भारतीय मानक **IS 2491 : 2024**

Indian Standard

खाद्य स्वच्छता — सामान्य सिद्धांत — रीति संहिता

(चौथा पुनरीक्षण)

Food Hygiene — General Principles — Code of Practice

(Fourth Revision)

ICS 67.020

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September 2024 **Price Group 10**

Food Hygiene, Safety Management and Other Systems Sectional Committee, FAD 15

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Hygiene, Safety Management and Other Systems Sectional Committee had been approved by the Food and Agriculture Division Council.

People have the right to expect the food they eat to be safe and suitable for consumption. Foodborne illness and foodborne injury are, at best unpleasant, and at worst, can be fatal. There are also other consequences, such as damage to trade and tourism, which may lead to loss of earnings, unemployment and litigation. Food spoilage is wasteful, costly and can adversely affect trade and consumer confidence.

International food trade and foreign travel are increasing, bringing important social and economic benefits. But this also makes the spread of illness around the world easier. Eating habits too, have undergone major change in many countries over the last three decades and new food production, preparation and distribution techniques have developed to reflect this. Effective hygiene control, therefore, is vital to avoid the adverse human health and economic consequences of foodborne illness, foodborne injury and food spoilage. Everyone, including farmers and growers, manufacturers and processors, food handlers and consumers has a responsibility to assure that food is safe and suitable for consumption.

Keeping the above in view, this standard was first published in 1963 and first revised in 1972. The second revision was brought out in 1998 followed by third revision in 2013. In the second and third revision, the text was updated and aligned with the 'Recommended International code of practice — General principles of food hygiene' [CAC/RCP-1-1969), Rev. 1-1997] and [CAC/RCP 1-1969, Rev. 2-2003], respectively, published by the Joint FAO/WHO Food Standards Programme, Codex Alimentarius Commission, Rome. The title was also aligned with the Codex Code of Practice.

In this revision, the text has again been updated and aligned with the latest version of 'Code of practice — General principles of food hygiene' [CXC-1-1969), Rev. 4-2022]. Examples relevant to the Indian context pertaining to various clauses have also been added in this revision. Annex B provides a comparison of control measures applied as GHPs and those applied at critical control points (CCPs) with examples.

This standard lays a firm foundation for ensuring food hygiene and should be used in conjunction with each specific code of hygienic practice, where appropriate and IS 14595 : 1998 'Food hygiene — Microbiological criteria — Principles for establishment and application'. The standard follows the food chain from primary production through to final consumption, highlighting the key hygiene controls at each stage.

The government, that is the regulatory authorities, can consider the contents of the standard and decide how they can encourage the implementation of this standard to protect consumers adequately from illness or injury caused by food and provide assurance to the consumers that the food is suitable for human consumption. Similarly, industry should apply the hygienic practices set out in this standard to provide food which is safe and suitable for consumption and ensure that the consumers are given clear and easily understood information, by way of labelling and other appropriate means, to enable them to protect their food from contamination and growth/survival of food borne pathogens by storing, handling and preparing it correctly. By adopting this standard, the industry can also maintain confidence in internationally traded food.

There may be situations where some of the specific requirements contained in this standard are not applicable. In all such cases, the user shall take a decision on the basis of the assessment as to what is necessary and appropriate on the grounds of the safety and suitability of food for consumption.

(*Continued on third cover*)

Indian Standard

FOOD HYGIENE — GENERAL PRINCIPLES — CODE OF PRACTICE

(Fourth Revision)

1 SCOPE

This standard covers the essential principles of food hygiene applicable throughout the food chain which includes production (including primary production), processing, manufacturing, preparation, packaging, storage, distribution, retail, food service operation and transport of food to achieve the goal of ensuring that food is safe and suitable for human consumption.

2 REFERENCES

The standards listed in Annex A contain provisions, which, through references in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 DEFINITIONS

For the purpose of this standard, the following definitions shall apply.

3.1 Acceptable Level — A level of hazard in a food at or below which the food is considered to be safe according to its intended use.

3.2 Allergen Cross-contact — The unintentional incorporation of an allergenic food, or ingredient, into another food that is not intended to contain that allergenic food or ingredient.

3.3 Cleaning — The removal of soil, food residues, dirt, grease or other objectionable matter.

3.4 Competent Authority — The government authority or official body authorized by the government that is responsible for the setting of regulatory food safety requirements and/or for the organization of official controls including enforcement.

3.5 Contaminant — Any biological, chemical or physical agent, foreign matter or other substances not intentionally added to food that may compromise food safety or suitability.

3.6 Contamination — The introduction or occurrence of a contaminant in the food or food environment.

3.7 Control

a) when used as a noun — The state wherein correct procedures are being followed and any established criteria are being met; and

b) when used a verb — To take all necessary actions to ensure and maintain compliance with established criteria and procedures.

