UNIT 14 FOOD REGULATIONS: STANDARDS AND QUALITY CONTROL

Structure

14.1 INTRODUCTION

In the last two units we learnt about the concept of risk analysis, HACCP. It is crucial that the food industry try to adapt these concepts so as to ensure food safety and quality. On the other hand, the role of regulatory agencies is of utmost importance as they are the ones to implement the regulations and check their effectiveness. The question, however, arises what legislations and regulations do we have in place at the international and national level to ensure food safety? This is the focus of this unit.

The new National Health Policy (NHP)-2002 was formulated in the year 2002, with an objective to achieve an acceptable standard of good health amongst the general population of the country. Among the various objectives, NHP-2002 envisages that the standard of food items will be progressively tightened up at a pace which will permit domestic food handling/manufacturing facilities to undertake the necessary up-gradation of technology. In line with NHP-2002, the government of India has embarked on an exercise to review the Prevention of Food Adulteration (PFA) Act and efforts are underway to streamline the food legislations within the country. What is the PFA Act? What are the other national food legislations enacted by the Government? These are a few issues discussed in this unit.

Further, various international organizations and agreements are in place in the area of food standardization, quality, research and trade. Which are these organizations? What is their role? We will learn about these issues subsequently in this unit.

Objectives

After studying this unit, you will be able to:

- recognize the Food Legislations, Acts and Standards operating in our country,

- describe the PFA Act and formulation of standards of food products under PFA Rules,
- discuss the various compulsory and voluntary legislations enacted by the government, and
- enumerate the role of various international organizations and agreements in the area of food standardization and quality control.

14.2 FOOD STANDARDS AND REGULATIONS IN INDIA

The laws regulating the safety and quality of food in India date back to the year 1899. Until 1954, several states formulated their own food laws which led to a considerable variance in the rules and specifications of food items and consequently created conflicts in inter-provincial trade. The Central Advisory Board appointed in 1943, while reviewing the subject of food adulteration, recommended for a Central legislation that brings in uniformity across the country. With the Constitution of India providing powers to Central Government for making such legislation as the subject of foods and drugs adulteration in the Concurrent list, the Government of India enacted a Central legislation called the 'Prevention of Food Adulteration (PFA) Act', 1954, in the year 1954, which came into effect from 1st June 1955. The Act repealed all laws existing at that time concerning food.

The objective envisaged in this salient legislation was to ensure pure and wholesome food to the consumers and also to prevent fraud or deception. All the food products manufactured in India or imported and sold in India have to meet the requirements prescribed under PFA Act, 1954 and the Prevention of Food Adulteration Rules made there under.

However, there are some more legislations, which are equally applicable on different food products. These legislations are being implemented by different departments of Government of India. These legislations are divided in two groups, namely:

- Compulsory viz. all orders under Essential Commodities Act, 1955
- Voluntary based product certifications viz. 'ISI' mark of BIS and 'Agmark'

Currently the focus of food regulatory work in India is on inspections and penal action. The inspection, sampling and testing skills of the regulatory staff are the key ingredients in ensuring prompt and speedy enforcement of the law.

With the developments in agriculture and food sector, the risk of adverse impact of contaminants like pesticide residues, aflatoxins or microbiological organisms on health is increasing. Further, there is a critical need to build capacities at Central and State levels to test new varieties of processed foods, including food supplements and genetically modified (GM) Foods.

To address these critical needs, a strategic shift is required from regulatory enforcement to guidance, self-regulation by the industry through partnership with consumer groups along with simultaneous up-gradation of the standards and testing facilities.

Accordingly, a Capacity Building Project in association with World Bank is under implementation from October 2003. The project will play a catalytic role in strengthening the advisory role of the government and promoting self-regulation by the industry. This project seeks to harmonize the food quality assurance standards and practices in India with international norms. This entails the food manufacturers in priority areas to adopt 'Hazard Analysis Critical Control Point' (HACCP) approach to enhance food safety.

It is hoped that such an approach would facilitate a strategic move from a reactive system depending on spot checks to a preventive system oriented on processes. This shift would facilitate placing responsibility on the manufacturers and would help the food industry compete more effectively in the international markets.

Till such time, this approach is adopted we have the national food legislations in place. We shall learn about these legislations next, starting with a study of the Prevention of Food Adulteration Act.

14.3 THE PREVENTION OF FOOD ADULTERATION ACT, 1954

The Prevention of Food Adulteration Act, 1954, as described earlier, aims at making provisions for the prevention of adulteration of food. The Act extends to the whole of India and has been amended in 1964, 1976 and 1986 so as to plug the loopholes from time to time.

What are the important features of PFA? The salient features of this legislation include:

a) Definition of terms like Food, Adulteration, Misbranding

b) Powers to Central / State Government to appoint Public Analysts and Food Inspectors

c) Powers to the Central Government to make rules for:
   - defining the standards of quality of food and food additives
   - prescribing list of permissible additives and their limits, tolerance limits of contaminants
   - packaging and labeling of food, and
   - control over quality aspect of production, distribution and sale of an article of food by outlining conditions of license

d) Provision for seizure and disposal of perishable foods, unfit for human consumption by Local (Health) Authority, including seizure of documents

e) Procedure for drawing and dispatch of samples to the laboratories

f) Appointment of an Advisory Committee called Central Committee for Food Standards (CCFS) and its Sub-committee consisting of representatives from State Governments, Research Institutions, Medical Institutions, Industry and Consumers to advise the Central Government and the State Government on matters arising out of the administration of this Act

g) Powers to consumer organizations to draw legal samples and initiate legal proceeding against the offender, and

h) Providing deterrent punishment for offences of adulteration/misbranding – minimum imprisonment of six months but extendable to three years and with fine not less than Rs.1000. In case adulteration causes death or grievous hurt, imprisonments may extend to term of life along with a minimum fine of Rs.5000.

The most important feature of PFA is to define important terms like adulteration, food etc. The important definitions of these terms under PFA are presented next.

Important Definitions under PFA

Adulterated - Under PFA, an article of food shall be deemed to be adulterated –

a) if the article sold by a vendor is *not of the nature, substance or quality* demanded by the purchaser or which it purports to be

b) if the article contains any substance *affecting* its quality or of it is so processed as *to injuriously* affect its *nature, substance or quality*

c) if any *inferior or cheaper substance* has been *substituted* wholly or partly for the article, or any constituent of the article has been wholly or partly abstracted from it, so as to affecting its quality or if it is so processed as to injuriously affect its nature, substance or quality

d) if the article had been prepared, packed or kept under *insanitary conditions* whereby, it has become *contaminated* or injurious to health

e) if the article consists wholly or in part of any *filthy, putrid, rotten, decomposed or diseased animal or vegetable substance or being insect-infested,* or is otherwise unfit for human consumption

f) if the article is *obtained from a diseased animal*

g) if the article contains any *poisonous* or other ingredient which is injurious to health

h) if the container of the article is composed of any *poisonous or deleterious* substance which renders its contents injurious to health

i) if the article contains any *prohibited* colouring matter or *preservative,* or any permitted *colouring matter* or preservative in excess of the prescribed limits

j) if the *quality or purity* of the article falls *below the prescribed standard,* or its constituents are present in proportions other than the standard, or its constituents are present in proportions other than those prescribed, whether or not rendering it injurious to health.

Food- Under the PFA Act, food means any article used as food or drink for human consumption other than drugs and water and includes:

a) any article which ordinarily enters into or is used in the composition or preparation of human food

b) any flavouring matter or condiments, and

c) any other article with the Central Government may having regard to its use, nature, substance or quality, declare by the notification in the official gazette, as food for the purposes of this Act.

Having defined these terms, let us next get to know how the standards of food products under PFA rule get formulated? How is the PFA Act administered? What role does the Government of India - Central PFA Cell, State Governments and other bodies play in this context?

14.3.1 Formulation of Standards of Food Products under PFA Rules, 1955

The Section 23 of the Prevention of Food Adulteration Act, 1954 lays down the procedure for amendment of Prevention of Food Adulteration Rules including prescribing/amending the standards of food products. As per this provision, the proposal is considered by the Central Committee for Food Standards (CCFS), which is a Statutory Committee under the Act. On the basis of the recommendation of CCFS, the draft notification is published for inviting comments.

There are 9 Technical Sub-Committees to assist the CCFS in this process. Standards for around 270 food articles have been prescribed under PFA Rules, 1955, out of which 55 food products are under Compulsory Certification Scheme of BIS.

Standards for food products are prescribed based upon International Standards, as well as, data developed by Central Food Laboratories and other National Research Institutions like National Institute of Nutrition (NIN) Hyderabad, Central Food Technological Research Institute (CFTRI) Mysore, Indian Toxicology Research Centre (ITRC), Lucknow, Defence Food Research Laboratory (DFRL), Mysore, National Dairy Research Institute (NDRI), Karnal and National Dairy Development Board (NDDB), Anand etc. The proposal for formulation/amendment of standards is considered by CCFS and, thereafter, further action is initiated as explained above.

Next, let us see how the PFA Act is administered?

14.3.2 Administration of PFA Act

The administration of the PFA Act, 1954 and Rules, 1955 within the country is through a three tier system viz

a) Government of India

b) State / Union Territory Governments, and

c) Local Bodies.

Let us see how it is administered through these above mentioned bodies.

A) *Role of Government of India - Central PFA Cells*

The legislation, namely Prevention of Food Adulteration (PFA) Act has been enacted by the Ministry of Health and Family Welfare in the Government of India. Rules and standards framed under the Act are uniformly applicable throughout the country. Besides, framing of rules and standards, in consultation with the Central Committee for Food Standards, followed by pre-publication, the following activities are undertaken:

a) Keeping close liaison with States / Local bodies for uniform implementation of food laws

b) Monitoring the activities of State by collecting periodical reports on working of food laws, getting the reports of food poisoning cases and visiting the States from time to time

c) Arranging periodical training programmes for senior officers / inspectors / analysts

d) Creating consumers' awareness about the programme by holding exhibitions/ seminars / training programmes and publishing pamphlets

e) Approving proprietary products of infant milk substitute and infant food and their labels so as to safeguard the health of infants

f) Keeping liaison with the concerned Ministries of Central Government working in the field of food standardization

g) Coordinating with the international bodies like FAO / WHO and Codex

h) Carrying out survey-cum monitoring activities on food contaminants/colours/ quality of street food/packaging

i) Giving administrative/financial /technical support to four Central Food Laboratories situated in Kolkata, Ghaziabad, Mysore and Pune, and providing technical guidance to the food laboratories set up by States/Local Bodies

j) Holding activities connected with National Monitoring Agency vested with powers to decide policy issues on food irradiation, and

k) Formulation of manual of method of analysis of food. Standards of several articles of food, which are of mass consumption, have been formulated. While making amendments, standards formulated by Codex / technological development in the food industry/dietary habits/nutritional status of our population/social/cultural practices are taken into consideration.

B) *Role of State/UT Governments*

The enforcement of the food laws rests primarily with States /U.Ts. The implementation of the Act in most of the States is under the administrative control of the Directorate of Health Services, whereas, in a few States, the implementation is being combined with Drugs Administration under Joint Food and Drug Administration.

