SECTION - IV

SAFETY

Safety is one of the most fundamental expectations of consumers when they engage with goods and services. It is a cornerstone of trust in any marketplace and a critical component of consumer protection. This section, "Safety," delves into the multifaceted aspects of consumer safety, addressing not only traditional concerns like product quality but also the growing challenges posed by emerging risks in a rapidly evolving world. By understanding these dimensions, consumers can take informed actions to safeguard their well-being and advocate for systemic improvements in safety standards.

The concept of safety in consumerism extends beyond the physical integrity of products; it encompasses the reliability of services, the security of personal data, and the ethical responsibilities of providers. It also touches upon the broader social impact of unsafe practices, such as environmental harm and public health crises. The scope of this section spans essential sectors like product safety, healthcare, food, and housing, which are central to everyday life, while also examining new and emerging threats that require proactive vigilance.

Product safety and quality form the foundation of this discussion. Consumers have the right to expect that the products they purchase are free from defects and meet established standards of performance and reliability. Whether it is an electronic device, a household item, or a child's toy, ensuring product safety is not only a legal obligation for manufacturers but also a moral imperative. This section explores how safety standards are enforced, the role of regulatory bodies, and the responsibilities of both businesses and consumers in maintaining these standards.

Healthcare is another critical area where consumer safety intersects with rights. Access to safe, reliable, and affordable healthcare services is a fundamental necessity, yet it is often fraught with challenges like misinformation, substandard care, and financial exploitation. Similarly, food safety and security are paramount, given the direct impact of dietary choices on health. From ensuring the authenticity of labels to regulating the supply chain, protecting consumers from unsafe food practices is vital for public health. Housing, too, plays a crucial role in consumer safety, as issues like structural integrity, fire safety, and legal protections against fraud are integral to a secure living environment.

As the world becomes increasingly complex and interconnected, new safety concerns are emerging. Rapid technological advancements, for example, have brought conveniences but also risks, such as cyber fraud, misuse of personal data, and vulnerabilities in digital transactions. Environmental safety, the proliferation of counterfeit products, and the growing dependence on automation are additional areas requiring attention. This section examines these evolving threats and emphasizes the need for adaptive strategies to address them.

Ultimately, the safety of consumers is not just the responsibility of regulatory bodies and businesses but also individuals and communities. Informed and proactive consumers play a pivotal role in identifying and mitigating risks, advocating for stronger protections, and fostering a culture of accountability. By exploring the principles, challenges, and solutions related to consumer safety, this section aims to empower readers with the knowledge and tools to prioritize their well-being in all aspects of consumption. It underscores the importance of collective vigilance in creating a marketplace where safety is a shared value and a non-negotiable standard.

CHAPTER - 11
PRODUCT AND SERVICE SAFETY

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11.1 PRODUCT SAFETY AND QUALITY

Product safety and quality are essential components of consumer protection, ensuring that goods and services meet regulatory standards and do not pose risks to health, safety, or well-being. This section explores the frameworks for maintaining product quality, mechanisms for redressal, and challenges in the e-commerce landscape.

1. **Standards, Certifications, and Product Liability**
   a. **Importance of Standards and Certifications:** Standards and certifications ensure that products meet specific safety, performance, and quality benchmarks. These frameworks protect consumers and build trust in the market.

   Key Standards and Certifications
   - ISO Standards (International)
   - ISO 9001: Quality management systems
   - ISO 22000: Food safety management systems
   - CE Mark (Europe): Indicates compliance with EU safety, health, and environmental standards
   - BIS Certification (India): Bureau of Indian Standards for consumer goods like electrical appliances and toys
   - UL Mark (USA): Certifies electrical safety

Example of Key Certifications

Certification	Region	Purpose	Example Products	Logo
ISO 9001	Global	Quality management	Machinery, Electronics	

CE Mark	European Union	Health and Safety	Toys, Electronics, Furniture	
BIS Mark	India	Safety Standards	Electrical goods, Helmets	
UL Mark	USA	Electrical safety	Home Appliances, Power Tools	

b. Role of Product Liability

Product liability refers to the legal responsibility of manufacturers, suppliers, or retailers for harm caused by defective products.

Types of Defects

1. Design Defects: Products inherently dangerous due to flawed design (e.g., faulty airbags in cars).
2. Manufacturing Defects: Errors during production that lead to unsafe products.
3. Marketing Defects: Insufficient warnings, mislabelling, or lack of instructions for safe use.

c. Case Study: Takata Airbag Recall (Global)

- Incident: Millions of vehicles were recalled due to defective airbags that could explode and cause injury.
- Outcome: Emphasized the need for stringent quality control and liability for manufacturers.

d. Consumer Rights in Product Safety

1. Right to Safety: Protection from products that pose health or safety risks.
2. Right to Information: Accurate and complete details about the product's usage and risks.
3. Right to Redressal: Mechanisms for compensation in case of harm caused by defective products.

2. Redressal for Defective Products and Services

a. Identifying Defective Products and Services

Consumers can identify defects through:

- Visible damage or malfunction.
- Products failing to meet advertised performance.
- Missing or misleading product information.

How to Identify a Defective Product

1. Inspect Physical Damage → 2. Cross-check Product Specifications →

3. Test Performance → 4. Verify Labels and Warnings

b. Redressal Mechanisms

1. Warranty and Guarantees
   - Warranty: A legal promise for repairs or replacements within a specified period.
   - Guarantee: A broader assurance of product quality, often including refunds or replacements.
2. Filing Complaints
   - Contact the Seller/Manufacturer: First step for resolving disputes.
   - Approach Consumer Forums: National consumer helplines or local forums handle grievances.
   - Regulatory Authorities: Industry-specific regulators (e.g., food safety authorities, telecom regulators) can be approached.
3. Legal Remedies
   - Consumer Protection Laws:
   - Consumer Protection Act (India): Offers redressal for defective goods and unfair trade practices.
   - Magnuson-Moss Warranty Act (USA): Protects consumers from deceptive warranty terms.
   - Product Liability Lawsuits: Seek compensation for damages caused by defective products.

c. Case Study: Johnson & Johnson Baby Powder Lawsuit (USA)

- Incident: Allegations of asbestos contamination in talcum powder led to multiple lawsuits.
- Outcome: The company faced penalties, and consumers were awarded compensation, raising awareness of corporate accountability.