3.8 Control Measure — Any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.

3.9 Corrective Action — Any action taken when a deviation occurs in order to re-establish control, segregate and determine the disposition of the affected product, if any, and prevent or minimize reoccurrence of the deviation.

3.10 Critical Control Point (CCP) — A step at which a control measure or control measures, essential to control a significant hazard, is/are applied in a HACCP system.

3.11 Critical Limit — A criterion, observable or measurable, relating to a control measure at a CCP which separates acceptability from unacceptability of the food.

3.12 Deviation — Failure to meet a critical limit or to follow a GHP procedure.

3.13 Disinfection — Reduction by means of biological or chemical agents and/or physical methods in the number of viable microorganisms on surfaces, in water or air to a level that does not compromise food safety and/or suitability.

3.14 Flow Diagram — A systematic representation of the sequence of steps used in the production or manufacture of food.

3.15 Food Business Operator (FBO) — The entity responsible for operating a business at any step in the food chain.

3.16 Food Handler — Any person who directly handles packaged or unpackaged food, equipment and utensils used for food, or surfaces that come into contact with food and that is expected, therefore, to comply with food hygiene requirements.

3.17 Food Hygiene — All conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.

3.18 Food Hygiene System — Prerequisite programmes, supplemented with control measures at CCPs, as appropriate, that when taken as a whole, ensure that food is safe and suitable for its intended use.

3.19 Food Safety — Assurance that food will not cause adverse health effects to the consumer when it is prepared and/or eaten according to its intended use.

3.20 Food Suitability — Assurance that food is acceptable for human consumption according to its intended use.

3.21 Good Hygiene Practices (GHPs) — Fundamental measures and conditions applied at any step within the food chain to provide safe and suitable food.

3.22 HACCP Plan — Documentation or set of documents, prepared in accordance with the principles of HACCP to ensure control of significant hazards in the food business.

3.23 HACCP System — The development of a HACCP plan and the implementation of the procedures in accordance with that plan.

3.24 Hazard — A biological, chemical or physical agent in food with the potential to cause an adverse health effect.

3.25 Hazard Analysis — The process of collecting and evaluating information on hazards identified in raw materials and other ingredients, the environment, in the process or in the food, and conditions leading to their presence to decide whether or not these are significant hazards.

3.26 Monitor — The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a control measure is under control.

3.27 Prerequisite Programme — Programmes including good hygiene practices, good agricultural practices and good manufacturing practices, as well as other practices and procedures such as training and traceability, that establish the basic environmental and operating conditions that set the foundation for implementation of a HACCP system.

3.28 Primary Production — Those steps in the food chain up to and including storage and, where appropriate, transport of outputs of farming. This would include growing crops, raising fish and animals, and the harvesting of plants, animals or animal products from a farm or their natural habitat.

3.29 Significant Hazard — A hazard identified by a hazard analysis, as reasonably likely to occur at an unacceptable level in the absence of control, and for which control is essential given the intended use of the food.

3.30 Step — A point, procedure, operation or stage in the food chain, including raw materials, from primary production to final consumption.

3.31 Validation of Control Measures — Obtaining evidence that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard to a specified outcome.

3.32 Verification — The application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine whether a control measure is or has been operating as intended.

4 INTRODUCTION AND CONTROL OF FOOD HAZARDS

4.1 The development, implementation and maintenance of GHPs provide the conditions and activities that are necessary to support the production of safe and suitable food at all stages of the food chain from primary production through to handling of the final product. Applied generally, they assist in controlling hazards in food products.

4.2 Knowledge of the food and its production process is essential for the effective implementation of GHPs. This standard provides guidance for effective implementation of GHPs, including appropriate location, layout, design, construction and maintenance of premises and facilities, and should be applied in conjunction with sector and product-specific codes.

4.3 GHPs manage many sources of food hazards which could contaminate food products, for example, persons who handle food at harvest, during manufacturing, and during preparation; raw materials and other ingredients purchased from suppliers; cleaning and maintaining the work environment; storage and display.

4.4 As previously noted, all FBOs should be aware of and understand hazards associated with their businesses, and the control measures required to manage these hazards, as appropriate. FBOs should consider (using external resources as needed) whether the application of GHPs alone is sufficient to manage some or all of the hazards associated with the operation through control of their sources, for example:

a) Control of water quality — Minimizes the presence of many potential hazards (for example, biological, chemical, physical);

b) Control of faecal contamination — Minimizes the potential for contamination with many foodborne pathogens such as *Salmonella*, *Campylobacter*, *Yersinia*, pathogenic strains of *E. coli*;

c) Control of food handler practices and hygiene — Prevents many potential communicable diseases that could be foodborne; and

d) Control of food contact surfaces by cleaning — Removes bacterial contaminants, including foodborne pathogens, and allergens.