The implementation has been left to the administrative setup of the States, but it has been stressed on the States that whatever the structure be, there should be a whole-time senior officer duly qualified and experienced in food science, food technology, food analysis with other supporting officers and inspectors who will perform the job of food inspection and sampling.

The samples of food products are lifted by food inspectors under the provision of PFA Act, 1954. These samples are analyzed in the laboratories and thereafter, further action is initiated. In case the samples of food product found not conforming to the provision of Act and Rules / Standards, prosecution is launched in the Court. A chance is given to the party for second analysis of the sample in the appellate laboratory i.e. Central Food Laboratory. The final decision of the Court depends on the analysis report of the Central Food Laboratory.

The State Governments are also empowered to make rules laying down details of licensing conditions of food establishments/industries and prescribing license fees / analysis fees.

C) *Role of Local Bodies*

By and large, in most of the States, implementation in corporation/municipal areas rests with the local bodies that employ their own food inspectors. Licensing of food industries/establishments is also left with them.

D) *Food Laboratories*

There are about 80 food laboratories in the country at District / Regional or State level in addition to four Central Food Laboratories set-up by the central Government. Almost every State has got one or more laboratories depending upon its need. About 1/3rd of these laboratories are under the administrative control of the local bodies whereas, the remaining ones are under the administrative control of the State Governments.

The discussion above presents a comprehensive review of PFA, its administration and how standards are formulated. Next, we shall look at the other legislations/ authorities and their role in ensuring food safety. But first let us recapitulate what we have learnt so far.

Check Your Progress Exercise 1

1) What is the primary objective behind enacting PFA Act, 1954?

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2) List the important features of PFA Act, 1954.

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3) Define the term 'food' in the context of PFA Act.

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4) Name a few laboratories and research institutions that develop standards for food products.

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5) Describe briefly the 3-tier system for administration of PFA Act, 1954.

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You may recall reading earlier that besides PFA there are other legislations as well and these have been classified as either compulsory or voluntary. Let us next get to know about the different compulsory legislations, starting with Essential Commodities Act.

14.4 COMPULSORY NATIONAL LEGISLATIONS

Within the compulsory legislations, Essential Commodities Act, Standard of Weight and Measures Act and Export (quality control and inspection) Act are included. Let us learn about these Acts.

14.4.1 Essential Commodities Act, 1955

The Essential Commodities Act was enacted in 1955 with the objective to regulate the production, supply and distribution of, and trade and commerce, in certain essential commodities, the principle of them being foodstuffs. The Act extends to the whole of India. A number of Control Orders have been formulated under the provisions of Essential Commodities Act, 1955 and few such orders are given herewith and highlighted in Figure 14.1.

a) Fruit Product Order, 1955 (Ministry of Food Processing)

b) Vegetable Oils Product (Regulation) Order, 1998

c) Solvent Extracted Oil, De-oiled Meal and Edible Flour (Control) Order

d) Meat Product Control Order, 1973 (Ministry of Rural Areas and Employment)

e) Edible Oil Packaging (Development and Regulation) Order, 1998

f) Milk and Milk Product Order, 1992 (Ministry of Agriculture)

However, excluding the Fruit Product Order, 1955, the majority of the Orders under the Essential Commodities Act, 1955 have not prescribed specifications of food products but specify the hygiene and food safety requirements. Specifications of food articles formulated under these Order are in line with the standards laid down under the Prevention of Food Adulteration Act and Rules. We shall learn about these orders in greater details next.

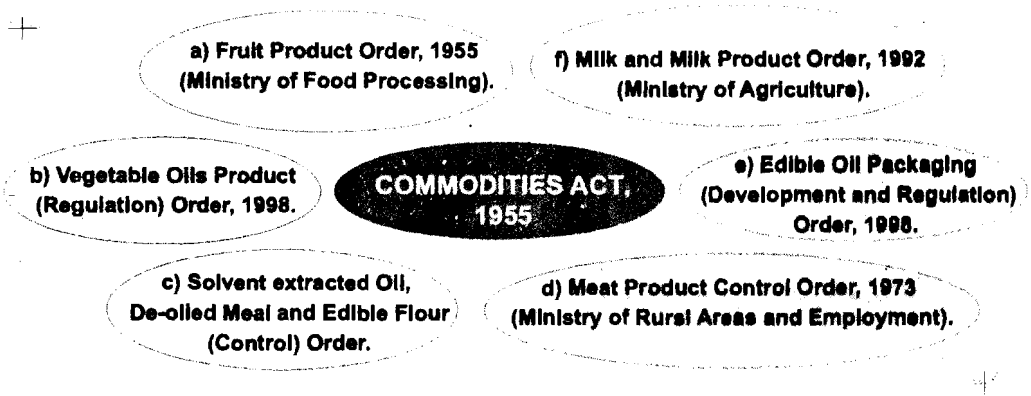

Figure 14.1: Commodities Act, 1955

A) Fruit Product Order, 1955

The Fruit Product Control Order was issued in 1946. Subsequently, this Order was brought under Essential Supplies Act, 1948 after passing under Section 3 of Essential Commodities Act, 1955 and thereafter this Order is known as *Fruit Products Order (FPO), 1955*. Products covered under this Order are fruit and vegetable products.

The Order aims at regulating sanitary and hygienic conditions in manufacture of fruit and vegetable products. It is mandatory for all manufacturers of fruit and vegetable products to obtain a license under this Order. To ensure good quality products, manufactured under hygienic conditions, the Fruit Product Order lays down the minimum requirements for:

- sanitary and hygienic conditions of premises, surrounding and personnel
- water to be used for processing
- machinery and equipment, and
- product standards.

Besides this, maximum limits of preservatives, additives and contaminants have also been specified for various products.

This order is implemented by Ministry of Food Processing Industries, Government of India, through the Directorate of Fruit and Vegetable Preservation at New Delhi. The Directorate has four regional offices located at Delhi, Mumbai, Kolkata and Chennai, as well as, sub-offices at Lucknow and Guwahati. The officials of the Directorate undertake frequent inspections of the manufacturing units and draw random samples of products from the manufacturers and markets which are analyzed in the laboratories to test their conformity with the specifications laid under FPO.

The Central Fruit Advisory Committee comprising of the officials of concerned Government Departments, Technical experts, representatives of Central Food Technology Research Institute, Bureau of Indian Standards, Fruits and Vegetable Products and Processing Industry, is responsible for recommending amendments in the Fruit Product Order. In view of the demands of the industry, and the liberalized economic scenario, major amendments were made in FPO during 1997.

B) **Vegetable Oil Products (Regulation) Order, 1998**

The Vegetable Oil Products (Regulation) Order has been issued in 1998 in the super session of Vegetable Oil Product Control Order, 1947 which was issued under Section 3 of Essential Supplies Act, 1946 (in super session of Vegetable Oil Products Control Order, 1946) which was in existence at that time. Later on, after passing the Essential Commodities Act, 1955, the Vegetable Oil Product Order was adopted under Essential Commodities Act. This Order is implemented by Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Food and Civil Supplies, Government of India. Products covered under this Order are *vanaspati, margarine and bakery and shortening.* The Order provides for compulsory licensing for manufacturing units. Licensing of the manufacturing units under Rule 50 of the PFA Rules is exempted.

The specifications of the products, namely, vanaspati, margarine and bakery and shortening have been laid down under this Order. These specifications are at least equal to the specifications of these products laid down under PFA Rules 1955, if not higher.

C) **Solvent Extracted Oil, De-oiled Meal and Edible Flour (Control) Order, 1967**

This Order issued under Section 3 of Essential Commodities Act, 1955, for controlling the production and distribution of oils, de-oiled meal and edible flour, which are obtained by the methods of solvent extraction. This Order provides for the compulsory licensing of manufacturing units. The license to such units under Rule 50 of the PFA Rules is exempted. The specifications of the edible oils produced by solvent extraction method have been laid down under the said Order. The packing and labeling conditions of such oils are also laid down under S.E.O. Order, but these oils shall conform to the specifications laid down under item A.17 of Appendix 'A' of the PFA Rules.

D) **Meat Product Control Order, 1973 (Ministry of Rural Areas and Employment)**

The Meat Product Control Order has been issued under Section 3 of the Essential Commodity Act, 1955. This order was initially being implemented by Ministry of Rural Development in the Ministry of Rural Area and Employment. Subsequently, Ministry of Agriculture, Department of Agriculture and Cooperation was made the Administrative Ministry for this Order. As on 31st March 1998, there were 128 licenses issued under MFPO 1973. Licensing under Rule 50 of PFA Rules, 1955 are exempted for those industries, which manufacture meat and meat products. Quality and safety parameters have been prescribed for meat and meat products under this order. The quality and safety parameters have now been provided under PFA Rule, 1955 for these products also. However, under this order, requirement of heavy metal and pesticide residues have been prescribed. Additionally, the list of preservatives, sequestering and buffering agent for use in these products have also been provided. This order is emphasized for the hygienic conditions of the plant machinery and personnel. This order is being implemented by Agricultural Marketing Advisor to Government of India.

E) **Edible Oil Packaging (Development and Regulation) Order, 1998**

The Ministry of Consumer Affairs issued the Edible Oil Packaging Order in 1998 during the period of epidemic dropsy in India. In 1998, all the edible vegetable oil were found to contain argemone oil. The main edible vegetable oil found to be contaminated, you may recall, was mustard oil. To control the quality of edible vegetable oils, the above order was issued and the main provision of this order included:

- all edible vegetable oils shall be sold only in packed conditions

- all the edible vegetable oils shall be packed only after testing by the manufacturers
- all the edible oils shall meet the requirement prescribed under PFA Rules, 1955 for such oils,
- the methods of analysis to be used are the same which have been prescribed in the manual prescribed by Directorate General of Health Services, and
- all the manufacturers will have to register themselves with the local civil supply departments and shall file the returns as prescribed under that order.

F) **Milk and Milk Product Order, 1992, Ministry of Agriculture**

The Milk and Milk Product Order was issued under Section 3 of the Essential Commodities Act, 1955. This order is being implemented by the Ministry of Agriculture, Department of Animal Husbandry and Dairying, Government of India. Under this order, condition for registration and its renewal have been prescribed. The condition of registration have been prescribed that any manufacturer who manufactures or carries on business in milk or milk product shall get registered himself with the registration authority along with the details of the product manufactured / processed and its quantity. Registration fee have also been prescribed under this order. Such premises are inspected by the concerned inspector to assess the hygienic conditions of the premises and the quantity of such product being processed. Quality and safety parameters for milk and milk products have not been prescribed under this order, meaning, thereby, that all the milk and milk products shall meet the Standard prescribed under PFA Rule, 1955. The main aim of this order is to control the collection of milk and production of milk products in addition to hygienic requirements of the plant, machinery and personnel.

So, that was an exhaustive list of orders, included in the Essential Commodity Act. Take a break and refresh your understanding of these essential orders by answering the check your progress exercise 2.

Check Your Progress Exercise 2

1) What is the main objective behind formulating 'Essential Commodities Act'?

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2) List the various control orders which have been formulated under the ECA, 1955.

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3) What are the main provisions of the following Acts?

a) Fruit Product Order

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b) Edible Oil Packaging Order

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4) Mention the conditions of registration under the Milk and Milk Product Order, 1992.