3. Consumer Safety and E-Commerce

The rapid growth of e-commerce has revolutionized shopping but also introduced challenges related to safety, fraud, and accountability.

a. Risks in E-Commerce

1. Counterfeit Products: Fake goods that do not meet safety standards.
2. Fraudulent Sellers: Sellers disappearing after payments without delivering products.
3. Data Theft: Online scams involving the misuse of consumer payment information.
4. Misleading Ads: Products not matching descriptions or images.

b. Consumer Rights in Online Shopping

1. Right to Refunds and Returns: E-commerce platforms must have clear return and refund policies.
2. Right to Privacy: Consumer data must be protected from unauthorized access or misuse.
3. Right to Information: Complete and accurate details about the product, seller, **and shipping terms must be provided.**

Rights in E-Commerce Transactions

Consumer Right	Example Situation	Redressal Mechanism
Right to Refund	Product damaged during delivery	File return request via platform policy
Right to Privacy	Misuse of payment details	Report to platform and data protection body
Right to Information	Incomplete details about a product	Request information from seller/platform

c. Preventing Frauds and Scams

How to Avoid Scams:

- Verify Sellers: Check reviews, ratings, and credentials.
- Secure Payments: Use trusted payment gateways or cash-on-delivery options.
- Avoid Suspicious Links: Do not click on unsolicited emails or ads offering unrealistic discounts.
- Check Platform Policies: Understand refund, return, and warranty policies before purchasing.

d. Case Study: Amazon Counterfeit Goods (Global)

- Incident: Amazon faced criticism for the sale of counterfeit goods like electronics and luxury items.
- Outcome: The platform strengthened its policies, implementing stricter seller verification and anti-counterfeit measures.

e. Regulatory Frameworks for E-Commerce

- General Data Protection Regulation (GDPR): Protects consumer data in the EU.
- Consumer Protection (E-Commerce) Rules (India): Mandates transparency, grievance redressal, and accountability for online platforms.
- FTC Regulations (USA): Enforces rules against deceptive online practices.

Product safety and quality are crucial for consumer well-being. Whether purchasing from a physical store or online, consumers must remain vigilant and informed about their rights. Regulatory frameworks, certifications, and liability laws play a vital role in ensuring product safety, but consumer participation in reporting violations and demanding accountability is equally important. By understanding their rights and the mechanisms available for redressal, consumers can contribute to a safer and fairer marketplace.

11.2 HEALTHCARE AND CONSUMER RIGHTS

Healthcare is a fundamental right that intersects significantly with consumer rights. Patients and consumers have the right to access safe, effective, and affordable medical services, drugs, and insurance. This section explores three critical dimensions of healthcare consumer rights: medical negligence, healthcare insurance, and drug safety.

1. Medical Negligence and Patient Rights

Medical negligence occurs when healthcare professionals fail to provide the standard level of care, resulting in harm to the patient. Protecting patient rights is crucial to ensuring accountability and trust in the healthcare system.

a. What Constitutes Medical Negligence?
   - Failure to Diagnose: Misdiagnosing or delayed diagnosis leading to worsened conditions.
   - Improper Treatment: Administering incorrect or substandard treatment.
   - Surgical Errors: Accidental injuries during surgeries or operating on the wrong body part.
   - Failure to Inform: Not providing sufficient information about risks, side effects, or alternatives for a procedure.

b. Key Patient Rights
   1. Right to Informed Consent: Patients must be fully informed about their diagnosis, treatment options, and associated risks.
   2. Right to Privacy: Confidentiality of medical records and personal information must be maintained.
   3. Right to Second Opinion: Patients have the right to seek a second opinion without prejudice.
   4. Right to Compensation: Victims of medical negligence can seek redressal through legal channels.

c. Real-World Example
   - Case: Kunal Saha v. AMRI Hospital (India, 1998)
   - Incident: A wrongful treatment led to the death of the patient's wife.
   - Outcome: The court awarded significant compensation to the plaintiff, strengthening medical negligence laws in India.

d. Redressal Mechanisms
   - Medical Councils: File complaints against negligent doctors or hospitals.
   - Consumer Protection Laws: Seek compensation through consumer courts.
   - Public Grievance Portals: Many countries have online platforms for reporting medical negligence.

2. Healthcare Insurance and Consumer Protection

Healthcare insurance plays a pivotal role in providing financial security to patients. However, consumers often face challenges such as claim denials, hidden charges, or inadequate coverage.

a. Common Issues with Healthcare Insurance
   - Claim Rejections: Denial of claims on technical grounds or due to unclear policy terms.
   - Exclusions: Many policies exclude pre-existing conditions or specific treatments.
   - Lack of Transparency: Misleading terms and conditions or undisclosed charges.
   - Delay in Approvals: Prolonged claim processing can delay necessary medical treatment.

b. Consumer Rights in Healthcare Insurance

1. Right to Clear Information: Policies must provide transparent details about coverage, exclusions, and claim procedures.
2. Right to Fair Claim Settlement: Insurers are obligated to process valid claims promptly.
3. Right to Appeal: Consumers can challenge claim denials or disputes.

c. Regulatory Frameworks
- IRDAI (India): Insurance Regulatory and Development Authority mandates fair practices for health insurance providers.
- Affordable Care Act (USA): Protects consumers from policy cancellations and provides coverage for pre-existing conditions.
- European Health Insurance Card (EU): Allows citizens to access healthcare services in other EU countries.

d. Redressal Mechanisms
- Insurance Ombudsman: Handles grievances related to claim disputes or unfair practices.
- Consumer Protection Courts: Address unresolved insurance disputes.

e. Case Study
- Case: Unfair Denial of Cancer Treatment Claims (USA)
- Incident: A health insurance company denied a cancer patient's claim, citing a pre-existing condition.
- Outcome: The court ruled in favor of the patient, emphasizing transparency and fairness in claim processing.

3. Drug Safety, Regulation, and Consumer Redressal

The safety and efficacy of drugs are essential to public health. Drug regulation ensures that pharmaceutical companies comply with stringent safety and quality standards.

a. Importance of Drug Safety
- Preventing Adverse Effects: Ensures that drugs do not cause harm due to improper testing or manufacturing.
- Countering Fake Drugs: Protects consumers from counterfeit or substandard medicines.
- Transparency in Trials: Ensures consumers are aware of side effects and limitations of medications.

b. Regulatory Authorities
- FDA (USA): Oversees drug approval, safety, and post-market surveillance.
- EMA (EU): European Medicines Agency monitors pharmaceutical products across EU countries.
- CDSCO (India): Central Drugs Standard Control Organization ensures drug safety in India.

c. Common Consumer Issues
- Adverse Drug Reactions (ADRs): Harmful effects from improperly tested or mislabelled drugs.
- Overpricing: Exploitative pricing of essential medications.