4.5 After consideration of the conditions and activities in the business, it may be determined that GHPs alone may be sufficient to manage the hazards. However, it may also be determined that it is necessary to place greater attention on some GHPs that are particularly important for food safety (for example, increased stringency of cleaning of a mincer for producing minced meat for raw or lightly cooked consumption compared to equipment used for producing meat to be cooked prior to consumption; increased monitoring and/or verification of disinfection of food contact surfaces).

4.6 Hazards that occur or are present at levels such that GHP procedures are not sufficient to provide safe food should be managed by an appropriate combination of control measures that are capable of preventing occurrence of hazards or eliminating or reducing them to an acceptable level. The control measures can be identified in one or more steps throughout the production process. In the case in which significant hazards are identified that need to be controlled after the implementation of GHPs, it will be necessary to develop and implement a HACCP system (*see* IS 15000).

5 PRIMARY PRODUCTION

5.1 Objectives

Primary production should be managed in a way that ensures that food is safe and suitable for its intended use. Where necessary, this will include:

a) an assessment of the suitability of water used where it may pose a hazard, for example, crop irrigation, rinsing activities, etc;

b) avoiding the use of areas where the environment poses a threat to the safety of food (for example, contaminated sites);

c) controlling contaminants, pests and diseases of animals and plants, to the extent practicable, to minimize the threat to food safety (for example, appropriate use of pesticides and veterinary drugs); and

d) adopting practices and measures to ensure food is produced under appropriately hygienic conditions (for example, cleaning and maintaining harvest equipment, rinsing, hygienic milking practices).

5.2 Rationale

To reduce the likelihood of introducing a contaminant which may adversely affect the safety of food, or its suitability for consumption, at all stages of the food chain.

NOTE — The types of activities involved in primary production may make eliminating or reducing some hazards difficult. However, by applying prerequisite programmes such as good agricultural practices (GAPs) (*see* IS 15930 series) and/or GHPs, steps can be taken to minimize the occurrence and levels of hazards in the food chain, for example, at milking for dairy production, steps taken in the hygienic production of eggs, or the controls on irrigation water used for growing salad crops. Not all provisions apply for all primary production situations and consideration will need to be given by the FBO on the appropriateness of the measures to be taken. The HACCP or FSMS based approach (*see* IS 15000 or IS/ISO 22000) may assist in the taking of such measures.

5.3 Environmental Control

Potential sources of contamination from the environment should be identified. In particular, primary production should not be carried out in areas where the presence of contaminants would lead to an unacceptable level of such contaminants in food, for example, using polluted areas, locating near facilities emitting toxic or offensive odours which could taint foodstuffs or near sources of contaminated water such as discharge of waste water from industrial production or runoff from agricultural land with high faecal material or chemical residues, unless there is a measure to reduce or prevent the contamination of food.

5.4 Hygienic Production

The potential effects of primary production activities on the safety and suitability of food should be considered at all times. In particular, this includes identifying any specific points in such activities where a high probability of contamination may exist and taking specific measures to minimize and, if possible, eliminate that probability.

Producers should as far as practicable, implement measures to:

a) control contamination from soil, water, feedstuffs, fertilizers (including natural fertilizers), pesticides, veterinary drugs or any other agent used in primary production;

b) protect food sources from faecal and other contamination (for example, zoonotic foodborne agents);

c) control plant and animal health so that it does not pose a threat to human health through food consumption, or adversely affect the suitability of the product (for example, observe the withdrawal period of veterinary drugs and pesticides, keeping records where applicable); and

d) manage waste and store harmful substances appropriately.

5.5 Handling, Storage and Transport

Procedures should be in place to:

a) sort food to remove material which should not be used for human consumption;

b) dispose of any rejected material in a hygienic manner; and

c) protect food from contamination by pests, or by chemical, physical or microbiological contaminants or other objectionable substances during handling (for example, sorting, grading, washing), storage and transport. Care should be taken to prevent deterioration and spoilage through appropriate measures which may include controlling temperature, humidity, and/or other controls.

5.6 Cleaning, Maintenance and Personnel Hygiene

Appropriate facilities and procedures should be in place to ensure that:

a) cleaning and maintenance are carried out effectively and do not compromise food safety (for example, ensuring equipment used in harvest is not a source of contamination); and

b) an appropriate degree of personal hygiene is maintained to ensure personnel are not a source of contamination (for example, by human faeces).

6 ESTABLISHMENT — DESIGN OF FACILITIES AND EQUIPMENT

6.1 Objectives

Depending on the nature of the operations and the associated risks, premises, equipment and facilities should be located, designed and constructed to ensure that:

a) contamination is minimized;

b) design and layout permit appropriate maintenance, cleaning and disinfection and minimize airborne contamination;

c) surfaces and materials, in particular those in contact with food, are non-toxic for their intended use;

d) where appropriate, suitable facilities are available for temperature, humidity and other controls;

e) there is effective protection against pest access and harbourage; and

f) there are sufficient and appropriate washroom facilities for personnel.