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5) Match the following:

A	B
a) Fruit Products Order	i) Ministry of Food and Civil Supplies
b) Vegetable Oil Products Order	ii) Ministry of Agriculture
c) Meat Product Control Order	iii) Ministry of Food Processing Industry

Next let us look at some other compulsory legislation.

14.4.2 Standard of Weights and Measures Act, 1976

The Standard of Weights and Measures Act, 1976 was enacted to establish standards of weights and measures, to regulate inter-state trade or commerce in weights, measures and other goods which are sold or distributed by weight, measure or number, and to provide for matters connected therewith or incidental thereto. The Act extends to the whole of India.

When commodities are sold or distributed in packaged form in the course of inter-state trade or commerce, it is essential that every package must have a:

- plain and conspicuous declaration, thereon, showing the identity of the commodity in the package
- the net quantity in terms of the standard units of weights and measures and if in numbers, the accurate number therein
- the unit sale price of the commodity and the sale price of that particular package of that commodity, and
- the names of the manufacturer and also of the packer or distributor, should also be mentioned on the package.

In this regard, the Packaged Commodities Rules were framed in 1977. These Rules extend to the whole of India and apply to commodities in the packaged form which are OR are intended OR likely to be sold, distributed OR delivered OR offered OR displayed for sale, distribution OR delivery OR which are stored for sale, OR for distribution OR delivery in the course of inter-state trade and commerce.

14.4.3 Export (Quality Control and Inspection) Act, 1963

The Export Inspection Council (EIC) 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 Council, constituted by the Central Government, is the apex body and has powers to constitute specialist committees to assist it in discharge of its functions. Accordingly, the Council has constituted Administrative Committee to advise it on administrative matters and a Technical Committee to advise it on technical matters.

EIC is an advisory body to the Central Government, which is empowered under the Act to:

- 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.

Besides its advisory role, the Export Inspection Council also exercises technical and administrative control over the five Export Inspection Agencies (EIAs) at Chennai, Delhi, Kochi, Kolkata and Mumbai. EIAs were established by the Ministry of Commerce, Government of India, under Section 7 of the Act for the purpose of implementing the various measures and policies formulated by EIC.

Export Inspection Council, either directly or through Export Inspection Agencies, its field organization, renders services in the areas of:

- Certification of quality of export commodities through installation of quality assurance systems (In-process Quality Control and Self Certification) in the exporting units, as well as, consignment wise inspection.
- Certification of quality of food items for export through installation of Food safety Management System in the food processing units.
- Issue of Certificates of origin to exporters under various preferential tariff schemes for export products.

Further, besides Export Inspection Council (EIC) following units have been set-up by the Ministry of Commerce for ensuring promotion and quality control of export of food item, under the Export (Quality Control and Inspection) Act, 1963:

a) Agricultural and Processed Food Export Development Authority (APEDA)

b) Spices Board

c) Coffee Board

d) Tea Board, and

e) Marine Products Export Development Authority (MPEDA).

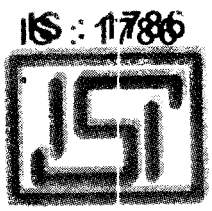
Pre-shipment inspection and analysis is carried out in order to ensure that exported items conform to the quality prescribed by the importing countries and do not pose any health hazard.

In case of some of the food articles like spices and condiments, fruit products, meat products, a system of compulsory certification has been introduced.

With this, we come to the end of our study about compulsory legislations. Next we shall review the voluntary legislations.

14.5 VOLUNTARY BASED PRODUCT CERTIFICATIONS

There are a few voluntary schemes of certification aimed at providing quality and safety of foods. The Bureau of Indian Standard Act, Agmark Grading and Marketing Act and Rules and Consumer Protection Act are the voluntary schemes of certification. What are these schemes and what are their objectives? Let's find out.



14.5.1 Bureau of Indian Standards Act, 1986

The Indian Standards Institution (ISI) was set up in 1947 as a registered society, under a Government of India resolution. It gave the nation the standards it needed for nationalization, orderly industrial and commercial growth, quality production and

competitive efficiency. However, in 1986, the government recognized the need for strengthening this National Standards Body due to fast changing socio-economic scenario and accorded it a statutory status. Thus came the Bureau of Indian Standards (BIS) Act, 1986 and on 1 April 1987, newly formed BIS took over staff assets, liabilities and functions of erstwhile ISI. Through this change over, the Government envisaged building of the climate of quality culture and consciousness and greater participation of consumers in formulation and implementation of National Standards.

The objectives of BIS include:

a) harmonious development of standardization, marking and quality certification,

b) to provide a new thrust to standardization and quality control, and

c) to evolve a national strategy for according recognition to standards integrating them with growth and development of production and exports.

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.

Although, the scheme itself offers voluntary licensing, the Government of India, on considerations of public health and safety, and mass consumption has enforced mandatory certification of 135 products through Orders issued from time to time under various Acts. While the Bureau continues to grant licenses only on application, the enforcement of compulsory certification is done by the notified authorities. Under the provisions of PFA Act, it has been made compulsory that commonly used *food additives permitted for use in specified items of food, condensed milk, different categories of milk powder, infant milk substitute, infant food and mineral water* will be sold only under *ISI Certification Mark.*

A list of Indian Standards which are under mandatory Certification through PFA Act, 1954 and Rules, 1955 is given in *Annexure* 1, in Table 1, at the end of the course booklet.

14.5.2 Agmark Grading and Marking Act and Rules, 1937 (Agmark)

Under the Grading and Marking Act, the Directorate of Marketing and Inspection was constituted in the Ministry of Rural areas and Employment which operates a voluntary scheme of certification of agricultural products (raw and processed) for safeguarding the health of consumers under *'Agmark'*. Each batch of consignment is tested by an approved chemist before a certification is granted. The PFA Rules 1955 provide compulsory Agmark certification of *blended oils, carbia callosa and honey dew, kangra tea, ghee* moving from one state to another, til oil produced in Tripura, Assam and West Bengal. Further, certain food items meant for export have been brought under compulsory Agmark certification viz. *walnuts, black pepper, cardamom, chillies, ginger and turmeric etc.*

The Directorate of Marketing and Inspection has 21 laboratories and 50 sub-offices spread all over the country. The Central Agmark Laboratory at Nagpur carries out research and development work in this field.

14.5.3 Consumer Protection Act, 1986

In order to protect the consumers from exploitation and to save them from adulterated and substandard goods and deficient services, the Consumer Protection Act came

into force on 15th April, 1986 and it applies to the whole of India except the State of Jammu and Kashmir. A Statutory Consumer Protection Council has been set-up under the Consumer Protection Act, 1986, implemented by the Ministry of Civil and Consumer Affairs. The main aim of the council is to redress the grievances of the consumers about quality of purchased goods, including food articles. The Act also provides setting up of such Councils at State /District level.

With this, we come to an end of our study regarding Acts and Legislations enacted by our government to protect consumers and ensure safe, quality food. Next, in this unit we shall focus on international organizations and agreements in the area of food standardization and quality control. But before moving on to that section, let's check what we have learnt till now.

Check Your Progress Exercise 3

1) Discuss the purpose behind enactment of the following Acts / Orders

   a) Standard of Weights and Measures Act

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   b) Bureau of Indian Standards

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   c) Consumer Protection Act

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2) What is the role of EIC as an advisory body?

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3) What do you understand by the following terms:

   a) Standard Mark

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   b) Agmark

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14.6 REGULATIONS RELATED TO GENETICALLY MODIFIED FOODS

The existing regulations in India for genetically engineered products are mainly based on environmental and research aspects and dealt by the Ministry of Environment and Department of Biotechnology of the Ministry of Science and Technology. The EPA Act 1986 and 1989 of the Ministry of Environment and Forests deal with the rules and procedures for handling genetically modified organisms (GMOs) and hazardous organisms. The Genetic Engineering Approval Committee (GEAC) is the apex body in India responsible for granting approval to GM crops for commercial cultivation and reviews them. The Review Committee on Genetic Manipulation (RCGM) under the Department of Biotechnology monitors the safety related aspects of ongoing research projects involving GMOs. It has brought out manuals / guidelines specifying procedures for regulatory process, activities involving GMOs in research, use and application from environmental safety angle. The mechanism of implementation of guidelines is through the Recombinant DNA Advisory Committee (RDAC) and Institutional Biosafety Committee (ISBC). The RDAC takes note of the developments at National and International levels in Biotechnology on recombinant research, use and application. The ISBC is a nodal point for interaction within an Institute, University or Commercial Organization.

14.7 INTERNATIONAL ORGANIZATIONS AND AGREEMENTS IN THE AREA OF FOOD STANDARDIZATION AND QUALITY CONTROL

While there have been several international organizations and agreements playing a role in enhancing food safety, quality and security, facilitating research and trade worldwide, the major organizations and agreements which have and are playing a key role are being taken up here. We start with the Codex Alimentarius.

A) Codex Alimentarius

In November 1961, the Eleventh Session of the Conference of FAO passed a resolution to set up the Codex Alimentarius Commission (CAC). In May 1963, the Sixteenth World Health Assembly approved the establishment of the Joint FAO/WHO Food Standards Programme and adopted the statutes of the Codex Alimentarius Commission.

The Codex Alimentarius Commission is *"...the body responsible for compiling the standards, codes of practice, guidelines and recommendations that constitute the Codex Alimentarius,"* which is the international food code.

Since the first steps were taken in 1961 to establish a Codex Alimentarius, the Codex Alimentarius Commission – the body charged with developing a food code – has drawn world attention to the field of food quality and safety. During the past three decades or more, all important aspects of food pertaining to the protection of consumer health and fair practices in the food trade have come under the Commission's scrutiny. The Commission has encouraged food-related scientific and technological research, as well as, discussion. In doing so, it has lifted the community's awareness of food safety and related issues to unprecedented heights and has consequently become the single *most important international reference point* for developments associated with food standards.

The role of the Codex Alimentarius Commission has evolved with development of the *Codex* itself. Creating standards that protect consumers, ensuring fair practices in the sale of food and facilitating trade is a process that involves specialists in numerous

food-related scientific disciplines, together with consumers' organizations, production and processing industries, food control administrators and traders.

The Codex Alimentarius Commission sensitizes the global community to the danger of food hazards, as well as, to the importance of food quality and hence to the need for food standards. By providing an international focal point and forum for informed dialogue on issues relevant to food, the Codex Alimentarius Commission fulfills a crucial role. In support of its work on food standards and codes of practice, it generates reputable scientific texts, convenes numerous expert committees and consultations, as well as, international meetings attended by the best-informed individuals and organizations concerned with food and related fields. Countries have responded by introducing the long-overdue food legislation and Codex-based standards and by establishing or strengthening food control agencies to monitor compliance with such regulations.

Notably, Codex Alimentarius has:

- formulated 237 food standards for commodities
- formulated 41 codes of hygienic or technological practice
- evaluated 185 pesticides
- prescribed limits for pesticide residues
- developed guidelines for 25 contaminants
- evaluated 1005 food additives, and
- evaluated 54 veterinary drugs

What is the national codex contact points for India? Let's find out, next.

B) **Codex India**

"Codex India"– the National Codex Contact Point (NCCP) for India, is located at the Directorate General of Health Services, Ministry of Health and Family Welfare (MOHFW), Government of India. It coordinates and promotes Codex activities in India in association with the National Codex Committee and facilitates India's input to work of Codex through an established consultation process.

