition and duties and functions of Chief Executive Officer, central advisory committee, scientific committee, scientific panel and provisions as to articles of food. it prohibits toxic substances, heavy metals, pesticides residue, veterinary drugs residues, antibiotics residues and microbiological counts, restriction of advertisement and prohibition as to unfair trade practices, imported food articles under foreign trade follow this act and rules and regulations made there under and special responsibilities of food business operators as per section 26 provisions relating to import, food recall procedures as per section 28. Immediately to with draw food sample from market, liability of manufactures, packers, wholesalers, distributors and sellers enforcement of this act. The food safety authority of India and state food authorities (food safety commissioner, designated officer, food safety officer) specified in the sections 30(1), 36(1), and 37(1) of this act are responsible for enforcement of this provision of the act. it empowers to monitor and verify relevant requirements are fulfilled by food business operators, licensing and restrictions of food business empowers the state govt. to appoint commissioner of food safety designated officer, food safety officer given power of search
,seizure, investigation, prosecution and procedure thereof for efficient implementation of food safety and standards and other requirements laid down under the act or rules and regulations made there under the purchaser to get analyzed any article of food from the food analysts (section 42).the act includes rules 2008 and 2011 ,various regulations like procedures for transaction of business of central advisory committee(2010),transaction of business assist meetings, procedures of scientific committee and scientific panels, There are six Regulations 2011 like food products standards and food additives(part I and II), laboratory and sampling analysis, licensesing and registrations of food businesses ,packaging and labeling ,prohibitions and restrictions on sales, contaminants, toxins and residues, regulations 2011.
Food safety and standards Act 2006 includes 101sections,first and second schedule ,various Regulations, definition of food, unsafe food under section 3(zz) ,standard, substandard ,Adulterant, contaminants, extraneous matter, food additives, hazard identification ,hazard characterization ,claim, consumer etc. are taken from codex, food authority, establishment of the scientific panel and committees, food safety audit, Misbranding food, unsafe food, risk analysis, risk assessment, communication management, Food safety management system, Provision for food recall, improvement notice, Surveillance, New enforcement structure, Envisages large network of appropriate recognition and accreditation of food laboratories from national accreditation board for laboratories, Food Safety Appellate Tribunal a new justice dispensation system for fast track Disposal of cases, graded punishment, mandatory standardization for food Harmonization of domestic standards with International food Standards, covering Health Foods etc. The main features of the Act are to establish an integrated line of control and response, decentralization of licensing, single reference point, self-compliance, making the business food operators to ensure the quality at all the stages and the act claims to be contemporary, comprehensive, and having standards based on science and transparency.
To fight adulteration numerous laws have been stipulated by ministry of food and related ministry to check consumer interest and stop malpractices. Following are the acts enacted by government of India.
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 (in relation to food)

IMPORTANT MISCELLANEOUS PROVISIONS

- If any extraneous additions of colouring matter are added, the same should be indicated on the labels
- From the labels the blending composition of ingredients should be clear to the customer
- Sale of kesari gram individually or as an admixture is prohibited
- Prohibition of use of carbide (acetylene) gas in ripening is prohibited
- Sale of ghee with Reichert value less than the permitted level
- Sale of admixture of ghee or butter is prohibited
- Selling salseed fat or any other purpose except for bakery and confectionery is prohibited
- Store of insecticides in the same premises where food articles are stored is prohibited
- Milk powder or condensed milk can be sold only with ISI mark
- Use of more than one type of preservative is prohibited
- Crop contaminants beyond certain specified level is treated as adulterant
- Naturally occurring toxic substances in the food material beyond certain level is considered as unfit for human consumption
- No anti-oxidant, emulsifiers and stabilising agent is permitted beyond the prescribed level
- No insecticides should be sprayed on the food items
- Oils can be manufactured only in factories licensed for such purpose

Food Safety Standards (Laboratory and Sampling Analysis) Regulations, 2011

The food safety and standards (Laboratory and Sample Analysis) Regulation,2011 came into force on 5th August 2011.The silent features of these regulation are it provides details on notified laboratories, laboratories for imports, referral laboratories ,their functions, area of jurisdiction and quality of sample sent for analysis. There are 140 food testing laboratories in the country for testing of food products as per standards prescribed under the food safety and standards Act 2006 and Rules /Regulations, 2011. Out of these, 68 NABL accredited laboratorieshave been authorized by Food Safety and Standards Authority of India. State Governments have set up 72 food testing laboratories. These laboratories are equipped to check the quality of food articles as per standards prescribed under the Food Safety and Standards, Rules/Regulations for various parameters.

Four referral food laboratories have been established under the Act which works as appellate laboratories for the purpose of analysis of appeal samples of food lifted by the food inspectors of the states/union territories and local bodies and imported food samples.

All type of food samples like for surveillance, sample sent by purchaser and Food Business Operators are analyzed in the above laboratories. A purchaser and Food Business Operator can send the samples to state public laboratories for analysis of sample. However a food safety officer can send samples to state/regional/district public laboratories and Food Safety and Standards Authority of India Authorized laboratories only for analysis tocheck safety of food as per standards prescribed in the food safety and standards regulation and in case of a dispute he shall send the sample to referral laboratory whose decision shall be considered final.

Conclusions

Apart from the harmonization of laws relating to food quality and standards with established international norms, FSSA2006 aims at regulating food hygiene and safety laws in the country in order to systematically and scientifically develop the food industry. Thus, the food processing industry may see FSSA as a mixed blessing but the practical application of this legislation, being at its nascent stage, will require some time to come into full

force. Better auditing, Food safety management system (FSMS), traceability, recall and other systems in place under the new act which will help in curbing food adulteration. The representative of the consumer organizations are members of the food Authorities and central advisory committee .The consumer can get their food analyzed on payment of fees. In case of injury or death of consumer there is a provision for compensation to the consumer by Food business operator, Consumer can use the food safety helpline for any queries related food and its safety. The use of biotechnology can lead to improved food safety by reducing pesticides use and enhancing the post harvest keeping quality of products, however may pose health risks duo to possible transfer of toxins and allergens between species. For adulteration controls, integrated approach through statutory and regulatory authorities, industry, scientific community, consumer guidance, voluntary agencies, proper counseling and IEC (Information, Education and Communication) materials can play a vital role. The act should have a compulsory provision for black-listing of the companies or even publication when held guilty of the offence and Food recall should be issued in the media to inform the citizens and make them aware about the unsafe food.

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