- Delayed Approvals: Regulatory delays in introducing life-saving drugs.

d. Consumer Rights in Drug Safety

1. Right to Safe Medication: Consumers must receive drugs tested for efficacy and safety.
2. Right to Information: Accurate labelling with details on dosage, side effects, and contraindications.
3. Right to Report Issues: Consumers can report adverse effects or counterfeit drugs to authorities.

e. Redressal Mechanisms

- Drug Recall Programs: Regulatory bodies can mandate recalls of unsafe drugs.
- Adverse Effect Reporting Portals: Consumers can report issues through platforms like MedWatch (USA) or PVPI (India).
- Legal Channels: Victims of unsafe drugs can file lawsuits for compensation.

f. Case Study

- Case: Vioxx Drug Scandal (USA, 2004)
- Incident: The painkiller Vioxx was withdrawn after it was linked to heart attacks.
- Outcome: Merck, the manufacturer, faced lawsuits and regulatory reforms were strengthened.

Healthcare and consumer rights are interwoven, demanding robust laws, effective regulatory frameworks, and informed consumers. By understanding their rights in cases of medical negligence, health insurance, and drug safety, consumers can better navigate the healthcare system and demand accountability. Active participation in reporting violations and advocating for stronger protections ensures a safer and more equitable healthcare environment.

11.3 FOOD SAFETY AND SECURITY

Food safety and security are vital to public health, ensuring that the food we consume is safe, nutritious, and accessible. This section explores critical aspects of food safety, including food adulteration, contamination, labelling practices, and consumer rights related to food safety and standards.

1. **Food Adulteration, Contamination, and Labelling:** Food adulteration and contamination pose significant threats to consumer health. Proper labelling and regulatory measures are crucial for mitigating these risks.

a. Food Adulteration

Food adulteration refers to the intentional addition of inferior or harmful substances to food products, reducing their quality and safety.

Adulteration in food is generally done in its most crude form; prohibited substances are either added or partly or wholly substituted. In India normally the contamination/adulteration of food is done either for financial gain or due to negligence and lack of proper hygienic conditions of processing, storing, transportation and marketing. Some times when the price of the food production is higher than the price which consumer is prepared to pay, seller is compelled to supply a food product of inferior quality. Thus, adulteration occurs. As a consequence of these the consumers are either cheated or often become victim of diseases. Such types of adulteration are quite common in developing countries or backward countries. However, adequate precautions taken by the consumers at the time of purchase of such produce

can make them alert to avoid procurement of such food. It is equally important for the consumer to know the common adulterants and their effect on health.

Prevention of Food Adulteration Act:

To check such malpractices, the Prevention of Food Adulteration Act was passed in 1954 and came into force from June I, 1955. This is the first central act popularly known as the PFA act which pertains to food sold to the public and defines what may be considered as adulteration.

According to **PFA act,** an article of food shall be deemed to be adulterated

- if the article sold by a vendor is not of the nature, substance or quality demanded by the purchaser and is to his prejudice, or is represented to be;
- if the article contains any other substance or which affects, or if the article is so processed as to effect, injuriously the nature, substance or quality thereof;
- if any inferior or cheaper substance has been substituted wholly or in part for the article, to effect injuriously the nature, substance or quality thereof;
- if any constituent of the article has been wholly or in part abstracted to affect injuriously the nature, substance, or quality thereof;
- if the article has been prepared, packed, or kept under the unsanitary conditions whereby it has become contaminated or injurious to health.
- If the article consists wholly or in part of any filthy, putrid, disgusting, rotten, decomposed or diseased animal or vegetable substance or is insect infested or otherwise unfit for human consumption.
- If the article is obtained from the infected animal.
- If the article contains any poisonous or other ingredient which renders it injurious to health.
- If the container of the article is composed, whether wholly or in part of any poisonous or deleterious substance which renders its contents injurious to health;
- If any coloring matter other than the prescribed in respect thereof and in amounts not within the prescribed limits of variability is present in the article.
- If the article contains any prohibitory preservative or permitted preservative over the prescribed limits;
- If the quality or purity of the article falls below the prescribed standard or its constituents are present in quantities that are more than the prescribed limits of variability.

Food adulteration is classified into three main types:

1. **Intentional Adulteration:** Intentional adulteration is a willful act on the part of the adulterator intended to increase the margin of profit. Intentional adulterants are sand, marble chips, stones mud, chalk powder, water, mineral oil and coal tar dyes. These can adversely affect the quality of the foods. The following are some of the examples for common intentional adulteration found in various foods.

Common Food Adulterants Found in Foods:

Foodstuff	Adulterant
A) milk and milk products	
Milk, liquid	Water, refined oil or fat after removal of milk fat, skim milk reconstituted from skim milk powder.
Milk powder	starch dextrins
Cream	Other fats
Ice cream	Non – permitted colour, artificial sweetners, other fats and jelling agents.
Butter and ghee	Hydrogenated fats
B) **vegetable oils and fats**	
Vanaspati	Animal fat and other high melting fats
Vegetable oils	Argemone oil, mineral oil, cheap non edible oils
C) spices and condiments	
Whole turmeric	Coating with lead chromate or coal tar dye
Turmeric powder	Coal tar color, yellow earth, starch or talc coloured yellow with coal tar dye.
Curry powder	Starch coloured brown with coal tar dye
Coriander seed	Other seeds colored green
Coriander seed powder	Powdered bran or saw dust coloured with dye
Chilli powder	Starch coloured red with coal tar dye
Mustard seed	Argemone seeds
Cumin seed	Artificial cumin seed like product
Black pepper	Dried papaya seeds
Asafetida	Resins and other plant gums

D) **cereals**	
Wheat and rice	Stones
Wheat lour	Tapioca flour, talc, chalk powder
Semolina	Tapioca semolina
E) **pulses**	
Bengal gram dhal	Kesari dhal
Red gram dhal	Kesari dhal colored with yellow with dye
Bengal gram flour	Tapioca flour or starch colored yellow with dye
F) **sweetening agents and soft drinks**	
Honey	Colored invert syrup
Soft drinks	Artificial sweeteners (saccharin), mineral acid other than phosphoric acid.
G) **Beverages**	
Coffee powder	Exhausted coffee powder, starch, roasted dated and tamarind seeds
Tea	Other leaves with added color
H) **miscellaneous**	
Processed arecanut	Other seeds or nuts broken and coloured.

2. **Unintentional or incidental adulteration:** Incidental contamination occurs usually due to ignorance, negligence or lack of proper facilities. Contamination of foods with deleterious substances such as toxins, insecticides, pathogenic bacteria and fungi and other harmful microorganisms during production, storage and handling will affect the health of the consumer.

The Argaemone mexicana is frequently found growing in brassica fields and if proper care is not taken during cultivation its seeds get mixed with those of brassica and the oil expressed contains also argemone oil. Its presence in edible mustard oil is injurious to health and might result into outbreaks of epidemic dropsy (extreme edema) .