National Codex Contact Point (NCCP)

The National Codex Contact Point acts as the liaison office to coordinate with the other concerned Government departments (at Central and State level), food industry, consumers, traders, research and development institutions and academia, through the National Codex Committee and its Shadow Committees.

It ensures that the government is backed with an appropriate balance of policy and technical advice upon which to base decision relating to issues raised in the context of the CAC and its subsidiary bodies.

What are the core functions of NCCP-INDIA? Let's get to know about them.

The NCCP has to perform the following core functions, established by the Codex Alimentarius Commission for National Codex Contact Points:

- act as a link between the Codex Secretariat and India Member Body
- coordinate all relevant Codex activities within India
- receive all Codex final texts (standards, codes of practice, guidelines and other advisory texts) and working documents of Codex sessions and ensure that these are circulated to those concerned
- send comments on Codex documents or proposals to the CAC or its subsidiary bodies and/or the Codex Secretariat within the time frame

- work in close cooperation with the National Codex Committee and its Shadow Committees
- act as a channel for the exchange of information and coordination of activities with other Codex members
- receive invitations to Codex sessions and inform the relevant chairpersons and the Codex Secretariat of the names of the participants representing India
- maintain a library of Codex final texts, and
- promote Codex activities throughout India.

Next, a word about the roles / responsibilities of NCCP-INDIA. In order to be able to discharge its core functions, the NCCP has the following responsibilities:

- undertake secretariat responsibilities to the National Codex Committee
- act as the contact point for the country for maintaining liaison with the CAC in elaborating international food standards
- collect, procure and analyze data for elaborating international food standards with the CAC
- keep a track of international food standards work and give comments and data to ensure that international food standards elaborated are practicable for local manufactures and does not hinder export of food products
- undertake the study and research work to solve any problem resulting from the elaboration of international food standards
- encourage food manufacturers to improve quality and hygiene management to meet requirements of international food standards, and
- disseminate information of food standards and food laws to relevant government agencies, primary producers, manufacturers, exporters, consumers and concerned organizations.

C) **World Trade Organization (WTO)**

The World Trade Organization came into being in 1995. One of the youngest of the international organizations, the WTO is the successor to the General Agreement on Tariffs and Trade (GATT) established in the wake of the Second World War. While the WTO is still young, the multilateral trading system that was originally set up under GATT is well over 50 years old.

The past 50 years have seen an exceptional growth in world trade. Merchandise exports grew on an average by 6% annually. Total trade in 2000 was 22-times the level of 1950. GATT and the WTO have helped to create a strong and prosperous trading system contributing to unprecedented growth.

The system was developed through a series of trade negotiations or rounds, held under GATT. The first rounds dealt mainly with tariff reductions but later negotiations included other areas such as anti-dumping and non-tariff measures. The last round, the 1986-94 Uruguay Round, led to the WTO's creation.

What are the benefits of WTO trading systems?

The ten benefits of the WTO trading system include:

1) The system helps promote peace
2) Disputes are handled constructively
3) Rules make life easier for all
4) Freer trade cuts the costs of living

5) More choice of products and qualities

6) Trade raises incomes

7) Trade stimulates economic growth

8) The basic principles make life more efficient

9) Governments are shielded from lobbying

10) The system encourages good government

The WTO agreement covers goods, services and intellectual property. They spell out the principles of liberalization and the permitted exceptions. They include individual countries' commitments to lower customs tariffs and other trade barriers and to open and keep open services markets. They set procedures for settling disputes. They prescribe special treatment for developing countries. They require governments to make their trade policies transparent. And they share a common three-part structure.

D) **Agreement on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT)**

Sanitary and Phytosanitary Measures: The Agreement on Sanitary and Phytosanitary Measures (SPS) sets out the basic rules for food safety and animal and plant health standards. It allows countries to set their own standards. But it also says regulations must be based on science. They should be applied only to the extent necessary to protect human, animal or plant life or health. And they should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail.

Member countries are encouraged to use international standards, guidelines and recommendations where they exist. However, members may use measures which result in higher standards if there is a scientific justification. They can also set higher standards based on appropriate assessment of risks as long as the approach is consistent, not arbitrary. The agreement still allows countries to use different standards and different methods of inspecting products.

The decision to negotiate an agreement on the application of sanitary and phytosanitary measures was made in 1986 when the Uruguay Round was launched. The SPS negotiations were open to all of the 124 Governments, which participated in the Uruguay Round.

All countries maintain measures to ensure that food is safe for consumers and to prevent the spread of pests or diseases among animals and plants. These sanitary and phytosanitary measures can take many forms, such as requiring products to come from a disease-free area, inspection of products, specific treatment or processing of products, setting of allowable maximum levels of pesticide residues or permitted use of only certain additives in food. Sanitary (human and animal health) and phytosanitary (plant health) measures apply to domestically produced food or local animal diseases, as well as, to products coming from other countries.

For the purposes of the SPS Agreement, sanitary and phytosanitary measures are defined as any measures applied to:

- protect human or animal life from risks arising from additives, contaminants, toxins or disease-causing organisms in their food
- protect human life from plant or animal-carried diseases
- protect animal or plant life from pests, diseases, or disease-causing organisms, and
- prevent or limit other damage to a country from the entry, establishment or spread of pests.

negotiations (1974-79), an Agreement on Technical Barriers to Trade was negotiated (the 1979 TBT Agreement or "Standards Code"). Although this agreement was not developed primarily for the purpose of regulating sanitary and phytosanitary measures, it covered technical requirements resulting from food safety and animal and plant health measures, including pesticide residual limits, inspection requirements and labeling.

Governments which were members of the 1979 TBT Agreement agreed to use relevant international standards (such as those for food safety developed by the Codex) except when they considered that these standards would not adequately protect health. They also agreed to notify other governments, through the GATT Secretariat, of any technical regulations which were not based on international standards. The 1979 TBT Agreement included provisions for settling trade disputes arising from the use of food safety and other technical restrictions.

The scope of SPS and TBT Agreements are different. The SPS Agreement covers all measures whose purpose is to protect:

- human or animal health from food-borne risks
- human health from animal or plant-carried diseases, and
- animals and plants from pests or diseases, whether or not these are technical requirements.

The TBT (Technical Barriers to Trade) Agreement covers all technical regulations, voluntary standards and the procedures to ensure that these are met, except when these are sanitary or phytosanitary measures as defined by the SPS Agreement. It is, thus, the type of measure which determines whether it is covered by the TBT Agreement, but the purpose of measure is relevant in determining whether a measure is subject to the SPS Agreement.

TBT measures could cover any subject. Most measures related to human disease control are under the TBT Agreement, unless they concern diseases which are carried by plants or animals (such as rabies). In terms of food, labeling requirements, nutrition claims and concerns, quality and packaging regulations are generally not considered to be sanitary or phytosanitary measures and hence are normally subject to the TBT Agreement.

On the other hand, by definition, regulations which address microbiological contamination of food, or set allowable levels of pesticides or veterinary drug residues or identify permitted food additives, fall under the SPS Agreement. Some packaging and labeling requirements, if directly related to the safety of the food, are also subject to the SPS Agreement.

The two agreements have some common elements, including basic obligations for non-discrimination and similar requirements for the advance notification of proposed measures and the creation of information offices ("Enquiry Points"). However, many of the substantive rules are different. For example, both agreements encourage the use of international standards. However, under the SPS Agreement the only justification for not using such standards for food safety for animal/plant health protection are the scientific arguments, resulting government may decide that international standards are not appropriate for other reasons, including fundamental technological problems or geographical factors.

Also, sanitary and phytosanitary measures may be imposed only to the extent necessary to protect human, animal or plant health, on the basis of scientific information. Governments may, however, introduce TBT regulations when necessary to meet a number of objectives, such as national security or the prevention of deceptive practices.

Because the obligations that governments have accepted are different under the two agreements, it is important to know whether a measure is a sanitary or phytosanitary measure, or a measure subject to the TBT Agreement.

E) International Organization for Standardization (ISO)

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from more than 140 countries, one from each country.

ISO is a non-governmental organization established in 1947. The mission of ISO is to promote the development of standardization and related activities in the world with a view to facilitate the international exchange of goods and services, and to develop cooperation in the spheres of intellectual, scientific, technological and economic activity. ISO's work results in international agreements which are published as International Standards.

You may have heard about ISO 9000 and ISO 14000. What are these? Let us read and find out.

ISO 9000 and ISO 14000

The ISO 9000 and ISO 14000 families are among ISO's most widely known and successful standards ever. ISO 9000 has become an international reference for quality requirements in business-to-business dealings, and ISO 14000 looks set to achieve at least as much, if not more, in helping organizations to meet their environmental challenges.

The vast majority of ISO standards are highly specific to a particular product, material, or process. However, the standards that have earned the ISO 9000 and ISO 14000 families a worldwide reputation are known as *"generic management system standards"*. *"Generic"* means that the same standards can be applied to any organization, large or small, whatever its product – including whether its "product" is actually a service – in any sector of activity, and whether it is a business enterprise, a public administration, or a government department. *"Management system"* refers to what the organization does to manage its processes or activities. *"Generic"* also signifies that no matter what the organization is or does, if it wants to establish a quality management system or an environmental management system, then such a system has a number of essential features which are spelled out in the relevant standards of the ISO 9000 or ISO 14000 families.

ISO 9000 is concerned with "quality management". This means what the organization does to enhance customer satisfaction by meeting customer and applicable regulatory requirements and continually to improve its performance in this regard. *ISO 14000 is primarily concerned with "environmental management"*. This means what the organization does to minimize harmful effects on the environment caused by its activities, and continually to improve its environmental performance.

Both ISO 9000 and ISO 14000 concern with the way an organization goes about its work, and not directly the result of this work. In other words, *they both concern processes, and not products – at least, not directly.* Nevertheless, the way in which the organization manages its processes is obviously going to affect its final product. In the case of ISO 9000, it is going to affect whether or not everything has been done to ensure that the product meets the customer's requirements. In the case of ISO 14000, it is going to affect whether or not everything has been done to ensure a product will have the least harmful impact on the environment, either during production or disposal either by pollution or by depleting natural resources.

The earlier three standards ISO 9001 and ISO 9003 have been integrated into the new ISO 9001:2000.

F) **Food and Agriculture Organization (FAO)**

The Food and Agriculture Organization of the United Nations was founded in 1945 with a mandate to raise levels of nutrition and standards of living, to improve agricultural productivity and to better the condition of rural populations. Today, FAO is one of the largest specialized agencies in the United Nations system and the lead agency to collect, analyze, interpret and disseminate information relating to nutrition, agriculture, forestry, fisheries and rural development. An inter-governmental organization, FAO has 183 member countries plus one member organizations, the European Community.

G) **World Health Organization (WHO)**

The World Health Organization, the United Nations specialized agency for health, was established on 7thApril 1948. WHO's objectives, as set out in its Constitution, is the attainment by all people of the highest possible level of health. Health is defined in WHO's constitution as *'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.'*

In carrying out its activities, WHO's Secretariat focuses its work on the following six core functions:

a) Articulating consistent, ethical and evidence-based policy and advocacy positions

b) Managing information by assessing trends and comparing performance, setting the agenda for and stimulating research and development

c) Catalyzing change through technical and policy support, in ways that stimulate cooperation an action and help to build sustainable national and inter-country capacity

d) Negotiating and sustaining national and global partnerships

e) Setting, validating monitoring and pursuing the proper implementation of norms and standards.

f) Stimulating the development and testing of new technologies, tools and guidelines for disease control, risk reduction, health care management and service delivery.

H) **Joint FAO/WHO Expert Committee on Food Additives (JECFA)**

The Joint FAO/WHO Expert Committee on Food Additives (JECFA) was constituted in 1956 for collecting and evaluating scientific data on food additives and making recommendations on safe level of use. This it does by elaborating specifications for the identity and purity of individual food additives that have been toxicologically tested and are in commerce and by evaluating the toxicological data on these food additives and estimating acceptable intakes by humans.

In 1972, the scope of the evaluation was extended to include the contaminants in food, while in 1987, the scope was extended even further to include residues of veterinary drugs in food.

The purpose and functions of JECFA include the following:

- Reviewing the latest knowledge and expert information and making it available to both FAO and WHO
- Formulating technical recommendations
- Making recommendations designed to initiate, stimulate and coordinate the research necessary to fulfill their terms of reference.

JECFA serves as the scientific advisory body to the Codex Alimentarius Commission (CAC) on all matters relating to food additives, contaminants and residues of veterinary/ drugs in food. Although JECFA is an independent FAO/WHO Expert Committee and is not part of the CAC, most priorities for assessment by JECFA originate with CAC.

Specialists invited to serve as members of JECFA are the independent scientists who serve in their individual capacities as experts and not as representatives of their governments or employers. During each meeting, the Committee members invited by WHO are primarily responsible for reviewing the toxicological and related data for estimating, where possible, acceptable daily intakes (ADIs) or other endpoints of assessment and for establishing principles for toxicological evaluation and testing. The members invited by FAO are primarily responsible for preparing and reviewing the specifications, for identifying purity of food additives that have undergone toxicological evaluation. A report summarizing the conclusions is published after each meeting. Toxicological monographs, which summarize the safety data and provide full references to the literature on the food additives, contaminants and veterinary drugs reviewed by the Committee, are also published after each meeting.

The discussion above presented a detailed review on the different international agreements formulated and various organizations working in the area of food safety, quality control and trade. We hope this would have given you a good global perspective on what is being done at different levels to protect consumers and provide good safe food.

Check Your Progress Exercise 4

1) What is Codex Alimentarius Commission?

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2) Briefly discuss the role of :

a) CAC

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b) NCCP-INDIA

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c) WHO

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d) JECFA

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3) Explain the benefits of WTO trading system.

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4) How would you define SPS measures?

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5) How is quality management different from environmental management?

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14.7 LET US SUM UP

In this unit we learnt about the PFA Act and the other compulsory and voluntary national food legislations regulating the safety and quality of foods in India. The Prevention of Food Adulteration Act and other legislations were enacted to protect the health of the citizens. While the Prevention of Food Adulteration Act, 1954, the Essential Commodities Act, 1955 and the Standard of Weights and Measures Act, 1976 aim at food quality control based on minimum requirements and are mandatory in nature, the Bureau of Indian Standards Act, 1986 and the Agmark Grading and Marking Act and Rules, 1937 (Agmark) lay down the provisions for voluntary food product certifications, based on specifications encompassing enhanced quality requirements.

The second part of the unit focused on the international organizations and agreements in the area of food standardization, quality, research and trade. The role of these organizations/agreements/ conventions – WHO, FAO, WTO, Codex Alimentarius, SPS, TBT etc. – was highlighted.

14.8 GLOSSARY

Acceptable Daily Intake : the amount of chemical that, is ingested daily over a lifetime, appears to be without appreciable effect.

Additives : any natural or synthetic material, other than the basic raw ingredients, used in the production of a food item to enhance the final product.

Adulteration : the act of adulterating i.e. mixing with extraneous material.

Buffering agent : an agent which drives an acidic or alkaline solution to neutral.

Codex Alimentarious Commission : the body responsible for compiling the standards, codes of practice, guidelines and recommendations that constitute the Codex Alimentarius.

Contaminants : substances that make another substance impure or corrupt by contact or mixture/ chemical and biological constituents of environment capable of producing adverse effects on biological systems

Dropsy : an unnatural collection of serous fluid in any serous cavity of the body, or in subcutaneous cellular tissue.

Environmental management : the organization does to minimize harmful effects on the environment caused by its activities, and continually to improve its environmental performance.

Food : any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drink, chewing gum and any substance which has been used in the manufacture, preparation or treatment of food but does not include cosmetics or tobacco or substances used only as drugs.

Generic Management System: the same standards can be applied to any organization, large or small, whatever its product – including whether its "product" is actually a service – in any sector of activity, and whether it is a business enterprise, a public administration, or a government department.

Preservative : any substance that, for a reasonable length of time, will prevent the action of microorganisms and other spoiling agents when added to food.

PFA : an act which aims at making provisions for the prevention of adulteration of food.

Quality management : what the organization does to enhance customer satisfaction by meeting customer and applicable regulatory requirements and continually to improve its performance in this regard.

Sequestering agent : a chemical that combines with dissolved metals in the water to prevent metals from coming out of solution.

Standard mark : presence of certification mark on a product is an assurance of conformity to the specifications.

Tariff : a Government tax on imports or exports.

14.9 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress Exercise 1

1) The primary objective behind enacting PFA Act is to ensure pure and wholesome food to the consumers and to prevent fraud or deception.

2) The important features of PFA Act, 1954 include:

- definition of terms like Food, Adulteration, Misbranding
- powers to Central / State Government to appoint Public Analysts and Food Inspectors
- powers to the Central Government to make rules for defining the standards of quality of food and food additives; packaging and labeling, control over quality

- provision for seizure and disposal of perishable foods, unfit for human consumption
- procedure for drawing and dispatch of samples to the laboratories
- appointment of an Advisory Committee
- powers to consumer organizations, and
- providing deterrent punishment for offences of adulteration / misbranding.

3) Food, in the context of PFA Act, is any article used as food or drink for human consumption other than drugs and water and includes: any article which ordinarily enters into, or is used in the composition or preparation of human food, any flavouring matter or condiments, and any other article with the Central Government may having regard to its use, nature, substance or quality.

4) A few laboratories and research institutions that develop standards for food products are:

- National Institution of Nutrition, Hyderabad
- Central Food Technological Research Institute, Mysore
- Indian Toxicology Research Centre, Lucknow
- Defence Food Research Laboratory, Mysore
- National Dairy Research Institute, Karnal.

5) The 3-tier system which administrates the PFA Act, 1954 and Rules, 1955 is

- Government of India: The PFA Act, 1954 has been enacted by the Ministry of Health and Family Welfare. Monitoring activities, training programmes, coordinating with international organizations, technical support to research institutes etc. are conducted.
- Role of State/ UT Governments: They have a major role in enforcing the foods laws. The implementation of the Act in most states is under the control of Directorate of Health Services combined with Food and Drug Administration
- Local Bodies: These employ their own food inspectors. Licensing of food industries/establishments is also left with them.

Check Your Progress Exercise 2

1) The main objective behind formulating the essential comodity act is: to regulate the production, supply and distribution of, and trade and commerce, in certain essential commodities, the principle of them being the foodstuffs.

2) The various control orders which have been formulate under the ECA, 1955 are:

- Fruit Product Order, 1955
- Vegetable Oils Product (Regulation) Order, 1998
- Solvent extracted Oil, De-oiled Meal and Edible Flour (Control) Order
- Meat Product Control Order, 1973
- Edible Oil Packaging (Developing and Regulation) Order, 1998
- Milk and Milk Product Order, 1992.

3) a) Fruit Product Order: aims at regulating sanitary and hygienic conditions in manufacture of fruit and vegetable products. The order lays down the minimum requirement for sanitary and hygienic conditions of premises, surrounding and personnel; water to be used for processing; machinery and equipment; and product standards.

b) Edible oil packaging order: all edible vegetable oils shall be sold only in packed conditions, all edible vegetable oils shall be packed only after testing by the manufacturers, all edible oils shall meet the requirements prescribed under PFA Rules, 1955.

4) The conditions of registration state that any manufacturer who manufactures or carries on business in milk or milk product shall get registered along with the details of the product manufactured / processed and its quantity; assessment of the hygienic conditions of premises; quality and safety parameters shall meet standards prescribed under PFA Rules, 1955.

5) a) - (iii)

b) - (i)

c) - (ii)

Check Your Progress Exercise 3

1) a) The purpose behind enactment of Standard of Weights and Measures Act is as follows:

- to establish standards of weights and measures
- to regulate inter-state trade or commerce in weights, measures and other goods which are sold or distributed by weight, measure or number, and
- to provide for matters connected therewith or incidental thereto.

b) The purpose behind the enactment of Bureau of Indian Standards is to facilitate harmonious development of standardization, marking and quality certification. Further it serves to provide a new thrust to standardization and quality control, and to evolve a national strategy for according recognition to standards integrating them with growth and development of production and exports .

c) The purpose behind the enactment of Consumer Protection Act is redress the grievances of the consumer about quality of purchased goods, including food articles, and to set up such councils at State / District level.

2) The role of EIC as an advisory body is to 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.

3) a) Standard mark is a certification mark on a product, which is an assurance of conformity to the specifications. The conformity is ensured by regular surveillance of the licensee's performance.

b) Agmark Grading and Marking Act and rules is a voluntary scheme of certification of agricultural products (raw and processed) for safeguarding the health of consumers.

Check Your Progress Exercise 4

1) Codex Alimentarius commission is the body responsible for compiling the standards, codes of practice, guidelines and recommendations that constitutes the Codex Alimentarius.

2) a) The role of CAC is to create standards to protect consumers, ensuring fair practices in the sale of food, and facilitating trade. Also, it sensitizes global community to the dangers of food hazards and importance of food quality.

b) The role of NCCP-INDIA is to:

- undertake Secretariat responsibilities to the National Codex Committee
- act as a contact point for the country for maintaining liasion with CAC
- collect, procure and analyze data for elaborating international food standards
- keep a track of international food standards
- undertake the study and research work
- encourage food manufacturers to improve quality and hygiene management, and
- disseminate information of food standards and laws.

c) The role of WHO is in:

- articulating consistent, ethical and evidence based policy and advocacy positions
- managing information by assessing trends and comparing performance
- catalyzing change through technical and policy support
- negotiating and sustaining National and global partnership
- setting, validating, monitoring and pursuing implementation of norms and standards, and
- stimulating the development and testing of new technologies.

d) The role of JECFA is to review the latest knowledge and expert information and making it available to both FAO and WHO, formulate technical recommendations, make recommendations designed to initiate, stimulate and coordinate the research

3) The WTO trading system promotes peace, deals whith constructive handling of disputes, formulates rules that make life easier for all, encourages, freer trade and trade raises income and stimulate growth, more choice of products and qualities. At the government level, Governments are shielded from lobbying, and encourages good government

4) Sanitary and Phytosanitary measures are defined as measures applied to:
protect human or animal life from risks from additives, contaminants, toxins, or disease-causing organisms

- protect human life from plant or animal carries diseases
- protect animal or plant life from pests, diseases or disease-causing organisms
- prevent or limit other damage to a country from the entry, establishment or spread of pests.