The most common incidental adulterants are pesticides. DDT, malathion and pyrethrum residues might be present on the plant products more than the safe limits. The maximum permissible residue limits for DDT and malathion is 3 ppm and for pyrethrum it is 10 ppm.

These toxic chemicals are absorbed by the small intestine when ingested and adhere to the fatty tissues-the toxins usually pile up in the fatty tissues of such vital organs as the thyroid, heart, kidney, liver, mammary gland and testes and damage these organs. These are easily transferred through placenta to foetus and breast milk to infant. The presence of these chemicals in children will lead to crippling and also inhibits normal growth.

Contamination with harmful microorganisms may occur at the time of cultivation itself, if the vegetables are grown on sewage. These foods if consumed in the raw state may cause food poisoning. Generally, these are destroyed during cooking or processing of food. However some microorganisms, both due to heat resistance or inadequate heat processing may still survive and contaminate the food.

Several studies have indicated that food grains, legumes and oil seeds when stored in humid atmosphere are infected by pathogenic fungus which can cause serious illness. The pathogenic microorganisms that commonly contaminate foods and responsible for causing serious illnesses are shown below.

List of common pathogens that cause serious illness in human beings:

Pathogenic Organisms	**Foods Commonly involved**	**Ill effects and diseases**
Bacterial		
Bacillus cereus	Cereal products	Nausea, vomiting, abdominal pain
Clostridium botulinum toxins	Defectively processed meat and fish	Botulism (muscular) paralysis, death due to respiratory failure.
Clostridium perfringens (welchii)	Defectively processed precooked meat	Nausea, abdominal pain and diarrhea.
Salmonella	Defectively processed meat, fish and egg products, raw vegetables grown on sewage.	Salmonellosis (vomiting diarrhea and fever).
Shigella Sonnei	Foods kept exposed for sale in unhygienic surroundings.	Bacillary dysentery.
Staphylococcus aureus	Foods kept exposed for sale in unhygienic surroundings.	Increased salivation, vomiting, abdominal pain and diarrhea.
Staphylococcus pyogenes	Foods kept exposed for sale in unhygienic surroundings.	Scarlet fever, septic sore throat.
Fungal		
Aspergillus flavus	Liver damage and cancer.	

(aflatoxin)		
Claviceps Perpurea (Ergot)	Rye and pearl millet infested with ergot.	Ergotism (burning sensation in extremities peripheral gangrene.
Fusarium Sporotrichiodies	Cereals and millets infected with fusarium	Alimentary toxic aleukia.
Penicillium islandicum	Rice	Liver damage.
Parasitic		
Trichinella spiralis	Pork and pork products	Nausea, vomiting, diarrhoea, colic and muscular pains (trichionosis).
Ascaris lumbricoides	Raw vegetables grown on sewage farms	Ascariasis
Entamoeba histilytica.	Raw vegetables grown on sewage farms	Amoebic dysentery.
Ancylostoma duodenale (Hookworm)	Raw vegetables grown on sewage farms	Epigastric pain, loss of blood, anaemia.

Metallic Contamination

Toxic Metals:

Contamination of food products by heavy metals is becoming an unavoidable problem these days. Air, soil, and water pollution are contributing to the presence of harmful elements, such as cadmium, lead, mercury, and arsenic in foodstuff.

The occurrence of heavy metals-enriched ecosystem components, firstly, arises from rapid industrial growth, advances in agricultural chemicalization, or the urban activities of human beings. These agents have led to metal dispersion in the environment and, consequently, impaired health of the population by the ingestion of victuals contaminated by harmful elements.

For example, turmeric is coated sometimes with lead chromate. Cooking vessels could be a source of lead and cadmium contamination of foods. Lead is a toxic element and contamination of food with lead can interfere with a variety of body processes and is toxic to many organs and tissues including the heart, bones, intestines, kidneys, reproductive and nervous systems. It interferes with the development of the nervous system and is therefore particularly toxic to children, causing potentially permanent learning and behavior disorders. The common symptoms include abdominal pain, headache, anemia, irritability, and in severe cases seizures, coma, and death.

Fish grown in mercury contaminated water when caught contains large amounts of mercury. The methyl or dimethyl forms of organic mercury compounds are most toxic. The toxic effects of methyl mercury are mostly

neurological. When the brain is affected, the subject becomes blind, deaf and paralysis of the various muscles makes him a cripple. The other elements which are toxic in small doses are cadmium, arsenic, antimony and cobalt.

Indian Council of Medical Research (ICMR) in a survey results also revealed high levels of pesticide residues in bovine milk and metals like arsenic, cadmium and lead in infant formula canned products and turmeric.

List of common chemical contamination in foods:

Chemical	Foods commonly involved	Toxic effects
Arsenic	Fruits sprayed by lead arsenate, drinking water	Dizziness, chills, cramps, paralysis leading to death.
Barium	Foods contaminated by rat poison (barium carbonate).	Violent peristalsis, muscular twitching and convulsions.
Cadmium	Fruit juices and soft drinks that comes in contact with cadmium and plated vessels, crabs, oysters and kidneys.	Excessive salivation, liver, kidney damage, prostate cancer, multiple fractures (painful Itai·Itai' disease reported from Japan due to cadmium poisoning.)
Cobalt	Water, beer	Cardiac failure.
Copper	Acid foods in contact with tarnished copper ware.	Vomiting, diarrhoea, abdominal pain.
Lead	Some processed foods Lead water pipes.	Paralysis, brain damage.
Mercury	Mercury fungicide treated seed grains or mercury contaminated fish particularly pike, tuna and shell fish.	Paralysis, brain damage and blindness.
Tin	Canned foods	Colic, vomiting, photophobia.
Zinc	Foods stored in galvanized iron ware.	Dizziness, vomiting.
Pesticides	All types of foods.	Acute or chronic poisoning causing damage to liver, kidney, brain and nerves leading to death.
Diethyl stilbestrol	Present in meat of stibestrol fed animals and birds.	Teratogenesis, carcinogenesis.
Antibiotics	Meat from animals fed antibiotics	Drug resistance, hardening of arteries, heart diseases.

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Packaging Hazards

Packaging has become an indispensable element in the food manufacturing process, and different types of additives, such as antioxidants, stabilizers, lubricants, anti-static and anti-blocking agents, have also been developed to improve the performance of polymeric packaging materials. Recently the packaging has been found to represent a source of contamination itself through the migration of substances from the packaging into food. Various analytical methods have been developed to analyse the migrants in the foodstuff, and migration evaluation procedures based on theoretical prediction of migration from plastic food contact material were also introduced recently

Polyethylene, polyvinyl chloride and allied compounds are used to produce flexible packaging material. While this method of packaging is very convenient, it must not contain any noxious thermal breakdown products which could be injurious to health. Further, temperatures used for heat sealing, or sterilization should not result in formation of toxic residues. It has been observed sometimes that in foods like pickles the acid and oil could attack the plastic packaging material and create a health hazard. To avoid such incidences, it is essential that only food grade plastic packaging materials be used for packaging foods.