5) Quality Management means what the organization does to enhance customer satisfaction by meeting customer and applicable regulatory requirements and continually to improve its performance in this regard while environmental management means what the organization does to minimize harmful effects on the environment caused by its activities and continually to improve its environmental performance.

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ANNEXURE I

Table I: Tolerance limit of various Insecticides as given in PFA Rule

PFA Rule 65- Restriction on the use of insecticides:- Subject to the Provisions of sub rule (2), no insecticide shall be used directly on article of food :

Provided that nothing in this sub-rule shall apply to the fumigants which are registered and recommended for use as such on articles of food by the Registration Committee, constituted under section 5 of the Insecticides Act, 1968 (46 of 1968).]

(2) The amount of insecticide mentioned in Column 2, on the foods mentioned in Column 3, shall not exceed the tolerance limit prescribed in Column 4 of the table given below :

Sl.	Name of insecticide	Food	Tolerance limit mg/kg (ppm). No
(I)	(2)	(3)	(4)
1.	Aldrin diedrin, (the limits apply to aldrin and dieldrinsingly or in any combination and are expressed as dieldrin)	Foodgrains	0.01
		Milled Foodgrains	Nil
		Milk and Milk Products	0.15 (on a fat basis)
		Fruits and Vegetables	0.1
		Meat	0.2
		Eggs	0.1 (on a shell free basis)
		Fish	0.2
2.	Carbaryl	Foodgrains	1.5
		Milled Foodgrains	Nil
		Okra and leafy vegetables	10.0
		Potatoes	0.2
		Other vegetables	5.0
		Cottonseed (whole)	1.0
		Maize cob (kernels)	1.0
		Maize	0.50
		Rice	2.50
		Chillies	5.00
3.	Chlordane (residue to be measured as cis plus trans chlordane)	Foodgrains	0.02
		Milled Food grains	Nil
		Milk and Milk Products	0.05 (on a fat basis)
		Vegetables	0.2
		Fruits	0.1
		Sugar beet	0.3

4.	D.D. T. (The limits apply to D.D.T., DDD. basis) & D.D.E. singly or in any combination)	Milk and Milk Products	1.25 (on a fat basis)
		Fruits and vegetables including potatoes	3.5
		Meat, poultry and fish (on whole product basis)	7.0
		Eggs	0.5 (on a shell free basis)
5.	Diazinon	Food grains	0.05
		Milled Food grains	Nil
		Vegetables	0.5
6.	Dichlorvos (content of dichloroacetaldehyde (D.C.A.) be reported where possible	Food grains	1.0
		Milled food grains	0.25
		Vegetables	0.15
		Fruits	0.1
7.	Dicofol	Fruits and Vegetables	5.0
		Tea(dry manufactured)	5.0
8.	Dimethoate (residue to be determined as dimethoate and expressed as dimethoate)	Fruits and Vegetables	2.0
9.	Endosulfan (residues are measured and reported as total of endosulfan A and B and endosulfun-sulphate)	Fruits and Vegetables	2.0
		Cottonseed	0.5
		Cottonseed oil	0.2
		(crude)	0.2
		[2]Bengal gram	0.20
		Pigeon pea	0.10
		Fish	0.20
10.	Fenitrothion	Food grains	0.02
		Milled foodgrains	0.005
		Milk and Milk products	0.05 (on a fat basis)
		Fruits	0.5
		Vegetables	0.3
		Meat	0.03
11.	Heptachlor (Combined residues of heptachlor and epoxide to be determined and expressed as heptachlor)	Food grains	0.01
		Milled food grains	0.002
		Milk and Milk Products	0.15 (on a fat basis)
		Vegetables	0.05

12.	Hydrogen cyanide	Food grains	37.5
		Milled food grains	3.0
13.	Hydrogen phosphide	Food grains	Nil
		Milled food grains	Nil
14.	Inoganic bromide (determined and expressed as total bromide from all sources)	Food grains	25.0
		Milled food grains	25.0
		Fruits	30.0
		Dried fruits and spices	30.00 400.0
15.	Hexachlorocyclohexane and its isomers		
	(a) Alfa (α) isomer:	Rice grain unpolished	0.10
		Rice grain polished	0.05
		Milk (whole)	0.02
		Fruits and Vegetables	1.00
		Fish	0.25
	(b) Beta (β) isomer	Rice grain-unpolished	0.10
		Rice grain polished	0.05
		Milk (whole)	0.02
		Fruits and Vegetables	1.00
		Fish	0.25
	(c)Gamma γ isomer known as Lindane	Food grains except rice	0.10
		Milled Food grains	Nil
		Rice grain Unpolished	0.10
		Rice grain polished	0.05
		Milk	0.01 (on whole basis)
		Milk products	0.20 (on fat basis)
		fruits and Vegetable	1.00
		Fish	0.25
		Eggs	0.10 (on shell free basis)
		Meat and poultry	2.00 (on whole basis)
	(d) Delta (δ) isomer:	Rice grain unpolished	0.10
		Rice grain Polished	0.05
		Milk (whole)	0.02
		Fruits and Vegetable	1.00
		Fish	0.25
16.	Malathion (Malathion to be determined and expressed as combined residue of malathion and malaoxon)	Food grains	4.0
		Milled food grains	1.0
		Fruits	4.0
		Vegetables	3.0
		Dried fruits	8.0

17.	Parathion (Combined residues of parathion and paraoxon to be determined and expressed as parathion)	Fruits and Vegetables	0.5
18.	Parathion methyl Combined residue of parathion methyl and its oxygen analogue to be determined and expressed as parathion methyl)	Fruits Vegetables	0.2 1.0
19.	Phosphamidon residues (expressed as the sum of Phosphamidon and its desethyl derivative)	Food grains [1]Milled Foodgrains Fruits and Vegetables	0.05 Nil 0.2
20.	Pyrethrins (Sum of pyrethrins I and II and other structurally related insecticidal ingredients of pyrethrum)	Food grains Milled food grains fruits and Vegetables	Nil Nil 1.0
21.	Chlorfenvinphos (Residues to be measured as alpha and beta isomers of chlorfenvinphos)	Food grains Milled Foodgrains Milk and Milk Products Meat and Poultry Vegetables Groundnuts Cotton seed	0.025 0.006 0.2 [fat basis] 0.2 [carcass fat] 0.05 0.05 [shell free basis] 0.05
22.	Chlorobenzilate	Fruits Dry Fruits, Almonds and Walnuts	1.0 0.2 [Shell free basis]
23.	Chlorpyrifos	Foodgrains Milled food grains Fruits Potatoes and Onions Cauliflower and Cabbage Other vegetables Meat and Poultry Milk and Milk products Cotton seed Cotton seed oil (crude)	0.05 0.01 0.5 0.01 0.01 0.2 0.1 [carcass fat basis] 0.01 [fat basis] 0.05 0.025

24.	2,4D	Food grains	0.01
		Milled food grains	0.003
		Potatoes	0.2
		*Milk and Milk products	0.05
		*Meat and Poultry	0.05
		Eggs	0.05 [Shell free basis]
		Fruits	2.0
25.	Ethion {Residues to be determined as ethion and its oxygen analogue and expressed as ethion)	Tea{dry manufactured)	5.0
		Cucumber and Squash	0.5
		Other vegetables	1.0
		Cotton seed	0.5
		Milk and Milk products	0.5 [fat basis]
		*Meat and Poultry	0.2 [carcass fat basis]
		Eggs	0.2 [Shell free basis]
		Food grains	0.025
		Milled food grains	0.006
		Peaches	1.0
		Other fruits	2.0
		Dry fruits	0.1 [Shell free basis]
26.	Formothion {Determined as dimethoate and its oxygen analogue and expressed as { dimethoate except in citrus fruits where it is to be determined as formothion)	citrus fruits	0.2
		Other fruits	1.0
		Vegetables	2.0
		Peppers and Tomatoes	1.0
27.	Monocrotophos	Food grains	0.025
		Milled food grains	0.006
		Citrus fruits	0.2
		Other fruits	1.0
		Carrot, Turnip, Potatoes and Sugar beet	0.05
		Onion and Peas	0.1
		Other Vegetables	0.2
		Cotton seed	0.1
		Cottonseed oil {raw)	0.05
		*Meat and Poultry	0.02
		*Milk and Milk products	0.02
		Egg	0.02 [Shell free basis]
		Coffee (Raw beans)	0.1

28.	Paraquat-Dichloride (Determined as paraquat cations)	Food grains	0.1
		Milled food grains	0.025
		Potatoes	0.2
		Other vegetables	0.05
		Cotton seed	0.2
		Cottonseed oil (edible Refined)	0.05
		*Milk (whole)	0.01
		Fruits	0.05
29.	Phosalone	Pears	2.0
		Citrus fruits	1.0
		Other fruits	5.0
		Potatoes	0.1
		Other vegetables	1.0
		Rapeseed/Mustard oil (crude)	0.05
30.	Trichlorfon	Food grains	0.05
		Milled food grains	0.0125
		Sugar beet	0.05
		Fruits and Vegetables	0.1
		Oil seeds	0.1
		Edible oil (refined)	0.05
		*Meat and Poultry	0.1
		*Milk (Whole)	0.05
31.	THIOMETON (Residues determined as thiometon its sulfoxide and sulphone	Food grains	0.025
		Milled food grains	0.006
		Fruits	0.5

*Soluble in water and hence not necessary to mention on fat basis.

	Expressed as thoimeton)	Potatoes, Carrots and Sugar beets	0.05
		Other vegetables	2.5
32.	Acephate	Safflower seed	2.0
		Cotton seed	2.0
33.	Methamido-phos (A Metabolite of Acephate)	Safflower seed	0.1
		Cotton seed	0.1
34.	Aldicarb (Sum of Aldicarb, its sulphoxide As Aldicarb)	Patato	0.05
		Chewing Tobacco	0.1
35.	ATRAZINE	Maize	NIL
		Sugarcane	0.25

36.	Carbendazim	Foodgrains	0.50
		Milled foodgrains	0.12
		Vegetables	0.50
		Mango	2.00
		Banana (Whole)	1.00
		Other fruits	5.00
		Cotton seed	0.10
		Groundnut	0.10
		Sugar beet	0.10
		Dry fruits	0.10
		Eggs	0.10 (Shell free basis)
		Meat & Poultry	0.10 (Carcass fat basis)
		Milk & Milk Products	0.10 (Fat basis)
37.	Benomyl	Foodgrains	0.50
		Milled foodgrains	0.12
		Vegetables	0.50
		Mango	2.00
		Banana (whole)	1.00
		Other fruits	5.00
		Cotton seed	0.10
		Groundnut	0.10
		Sugar beet	0.10
		Dry fruits	0.10
		Eggs	0.10 (shell free basis)
		Meat & Poultry	0.10 (carcass fat basis)
		Milk & Milk Products	0.10 (fat basis)
38.	Captan	Fruit & Vegetable	15.00
39.	Carbofuran (sum of carbofuran and 3-hydroxy carbofuran expressed as carbofuran)	Foodgrains	0.10
		Milled foodgrains	0.03
		Fruit & Vegetable	0.10
		Oil seeds	0.10
		Sugarcane	0.10
		Meat & Poultry	0.10 (carcass fat basis)
		Milk & Milk Products	0.05 (fat basis)
40.	Copper Oxychloride (Determined as copper)	Fruit	20.00
		Potato	1.0
		Other vegetables	20.00