Newer adulterants:

These include adulteration of legumes with imported toxic lentils and local Subabul (Lencana leucocephala) seeds, veterinary drug residues in milk, flours made from mouldy wheat, strychnos potatorum, a forest produce in arecanut, animal fat in bakery products and industrial contaminants like orthonitro aniline in vanaspathi.

The Lathyrus sativus, Lens Culinaris (lentils) and Vicia sateva are three closely related species containing unusual amino acids which are used to adulterate some dhals.

Sometimes Turkish lentil which contain the diaminopropionic derivatives is sold as Indian red gram (Cajanas cajan) dhal and Australian vetch (Vicia sativa) which contains toxic amino acid pcyanoalamine is sold as Indian masur dhal (Lens culinaris) .

Dry ginger is often coated with a blue coloured dye ultramarine blue to prevent insect infestation. It is an inorganic pigment used as laundry whitener.

Standards For Product Quality and Safety

Standards are common in all forms of human activity and are designed to both simplify transactions and provide an element of certainty in exchange. Standards fulfil a number of diverse functions. In the technical realm, standards lower risk, increase credibility and trust, and facilitate predictability for buyers and sellers.

Standards are necessary, therefore, for the smooth functioning of exchange between anonymous economic agents, as parties to a transaction must be assured of the nature and quality of the product involved. By reducing search and transaction costs and lowering risk, standards help to facilitate exchange and trade. The efficacy of exchange is enhanced by two main functions of a standard – as a guarantee of a minimum quality and by defining the characteristics or specifications of the product or its production process and associated criteria of performance.

Although standardisation is necessary to facilitate market operations and implies some degree of homogeneity, it does not follow that variety per se is undesirable. Standards reflect the needs of the groups that express them and as long as groups differ, their optimal standards will reflect these differences.

Public and private standards do not only influence how safe the final goods are, but also affect the internal organisation of firms, their strategic behaviour and the organisation of the supply chain. Hence, they affect the market power of actors, the distribution of profits along the supply chain and the welfare of all stakeholders.

Imposing a minimum product standard through regulations affects the prices, the quantities and varieties supplied, and the welfare of stakeholders. Hence, standards affect competition, and the success of public policies depends on the firm's strategic response. Standards are also highly relevant in the trade context.

Mandatory vs voluntary:

Private standards are by definition voluntary, but public standards can be either voluntary or mandatory. Voluntary consensus standards arise from a formal coordination process involving participants in a market and this may occur with or without the participation of government Voluntary public standards are often combined with certain government labels such as the EU?s labels of protected designation of origin (PDO), of protected geographical indication (PGI) and of traditional specialty guaranteed (TSG).The concept is schematically shown in Fig1. .

These are usually non-product related standards, although product related production standards also exist (e.g. standards on organic production). Voluntary standards whether public or private, and with compliance communicated by labels, provide a mechanism to overcome the information asymmetry problem.

Countries can choose from several different types of labelling schemes that allocate the information provision task to private and public sectors in different ways.

Standard-setting, adoption, implementation, conformity assessment and enforcement may be carried out by public or private entities according to the nature of the standard. This is highlighted in Table 3.

Table 3 Functions associated with standards schemes:

Function	Legal Regulations	Public Voluntary Standards	Mandated Private Standards	Private Voluntary Standards
Standard-setting	Legislature and/or public regulator	Legislature and/or public regulator	Commercial or non-commercial private body	Commercial or non-commercial private body
Adoption	Legislature and/or public regulator	Private firms or organisations	Legislature and/or public regulator	Private firms or organisations
Implementation	Private firms and public bodies	Private firms	Private firms	Private firms

Conformity assessment	Official inspectorate	Public/private auditor	Public/Private Auditor	Private auditor
Enforcement	Criminal or administrative	Public/private certification body	Criminal or administrative court	Private certification body

Public Standards

They are also called as Legal Standards

These are those standards which are commonly established by the Central, State or Municipal agencies and are generally mandatory. These standards are set up by the law or through regulations and represent the minimum standards of quality. These are generally concerned with freedom of defects and devoid of adulteration and are enforced by liability rules in case of no-compliance.

Governments have traditionally played the major role in establishing minimum food quality standards and regulations for their populations. This recognises a degree of government responsibility for food quality issues to ensure, amongst other things, the availability of safe food for the population at large and to protect consumers from deceptive and fraudulent practices. Public food quality standards have been enforced through legislation, and firms at different levels of the supply chain have developed various private standards.

Within the public arena this has led to profound changes in regulations at national, regional and multilateral levels. Legislations adopted to improve food safety include standards regarding the characteristics of the final product (e.g. maximum residue levels), production practices in the food supply chain, traceability within the supply chain and the legal liability of the supply chain.

At the international level, formal and informal discussions have primarily focused on the legitimacy and harmonization of standards. The change in public regulations has been accompanied by an increased use of private standards. These standards, which may include rules on infrastructure, equipment, modes of production, processing and quality management, often stipulate more stringent requirements than required by law.

Public voluntary standards

Bureau of Indian Standards (BIS)

The Bureau of Indian Standards (BIS) formulated Indian Standards in the processed food sector and implements them by promotion through voluntary and third-party certification system. BIS empowered through a legislative Act of the Indian Parliament known as the Bureau of Indian Standards Act, 1986, operates a product certification scheme. The product certification scheme is basically voluntary and aims at providing quality, safety and dependability to the ultimate customer.

Presence of certification mark known as Standard Mark on a product is an assurance of conformity to the specifications. The conformity is ensured by regular surveillance of the licensee's performance by surprise inspections and testing of samples, drawn both from the factory and the market.

Agmark

The Directorate of Marketing and Inspection (DMI) enforces the Agricultural Produce (Grading and Marking) Act 1937. Under this Act, Grade Standards are prescribed for agricultural and allied commodities which are known as 'Agmark' Standards.

For the processed food sector BIS certification is more important than DMI certification. BIS has on record, standards for most of the processed foods. These standards in general cover raw materials permitted and their quality parameters, hygienic conditions under which the product is manufactured and packaging and labelling requirements.

ISI mark

Manufacturers complying with the standards laid down by BIS can obtain an ISI mark which can be exhibited on their product packages. BIS has identified certain items like food colours/additives, vanaspati and containers for their packing, milk powder and condensed milk for compulsory certification.

BIS has granted more than 30,000 licenses to manufacturers covering practically every industrial discipline. The certification allows the licensees to use the popular ISI Mark, which has become synonymous with quality products for the Indian and neighbouring markets over the past more than 40 years.

Export Inspection Council (EIC) The Export Inspection Council was set up by the Government of India under Section 3 of the Export (Quality Control and Inspection) Act, 1963 (22 of 1963), in order to ensure sound development of export trade of India through Quality Control and Inspection and for matters connected thereof.

The main responsibilities if EIC are

- Notify commodities which will be subject to quality control and/ or inspection prior to export,
- Establish standards of quality for such notified commodities and specify the type of quality control and / or inspection to be applied to such commodities

Private Standards: Private standards include company standards, voluntary standards, and consumer standards.

Voluntary Standards:

The terms 'voluntary standards' and 'private standards' are frequently used interchangeably. Indeed, private standards developed collectively by private sector actors are frequently referred to as 'private voluntary standards'The voluntary standards are also called the company standards, which represents the various segments of the food industry. These standards generally reflect a consumer image that becomes a trademark or symbol of the product quality. Generally speaking, these voluntary standards are used by the private firms and they tend to vary depending upon the particular requirements for any given item.

The voluntary standards have come in to practice due to the sensitivity of consumers to food safety. This made food-handling companies, especially the leading companies with high profiles, increasingly keen to achieve food safety. These companies are fully aware that if they mishandle food safety requirements, such as mislabelling, they will be forced out of business, far more quickly than before, by the government, business partners, and consumers.

Therefore, tracking and tracing becomes a requirement. The sensitivity of consumers also offers opportunities, because manufacturers can distinguish their products from their competitors by meeting certain standards or providing traceability information. It means that safety-conscious retailers and manufacturers can be more successful in their businesses.

For example, in Japan in addition to the public food safety standards, Japanese supermarket chains set their own company specific quality standards. The number of retailers with their own standards has been increasing recently.

Company quality standards mainly relate to issues such as size, uniformity of size, appearance, and freshness. For suppliers in developing countries, these standards are hard to meet. Furthermore, they often differ per retailer, and retailers usually are very strict. Furthermore, it is not easy for companies from developing countries to become new suppliers to Japanese buyers, particularly, with regard to the quality aspects. The Japanese buyers prefer bigger suppliers with good access to capital and technology.

Voluntary consensus: Voluntary consensus standards represent another group of private standards and are established by coalitions of firms or industries to serve a collective purpose. Government may be involved, for example in facilitating the establishment of the standards, or these may be entirely private sector initiatives. Consensus standards have some of the properties of a club good: they are non-rivalrous but somewhat excludable.

Examples of consensus standards for food safety and food quality include initiatives from coalitions of food retailers, such as GLOBAL GAP and the Global Food Safety Initiative (GFSI), while the Assured Food Standards program (the so-called Red Tractor program) is driven by a coalition of agricultural producer organizations in the UK.

Individual company standards: These are set by individual firms, predominantly large food retailers, and adopted across their supply chains. These are frequently communicated to consumers as sub-brands on their own/private label products. Examples of such brands are

- Tesco's Nurture6,
- Tesco Nature's Choice
- Carrefour's Filières
- Qualité.

This communication to the consumer make claims about the superiority of product or process attributes. Such standards may have national or international reach.

In some cases, such as Carrefour, the standard is applied in multiple subsidiaries of the parent company. Though the standard is used by a company for its retailing operations in a single country, the standard itself has international spread as it is frequently applied to suppliers based in many different countries. Example: Farmers in USA will be certified to the Tesco Nature's Choice standard, that underpins the Nurture sub-brand, if they are exporting products to Tesco in the UK.

Collective national standards: These standards are set by collective organisations that operate within the boundaries of individual countries, including industry associations and NGOs. These organisations can represent the interests of commercial entities (for example food retailers, processors or producers) or be NGOs. These and other entities are then free to adopt them if they wish. It is important to note, however, that some of these standards are inherently

national, while others have international reach. Some such collective national standards are specifically designed to establish claims about food from particular countries or regions. The Farm Assured British Beef and Lamb (in the UK) and the QC Emilia Romagna (in Italy) schemes sustain claims about the superior attributes (safety, quality, environmental impact, etc.) of products conforming to these schemes. They are designed to differentiate these products from competing products. As a result, they are usually "visible" to the consumer; announcing their presence in the form of labels and trademarks.Third party

The Codex Alimentarius Commission has been developing international food standards since 1963, shortly after the establishment of a joint Food Standards Programme by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO).

The work of Codex is the preparation of international food standards, codes of good practice, labelling guidelines and many other recommendations that Governments can use to regulate international and domestic trade in food. These are all voluntary standards; there is no direct obligation on member Governments to apply Codex standards. However, the Uruguay Round Trade Agreements of the World Trade Organization (WTO) oblige countries to base their national food standards and regulations on Codex standards, unless the country concerned can show legitimate reasons for applying stricter or more comprehensive standards.

Industry Standards: The industry standards are those whereby an organized group attempts to establish given limits of quality for any given commodity. Normally these have become effective by pressure from marketing organizations or by specific commodity groups where legal standards are not involved.

Consumer Standards: The consumer standards represent the consumer requirements of a product and generally are based on experience in use by the industry for the consumers. The consumers are not very effective as a group, but individually they represent the everyday demands for any given product. That is the main reason that before any new product is launched, the consumer testing is done to determine the degree of acceptability amongst and diverse group of consumers.

Consumers for their part are increasingly focused on a broader range of product attributes when assessing the quality of food and agricultural products and this has strengthened the role of private agrifood quality standards. For instance, at higher levels of income, consumers demand relatively higher levels of enhanced attributes associated with food quality, nutrition, health promotion and traceability. Food businesses operating in a dynamic agro-food system that is generally characterised by low margins and inelastic demand, have responded to these consumer demands with private standards as an integral part of their competitive strategies as they seek to communicate their approach to food quality and diversity to consumers. Private standards are used to inform consumers about different quality attributes and have the effect of increasing consumer loyalty while lowering the price elasticity for the food product concerned to reward food suppliers through higher prices for undertaking investment in quality management systems

Food Contamination

Contamination occurs when food is exposed to harmful substances during production, processing, storage, or distribution.

Types of Contamination

1. Physical Contamination: Presence of foreign objects (e.g., glass, metal).
2. Chemical Contamination: Pesticides, heavy metals, or cleaning agents.
3. Biological Contamination: Bacteria, viruses, or fungi causing foodborne illnesses.