41.	Cypermethrin (Sum of isomers (fat soluble residue)	Wheat grains	0.05
		Milled wheat grains	0.01
		Brinjal	0.20
		Cabbage	2.00
		Bhindi	0.20
		Oil seeds except groundnut	0.20
		Meat & Poultry	0.20 (carcass fat basis)
		Milk & Milk Products	0.01 (fat basis)
42.	Decamethrin / Deltamethrin	Cotton seed	0.10
		Foodgrains	0.50
		Milled foodgrains	0.20
43.	Edifenphos	Rice	0.02
		Ricebran	1.00
		Eggs	0.01 (shell free basis)
		Meat & Poultry	0.02 (carcass fat basis)
		Milk & Milk Products	0.01 (fat basis)
44.	Fenthion (sum of fenthion, its oxygen analogue and their sulphoxides and sulphones, expressed as fenthion)	Foodgrains	0.10
		Milled foodgrains	0.03
		Onion	0.10
		Potatoes	0.05
		Beans	0.10
		Peas	0.50
		Tomatoes	0.50
		Other vegetables	1.00
		Musk melon	2.00
		Meat & Poultry	2.00 (carcass fat basis)
		Milk & Milk product	0.05 (fat basis)
45.	Fenvalerate (fat soluble residue)	Cauliflower	2.00
		Brinjal	2.00
		Okra	2.00
		Cotton seed	0.20
		Cottonseed oil	0.10
		Meat & Poultry	1.00 (carcass fat basis)
		Milk & Milk products	0.01 (fat basis)
46.	Dithiocarbamates (the residue tolerance limit are determined as *mg/CS2/Kg* and refer expressed	Food grains	0.20
		Milled food grains	0.05
		Potatoes	0.10

		Tomatoes	3.00
	separately to the residues	Cherries	1.00
	the residues arising from any or each from any or each groups of dithiocarbamates	Other fruits	3.00
	(a) Dimethyl dithiocar-.bamates residue resulting from the use of ferbam or Ziram and		
	(b) Ethylene bis-dithio-carbamates resulting from the use of mancozeb mane, or Zineb(including zineb derived from nabam plus zinc sulphate)		
47.	Phenthoate	Food grains	0.05
		Milled food grains	0.01
		Oilseeds	0.03
		Edible oils	0.01
		Eggs	0.05 (shell free basis)
		Meat & Poultry	0.05 (carcass fat basis)
		Milk & Milk Products	0.01 (fat basis)
48.	Phorate (sum of phorate, its oxygen analogue and their sulphoxides and sulphones, expressed as phorate)	Food grains	0.05
		Milled food grains	0.01
		Tomatoes	0.10
		Other vegetables	0.05
		Fruits	0.05
		Oil seeds	0.05
		Edible oils	0.03
		Sugarcane	0.05
		Eggs	0.05 (shell free basis)
		Milk & Milk Products	0.05 (fat basis)
49.	Simazine	Maize	NIL
		Sugarcane	0.25
50.	Pirimiphos-methyl	Rice	0.50
		Foodgrains except rice	5.00
		Milled food grains except rice	1.00
		Eggs	0.05 (shell free basis)

		Meat & Poultry	0.05 (carcass fat basis)
		Milk & Milk Products	0.05 (fat basis)
51	Alachlor	Cotton Seed	0.05
		Groundnut	0.05
		Maize	0.10
		Soyabeans	0.50
52.	Alfa Nephthyl Acetic Acid (A.N.A.)	Pine Apple	0.50
53.	Bitertanol	wheat	0.05
		Groundnut	0.10
54.	Captafol	Tomato	5.00
55.	Cataphydrochloride	Rice	0.50
56.	Chlormequatchloride	Grape	1.00
		Cotton Seed	1.00
57.	Chlorothalonil	Groundnut	0.10
		Potato	0.10
58.	Difubenzuron	Cotton Seed	0.20
59.	Dodine	Apple	5.00
60.	Diuron	Cotton Seed	1.00
		Banana	0.10
		Maize	0.50
		Ciytud (Sweet Orange)	1.00
		Grapes	1.00
61.	Ethephon	Pine Apple	2.00
		Coffee	0.10
		Tomato	2.00
		Manago	2.00
62.	Fluchloraline	Cotton Seed	0.05
		Soya beans	0.05
63.	Malic Hydrazide	Onion	15.00
		Potato	50.00
64.	Metalyxyl	Bajra	0.05
		Maize	0.05
		Sorghum	0.05

65.	Methomyl	Cotton Seed	0.10
66.	Methyl Chloro phenoxyacetic Acid (MCPA)	Rice	0.05
		Wheat	0.05
67.	Oxydiazon	Rice	0.03
68.	Oxydemeton methyl	Food-grains	0.02
69.	Pennethrin	Cucumber	0.50
		Cotton Seed	0.50
		Soya Beans	0.50
		Sunflower Seed	1.00
70.	Quinolphos	Rice	0.01
		Pigeonpea	0.01
		Cardamom	0.01
		Tea	0.01
		Fish	0.01
71.	Thiophanatemethyl	Apple	5.00
		Papaya	7.00"

Table II : The salient Veterinary Drug residues and their Maximum Residue Limits (MRL) for different food commodities, as given by Codex Alimentarius, are as under:

Sl No.	Veterinary Drugs	ADI (μg/kg body weight	Commodity	MRL (μg/kg)	Residue on which MRL was set
1	Albendazole	0-50	▪ Muscle, fat and Milk ▪ Liver and kidney	100 5000	2- Aminosulfone metabolite
2.	Benzylpenicillin	30	▪ Liver, kidney and muscle (cattle & pigs) ▪ Milk	50 4	Benylpeniclillin
3.	Carbadox	Limited acceptance	▪ Liver (pigs) ▪ Muscle (pig)	30 5	Quinoxaline 2-carboxylic acid
4.	Closantel	0-30	▪ Muscle and liver (sheep) ▪ Kidney (sheep) ▪ Fat (sheep) ▪ Muscle and liver (cattle) ▪ Kidney and fat (cattle)	1500 2000 2000 1000 3000	Closantel
5	Estradiol-17β	Unnecessary	▪ Foods of bovine origin	Unnecessary	Estradiol-17β
6	Flubendazole	0-12	▪ Muscle & liver (pig) ▪ Muscle (poultry) ▪ Liver (poultry) ▪ Eggs	10 200 500 400	Flubendazole
7	Isometamidium	0-100	▪ Muscle, fat, milk (cattle) ▪ Liver (cattle) ▪ Kidney (cattle)	100 500 1000	isometamidium
8	Ivermectin	0-1	▪ Liver (cattle) ▪ Fat (cattle) ▪ Liver (sheep, pigs) ▪ Fat (sheep, pigs)	100 40 15 20	22,23-Dihydroavermectin B_{1b} (H_2 B_{1a})
9	Sulfadimidine	0-50	▪ Muscle, liver, kidney and fat ▪ Milk (cattle)	100 25	sulfadimidine
10.	Progesterone	Unnecessary	▪ Food of bovine origin	Unnecessary	Progesterone
11	Oxytetracycline	0-3	▪ Muscle (cattle, sheep, pigs, chickens, turkeys, fish) ▪ Liver (cattle, sheep, pigs, chickens, turkeys)	100 300	Oxytetracycline

Sl No.	Veterinary Drugs	ADI (µg/kg body weight	Commodity	MRL (µg/kg)	Residue on which MRL was set
			▪ Kidney (cattle, sheep, pigs, chickens, turkeys) ▪ Fat (cattle, sheep, pigs, chickens, turkeys) ▪ Milk (cattle) ▪ Eggs (chickens)	600 10 100 200	
12.	Testosterone	Unnecessary	▪ Food and bovine origin	Unnecessary	Testosterone
13	Thiabendazole	0-100	▪ Muscle, liver, kidney, fat (cattle, pigs, goats, sheep); Milk (cattle, goats)	100	Sum of thiabendazole and 5-hydroxy-thiabendazole
14.	Trenbolone acetate	0-0.02	▪ Muscle (cattle) ▪ Liver (cattle)	2 10	β-Trenbolone
15.	Zeranol	0-0.5	▪ Liver (cattle) ▪ Muscle (cattle)	10 2	Zeranol

Table III - Poisonous Metals

PFA Rule 57 on Poisonous metals specifies that Chemicals described in monographs of the Indian Pharmacopoeia when used in foods, shall not contain poisonous metals beyond the limits specified in the appropriate monographs of the Indian Pharmacopoeia for the time being in force.

(2) Notwithstanding the provisions of sub-rule (1), no article of food specified in Column 2 of the table below, shall contain any metal specified in excess of the quantity specified in Column 3 of the said table.

Name of the poisonous metal	Article of food	Parts per million by weight
(I)	(2)	(3)
Lead	(i) Beverages :	
	Concentrated soft drinks (but not including concentrates used in the manufacture of soft drinks)	0.5
	Fruit and vegetable juice (including tomato juice, but not including lime juice and lemon juice)	1.0
	Concentrates used in the manufacture of soft drinks, lime juice and lemon juice	2.0
	(i-a) Baking powder	10
	[(i-b) Edible oils [5]and fats]	0.5
	(i-c) Infant Milk substitute and Infant foods	0.2
	(i-d) Turmeric whole and powder	10.0
	(ii) Other foods	
	Anhydrous dextrose and dextrose monohydrate, edible oils and fats, refined white sugar (sulphated ash content not exceeding 0.03 per cent)	0.5
	Ice-cream, iced lollies and similar frozen confections	1.0
	Canned fish, canned meats, edible gelatin, meat extracts and hydrolysed protein, dried or dehydrated vegetables (other	

		than onions)	
		All types of sugar, sugar syrup, invert sugar, and direct consumption coloured sugars with sulphated ash content exceeding 1.0 per cent	
		Raw sugars except those sold for direct consumption or used for manufacturing purposes other than the manufacture of refined sugar	5.0
		Edible molasses, caramel, liquid and solid glucose and starch conversion products with a sulphated ash content exceeding 1.0 per cent	
		Cocoa powder	50 (on the dry fat free substance)
		Yeast and yeast products	50 on the dry matter
		Tea, dehydrated onions, dried herbs and spices, flavourings, acid, alignates, agar, carrageen and similar products derived from seaweed	10.0 on the alginic dry matter
		Liquid pectin, chemicals not otherwise specified, used as ingredients or in the preparation or processing of food	10.0
		Food colouring other than caramel	10.0 (on the dry colouring matter)
		Solid pectin	50.0
		Hard boiled sugar confectionery	2.0
		Iron Fortified Common Salt	2.0
		(iii) Foods not specified	2.5
2. Copper	(i)	Beverages :	
		Soft drinks excluding concentrates and Carbonated water	7.0
		Carbonated water	1.5
		Today	5.0
		Concerntrates for soft drinks	20.0

(ii) Other foods :