Flowchart: Sources of Food Contamination

Farm → Transport → Processing → Packaging → Storage → Consumption

↓ ↓ ↓

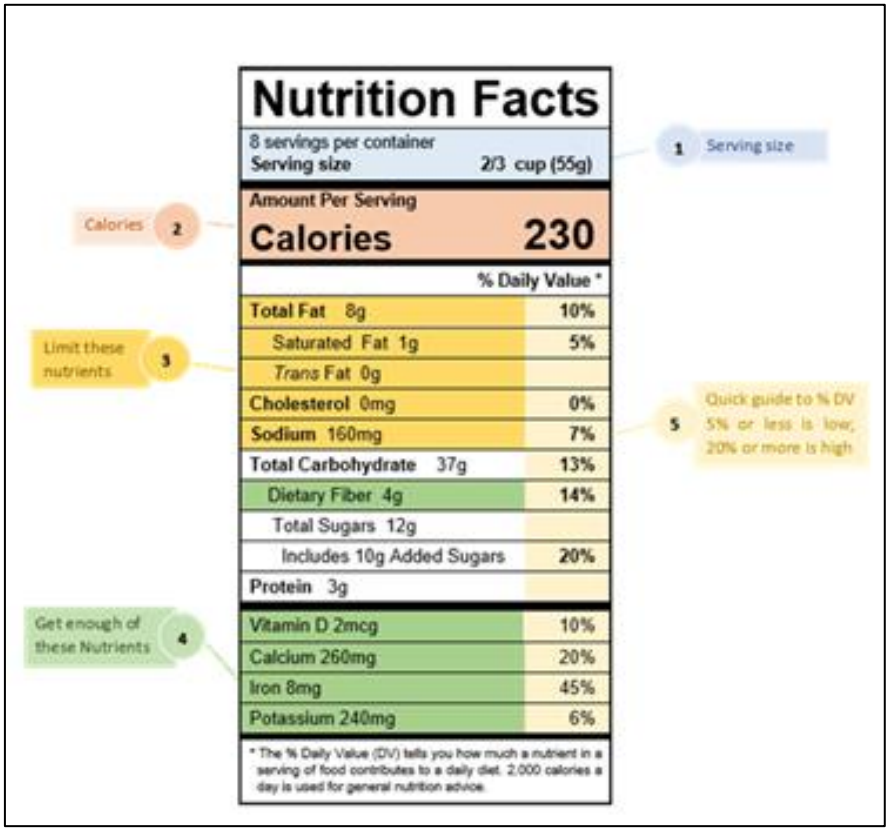
Pesticides Improper Hygiene Poor Storage

Food Labelling

Food labels provide critical information about a product's ingredients, nutritional value, and safety standards.

Key Elements of a Food Label

1. Ingredients List: Complete disclosure of all components.
2. Nutritional Facts: Information on calories, macronutrients, vitamins, etc.
3. Expiry Date: "Best Before" and "Use By" dates to ensure freshness.
4. Allergen Warnings: Alerts for common allergens like nuts or gluten.
5. Certifications: Marks like FSSAI (India), FDA Approved (USA), or EU Organic (Europe).



Example of a Nutritional Label

Consumer Rights Related to Food Safety and Standards

Consumers have the right to safe, hygienic, and correctly labeled food. Understanding these rights is crucial for protecting oneself from malpractices in the food industry.

a. Key Consumer Rights in Food Safety

1. Right to Safety: Protection from hazardous food products.
2. Right to Information: Accurate labeling and disclosure of food contents.
3. Right to Redressal: Mechanisms to address grievances related to food safety.

Table: Regulatory Bodies Ensuring Food Safety

Country/Region	Regulatory Body	Key Functions
India	Food Safety and Standards Authority (FSSAI)	Enforcing food labelling and hygiene standards
USA	Food and Drug Administration (FDA)	Monitoring food additives, contamination, recalls
Europe	European Food Safety Authority (EFSA)	Risk assessments and safety advice

b. Redressal Mechanisms for Food Safety Issues

1. Consumer Courts: Seek compensation for damages caused by unsafe food.
2. Food Safety Authorities: File complaints about food adulteration or contamination.
3. Online Portals: Use platforms like Consumer Complaints Helplines or Food Watchdog Websites.

Flowchart: Steps for Filing a Food Safety Complaint

Identify the Issue → Gather Evidence → File Complaint with Regulatory Body → Follow Up for Resolution

c. Prominent Laws and Regulations

- Codex Alimentarius: International food standards for safety and labeling.
- Food Safety and Standards Act (India): Comprehensive law to regulate food safety.
- Food Safety Modernization Act (USA): Focuses on prevention rather than reaction to foodborne illnesses.

1. Elements of a Food Label

2. Certification Logos

Ensuring food safety and security is a shared responsibility between consumers, regulatory bodies, and the food industry. By understanding food adulteration, contamination, labeling practices, and consumer rights, individuals can make informed choices and hold violators accountable. Regulatory frameworks and redressal mechanisms provide the foundation for a safer and more transparent food system.

11.4 HOUSING AND CONSUMER PROTECTION

Housing is a fundamental need and a significant investment for most individuals. Ensuring consumer protection in the housing sector is essential to address issues such as real estate fraud, unfair practices, and lack of transparency in transactions. This section examines the regulations governing real estate, consumer rights in home loans, and mechanisms to safeguard housing investments.

1. **Real Estate Regulations and Consumer Protection**

The real estate sector is regulated to protect consumers from fraudulent practices, delays in project delivery, and lack of transparency.

a. Real Estate Regulation Acts and Key Provisions

Real estate regulations aim to ensure accountability and transparency in property transactions.

Key Features of Real Estate Regulatory Authorities (RERA):

- Mandatory Registration: Real estate projects and agents must be registered with the regulatory authority.
- Escrow Accounts: Developers must deposit 70% of project funds in escrow accounts to prevent misuse.
- Transparency: Developers must disclose project plans, timelines, and approvals.
- Grievance Redressal: Consumer disputes are resolved through Real Estate Appellate Tribunals (REAT).

Comparison of Key Real Estate Regulations

Country	Regulation	Purpose
India	RERA (Real Estate Regulation and Development Act)	Consumer protection and project transparency
USA	RESPA (Real Estate Settlement Procedures Act)	Regulates mortgage and settlement processes
UK	Consumer Protection from Unfair Trading Regulations	Prevents misleading advertisements

b. Common Issues in Real Estate Transactions

1. Delays in Possession: Projects not completed on time.
2. Misleading Advertisements: Promises that differ from actual project specifications.
3. Hidden Costs: Undisclosed charges added during transactions.
4. Title Fraud: Selling properties without clear ownership.