Chicory dried or roasted, coffee beans, flavourings, pectin-liquid	30.0
Colouring	30.0 (on the dry colouring matter)
	30.0
	50.0
Edible gelatin	(on the dried total solids)
Tomato ketchup	60.0 (on the dry matter)
Yeast and yeast products	70.0 (on the fat free substance)
Cocoa powder	100.0 (on the dried tomato solid)
Tomato puree, paste, powder	
juice and cocktails	
Tea	150.0
Pectin-solid	300.0
Hard boiled sugar confectionery	5.0
Iron Fortified Common Salt]	2.0
(ii-a) Turmeric whole and powder	5.0
(ii-b) Juice of orange, grape, apple, tomato, pineapple and lemon	5.0
Pulp and pulp products of any fruit	5.0
(ii-c) Infant milk substitute and Infant foods	15.00 (But not less than 2.8)
(iii) Foods not specified	30.0

3. Arsenic	(i) Milk	0.1
	(ii) Beverages :	
	Soft drink intended for consumption after dilution except carbonated water	0.5
	Carbonated water	0.25
	(ii-a) Infant Milk substitute and Infant food	0.05
	(ii-b) Turmeric whole and powder	0.1
	(ii-c) Juice of orange, grape, apple, tomato, pineapple and lemon	0.2
	Pulp and pulp products of any fruit	0.2
	(iii) Preservatives, anti-oxidants, emulsifying and stabilising agents and synthetic food colours]	3.0 (on dry matter)
	(iv) Other foods :	
	Ice-cream, iced lollies and similar frozen confections	0.5
	Dehydrated onion Edible, gelatin liquid pectin	2.0
	Chicory-dried or roasted	4.0
	Dried herbs, fining and clearing agents, solid pectin all grades, spices	5.0
	Food colouring other than synthetic colouring	5.0 (on dry colouring matter)
	Hard boiled sugar confectionery	1.0
	[Iron Fortified common salt]	1.0
	(V) Foods not specified]	1.1
4. Tin	(i) Processed and canned products	250.0
	(i-aa) Jam, Jellies and marmalade	250.0
	Juice of orange, apple, tomato, pineapple and lemon	250.0
	Pulp and products of any fruit	250.0
	(i-a) Hard boiled sugar confectionery	5.0
	(i-b) Infant Milk substitute and infant foods	5.0
	(iib) Turmeric whole and powder	Nil
	(ii) Foods not specified	250.0
5. Zinc	(i) Ready-to-drink beverages	5.0
	Juice of orange, grape, tomato, pineapple and lemon	5.0

	Pulp and pulp products of any fruit	5.0
	(i-a) Infant milk substitute and Infant foods	50.0 (but not less than 25.0)
	(ii) Edible gelatin	100.0
	(iia) Turmeric whole and powder	25.0
	(iii) Fruit products covered under the Fruit Products Order, 1955	50.0
	(iii-a) Hard boiled sugar confectionery	5.0
	(iv) Foods not specified	50.0
6. Cadmium	(i) Infant Milk substitutes and infant foods	0.1
	(ii) Thrmeric whole and Powder	0.1
	(iii) other foods	1.5
7. Mercury	Fish	0.5
	Other food	1.0
8. Methyl Mercury (Calculated as the element)	All foods	0.25"
9. Chromium	Refined Sugar	20ppb,
10 Nickel	All hydrogenated, partially	1.5
	hydrogenated, interesterified vegetable	0.25"
	oils and fats such as vanaspati, table margarine, bankery and industrial margarine, bankery shortening, fat spread and partially hydrogenated soybean oil.	20ppb.

Table IV: List of food products and additives which are under mandatory certification of BIS through PFA Act, 1954

Sl No.	Indian Standards	Food Products / Additives
1	IS 1694	Tartrazine, Food grade
2	IS 1695	Sunset Yellow FCF, Food grade
3	IS 1697	Erythrosine, Food grade
4	IS 1698	Indigo Carmine, Food grade
5	IS 2558	Ponceau 4R, Food grade
6	IS 2923	Carmoisine, Food grade
7	IS 5346	Synthetic Food colour preparation and mixtures
8	IS 6022	Fast Green FCF, Food grade
9	IS 6406	Brilliant Blue FCF, Food grade
10	IS 3827	Riboflavin
11	IS 3841	â-carotene
12	IS 4446(Pt1)	Chlorophyll, (Mg Complex)
13	IS 4446(Pt2)	Chlorophyll, (Cu Complex)
14	IS 6386	Beta-apo-8-carotenal,Food grade
15	IS 6405	Centhaxanthine, Food grade
16	IS 6797	Methyl ester of beta-apo-8-carotenoic acid
17	IS 7260	Ethyl ester of beta-apo-8-carotenoic acid, Food grade
18	IS 2557	Annatto colour for food products
19	IS 4476	Caramel
20		Sulphuric acid (Food grade)
21	IS 4447	Sodium benzoate, Food grade
22	IS 4467(Pt1)	Caramel (Plain)
23	IS 4448	Benzoic acid, Food grade
24	IS 4467(Pt2)	Caramel (Ammonia process)
25	IS 4467(Pt3)	Caramel (Ammonia sulphite process)
26	IS 4750	Sorbitol, Food grade
27	IS 4751	Potassium metabisulphite, Food grade
28	IS 4752	Sodium metabisulphite, Food grade
29	IS 4818	Sorbic acid, Food grade
30	IS 5191	Sodium alginate, Food grade
31	IS 5306	Sodium carboxymethyl cellulose, Food grade
32	IS 5342	Ascorbic acid, Food grade
33	IS 5343	Butylated hydroxy-anisole, Food grade
34	IS 5707	Agar, Food grade
35	IS 5719	Gelatin, Food grade

36	IS 6030	Sodium propionate, Food grade
37		Butylated hydroxyl Toluene (BHT), Food grade
38	IS 6031	Calcium propionate, Food grade
39	IS 6793	Fumaric acid, Food grade
40	IS 7905	Calcium alginate, Food grade
41	IS 7928	Alginic acid, Food grade
42	IS 10563	Mineral Oil, Food grade
43	IS 8356	Titanium dioxide, Food grade
44	IS 9971	DL Lactic acid, Food grade
45	IS 1166	Condensed milk, sweetened
46	IS 1166	Condensed skimmed milk, sweetened
47	IS 1165	Milk powder
48	IS 13334	Skimmed milk powder
49	IS 14542	Partly skimmed milk powder
50	IS 1547	Infant milk foods
51	IS 1656	Milk-Cereal based weaning foods
52	IS 11156	Infant formulae
53	IS 1166	Partly skimmed, sweetened condensed milk
54	IS 13428	Natural mineral water (w.e.f. 29.3.2001)
55	IS 14543	Packaged drinking water (w.e.f. 29.3.2000)

LIST OF ABBREVIATIONS

ADI	:	Acceptable Daily Intake
Agmark	:	Agmark Grading and Marking Act and Rules
ALARA	:	As Low As Reasonably Achievable
APEDA	:	Agricultural and Processed Food Export Development
BHA	:	Butylated Hydroxyanisole
BHC	:	Benzene Hexachloride
BIS	:	Bureau of Indian Standards
BOAA	:	Beta-oxalyl Aminoalanine
BOPP	:	Biaxially Oriented Polypropylene
BSE	:	Bovine Spongiform Encephalopathy
BST	:	Bovine Somatotropin
CAC	:	Codex Alimentarius Commission
CAP	:	Controlled Atmosphere Packaging
CCFS	:	Central Committee for Food Standards
CCP	:	Critical Control Point
CFTRI	:	Central Food Technological Research Institute
CJD	:	Creutzfeldt- Jakob Disease
DFRL	:	Defence Food Research Laboratory
DNA	:	Deoxyribonucleic Acid
EAN	:	European Article Numbering
EDTA	:	Ethylene diamine tetra acetate
EEC	:	Enterovirulent Escherichia Coli
EIA	:	Export Inspection Agency
EIC	:	Export Inspection Council
EPA	:	Environmental Protection Agency
EPEC	:	Enteropathogenic Escherichia Coli
ERH	:	Equilibrium Relative Humidity
ETEC	:	Enterotoxigenic Escherichia Coli
FAO	:	Food and Agriculture Organization
FDA	:	Food and Drug Administration
FPO	:	Fruit Products Order
GATT	:	General Agreement on Tariffs and Trade
GEMS	:	Global Environmental Monitoring System
GHP	:	Good Handling Practices
GLP	:	Good Laboratory Practices
GM	:	Genetically Modified
GMP	:	Good Manufacturing Practices
GRAS	:	Generally Recognized As Safe
HACCP	:	Hazard Analysis Critical Control Point
HDPE	:	High Density Polyethylene
HTST	:	High Temperature Short Time
ISI	:	Indian Standards Institution
ISO	:	International Organization for Standardization

ITF	:	Interleaned of Fine
ITRC	:	Indian toxicology Research Centre
JECFA	:	Joint FAO/WHO Expert Committee on Food Additives
JMPR	:	Joint FAO/WHO Meetings on Pesticide Residues
LDPE	:	Low Density Polyethylene
LLDPE	:	Linear Low Density Polyethylene
LSD	:	Lysergic acid diethylamide
LT	:	Labile Toxin
LTLT	:	Low Temperature Long Time
MAP	:	Modified Atmosphere Packaging
MBM	:	Meat and Bone Meal
MOHFW	:	Ministry of Health and Family Welfare
MPEDA	:	Marine Products Export Development Authority
MRL	:	Maximum Residue Limit
MSG	:	Monosodium Glutamate
NASA	:	National Aeronautics and Space Administration
NCCP	:	National Codex Contact Point
NDDB	:	National Dairy Development Board
NDRI	:	National Dairy Research Institute
NHP	:	National Health Policy
NIN	:	National Institute of Nutrition
NOAEL	:	No-Observed Adverse Effect Level
NOEL	:	No-Observed Effect Level
OECD	:	Organization for Economic Co-operation & Development
PCB	:	Polychlorinated Biphenyls
PCDD	:	Polychlorinated dibenzo – p – dioxin
PCDF	:	Polychlorinated dibenzo furans
PE	:	Polyethylene
PET	:	Polyethylene Terepthalate
PFA	:	Prevention of Food Adulteration
PP	:	Polypropylene
PSP	:	Paralytic Shellfish Poisoning
PUFA	:	Polyunsaturated Fatty Acid
PVC	:	Polyvinyl Chloride
PVDC	:	Polyvinylidene Chloride
QA	:	Quality Assurance
QC	:	Quality Control
QUATS	:	Quaternary Ammonium Compounds
SIDS	:	Sudden Infant Death Syndrome
SPS	:	Sanitary and Phytosanitary
SU	:	Surlyn
SWMA	:	Standard Weights and Measures Act
TBHQ	:	Tertiary butyl hydro quinine
TBT	:	Technical Barriers to Trade
TMA	:	Trimethyl Amine

TMAO	:	Trimethyl Amine Oxide
TSE	:	Transmissible Spongiform Encephalopathy
TTX	:	Tetrodotoxin
UHT	:	Ultra High Temperature
UPC	:	Universal Products Code
UT	:	Union Territory
UV	:	Ultraviolet
VOD	:	Veno-occlusive Disease
VTEC	:	Verotoxigenic Escherichia Coli
WHO	:	World Health Organization
WTO	:	World Trade Organization and Development