Flowchart: Common Consumer Complaints in Real Estate

Step 1: Misleading Ads → Step 2: Delayed Possession → Step 3: Substandard Quality →

Step 4: Hidden Costs → Step 5: Legal Ownership Issues

c. Redressal Mechanisms for Real Estate Issues

- Real Estate Regulatory Authority (RERA): File complaints for non-compliance or disputes.
- Consumer Courts: Seek compensation for delays or defects.
- Ombudsman Services: Address grievances related to financing or transactions.

2. Home Loans and Consumer Rights in the Housing Sector

Home loans are a common method for financing property purchases. Consumers must be aware of their rights and protections to avoid unfair practices.

a. Key Aspects of Home Loans

1. Interest Rates: Fixed or floating rates, determined by market conditions and lender policies.
2. Loan Tenure: Period of repayment, typically ranging from 10 to 30 years.
3. Processing Fees: Charges levied for loan application and disbursement.
4. Prepayment Options: Rules for early repayment of the loan.

Comparison of Home Loan Types

Loan Type	Description	Best For
Fixed Interest Loans	Constant interest rate throughout tenure	Predictable repayments
Floating Interest Loans	Interest rate varies with market trends	Lower costs during low-rate periods
Home Construction Loans	Funds for building a new house	Self-construction projects
Balance Transfer Loans	Transfer to a lender with lower rates	Reducing loan repayment burden

b. Consumer Rights in Home Loans

1. Right to Transparent Information: Details of interest rates, EMIs, and charges must be disclosed upfront.
2. Right to Fair Practices: No hidden charges or arbitrary changes in terms.
3. Right to Prepayment: Consumers can repay loans early without excessive penalties.
4. Right to Redressal: Complaints can be filed with banking ombudsmen or consumer forums.

Figure: Steps in the Home Loan Process

Step 1: Loan Application → Step 2: Verification → Step 3: Loan Approval →

Step 4: Disbursement → Step 5: Repayment and Closure

c. Common Challenges and Redressal Mechanisms

Challenges:

1. Misleading Terms: Hidden fees or unclear loan conditions.
2. High Interest Rates: Sudden increases in floating rates.
3. Default Consequences: Unfair recovery practices by lenders.

Redressal Mechanisms:

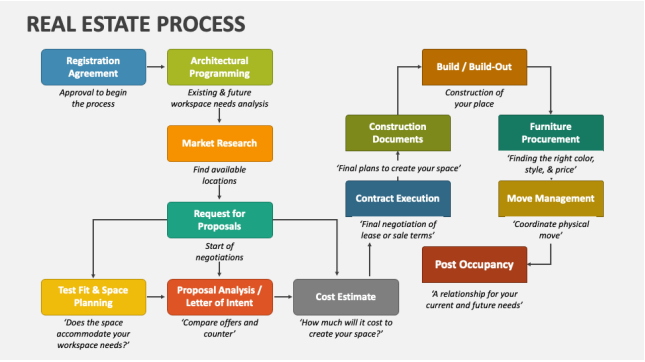
- Banking Ombudsman: Handles disputes with banks regarding unfair practices.
- Consumer Courts: For cases of financial fraud or excessive charges.
- Central Bank Regulations: Monitor compliance with lending rules.

Key Regulatory Bodies in Home Loans

Country	Regulatory Body	Responsibilities
India	Reserve Bank of India (RBI)	Monitors lending practices and grievances
USA	CFPB (Consumer Financial Protection Bureau)	Ensures fair practices in housing finance
UK	Financial Conduct Authority (FCA)	Regulates mortgage lenders and brokers

1. Elements of a Transparent Home Loan Offer: Highlight the interest rate, processing fees, EMI schedule, and repayment options.

2. RERA Logo and Approved Projects



3. Flowchart: Steps for Real Estate Process

The housing sector plays a vital role in economic and social stability, and consumer protection is critical to maintaining trust. Real estate regulations like RERA and home loan safeguards empower consumers to make informed decisions and address grievances effectively. By understanding their rights and utilizing available mechanisms, individuals can protect their investments and promote ethical practices in the housing industry.

End of the chapter questions

1. Explain the importance of standards and certifications for consumer safety.
2. What is Food adulteration and how it affects human health?
3. What is the importance of consumer protection in housing? Explain the measures.
4. Describe the need and importance of consumer rights in health care.

REFERENCES

1. A.V. Savov and G.B. Kouzmanov, Food quality and safety standards at a glance. Biotechnology & Biotechnological Equipment. (23) 2009 No 4, pp.1462-1468
2. Gorham, R.J. (1994) Hard foreign objects in food as a cause of injury and disease: a review. In Foodborne Disease Handbook, Vol. 3. Marcel-Dekker.
3. http://www.eufic.org/index/en (**The European food information council website)**
4. Importance of food safety for developing countries http://www.fao.org/trade/docs/LDC-foodqual_en.htm
5. Interaction Of Public And Private Standards In The Food Chain document of Working Party on Agricultural Policies and Markets, AGR/CA/APM(2006)21/FINAL, 02-Feb-2009
6. Quality standards and Regulatory acts for food safety in India, WTO cell, July 2007 ANGRAU, Hyderabad.
7. Radomir Lasztity, Marta Petro-Turza, Tamas Foldesi, (2004), HISTORY OF FOOD QUALITY STANDARDS, in Food Quality and Standards, [Ed. Radomir Lasztity], in Encyclopedia of Life Support Systems (EOLSS), Developed under the Auspices of the UNESCO, Eolss Publishers, Oxford ,UK, [http://www.eolss.net]
8. Rao, Roopa. (2024). Consumer Awareness and Education in India. In S. Singh, S. Dinesh, & R. Rao (Eds.), Resource Management (RM: ASSET): Advancements & strategies for education and transformation. pp. 265 – 324. Satish Serial Pub House, New Delhi, India. satishserial.com/book/9788119105403/resource-management-rmasset-advancements-strategies-for-education-and-transformation
9. Singh, S. (2023) Family Finance and Consumption Economics. Himanshu Publications, New Delhi
10. The Impacts of Private Food Safety Standards on the Food Chain and on Public Standard-Setting Processes. Paper Prepared for FAO/WHO Spencer Henson1 and John Humphrey FAO and WHO May 2009
11. Theo H. Jonker Hiroshi Ito Hiroji Fujishima Food Safety and Quality Standards in Japan Compliance of Suppliers from Developing Countries, Agriculture and Rural Development Discussion Paper, World bank 2005.
12. UN Chronicle, Winter, 1999 by John R. Lupien, Alan Randell Setting Standards for Food Quality - Codex Alimentarius Commission - Brief Article
13. www.codexalimentarius.net. Official site of Codex Alimentarius
14. www.fssai.gov.in. Official site of Food Safety and Standards India.