6.2 Rationale

Attention to good hygienic design and construction, appropriate location, and the provision of adequate facilities is necessary to enable contaminants to be effectively controlled.

6.3 Location and Structure

6.3.1 *Location of Establishment*

Food establishments should not be located where there is a threat to food safety or suitability and hazards cannot be controlled by reasonable measures. The location of an establishment, including temporary/mobile establishments, should not introduce any hazards from the environment that cannot be controlled. In particular, unless sufficient safeguards are provided, establishments should normally be located away from:

a) environmentally polluted areas and industrial activities which are reasonably likely to contaminate food;

b) areas subject to flooding;

c) areas prone to infestations of pests; and

d) areas where wastes, either solid or liquid, cannot be removed effectively.

6.3.2 *Design and Layout of Food Establishment*

6.3.2.1 The design and layout of food establishments should permit adequate maintenance and cleaning. The layout of premises and the flow of operations, including the movements of personnel and material within the buildings, should be such that cross-contamination is minimized or prevented.

6.3.2.2 Areas having different levels of hygiene control (for example, the raw material and finished product areas) should be separated to minimize cross-contamination through measures such as physical separation (for example, walls, partitions) and/or location (for example, distance), traffic flow (for example, one-directional production flow), airflow, or separation in time, with suitable cleaning and disinfection between uses.

6.3.3 *Internal Structures and Fittings*

6.3.3.1 Structures within food establishments should be soundly built of durable materials, which are easy to maintain, clean and, where appropriate, easy to disinfect. They should be constructed of non-toxic and inert materials according to intended use and normal operating conditions. In particular, the following specific conditions should be satisfied where necessary to protect the safety and suitability of food:

a) the surfaces of walls, partitions and floors should be made of impervious materials that are easy to clean and, where necessary, disinfect;

b) walls and partitions should have a smooth surface up to a height appropriate to the operation;

c) floors should be constructed to allow adequate drainage and cleaning;

d) ceilings and overhead fixtures (for example, lighting) should be constructed to be shatterproof where appropriate, and finished to minimize the build-up of dirt and condensation and the shedding of particles;

e) windows should be easy to clean, be constructed to minimize the build-up of dirt and, where necessary, be fitted with removable and cleanable insect-proof screens; and

f) doors should have smooth, non-absorbent surfaces, be easy to clean and, where necessary, disinfect.

6.3.3.2 Work surfaces that come into direct contact with food should be in sound condition, durable, and easy to clean, maintain and disinfect. They should be made of smooth, non-absorbent materials, and inert to the food, to detergents and to disinfectants under normal operating conditions.

6.3.4 *Temporary/Mobile Food Establishments and Vending Machines*

6.3.4.1 Establishments and structures covered here include market stalls, street vending vehicles, vending machines and temporary premises such as tents and marquees.

6.3.4.2 Such premises and structures should be located, designed and constructed to avoid, as far as reasonably practicable, the contamination of food and the harbouring of pests. Adequate facilities for toileting and washing hands should be provided, where appropriate.

6.4 Facilities

6.4.1 *Drainage and Waste Disposal Facilities*

6.4.1.1 Adequate drainage and waste disposal systems and facilities should be provided and well maintained. They should be designed and constructed so that the likelihood of contaminating food or the water supply is avoided. For plumbing, steps should be taken to prevent backflow, cross-connections, and backup of sewer gases. It is important that drainage does not flow from highly contaminated areas (such as toilets or raw production areas) to areas where finished food is exposed to the environment.

6.4.1.2 Waste should be collected, disposed of by trained personnel and, where appropriate, disposal records maintained. The waste disposal site should be located away from the food establishment to prevent pest infestation. Containers for waste, by-products and inedible or hazardous substances should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material.

6.4.1.3 Containers used to hold hazardous substances prior to disposal should be identified and, where appropriate, be lockable to prevent intentional or accidental contamination of food.

6.4.2 *Cleaning Facilities*

Adequate, suitably designated facilities should be provided for cleaning utensils and equipment. Such facilities should have an adequate supply of hot and/or cold water, where required. A separate cleaning area should be provided for tools and

equipment from highly contaminated areas like toilets, drainage and waste disposal areas. Where appropriate, facilities for washing food should be separate from facilities for cleaning utensils and equipment, and separate sinks should be available for hand washing and food washing.

6.4.3 *Personnel Hygiene Facilities and Toilets*

6.4.3.1 Adequate washing and toilet facilities should be available so that an appropriate degree of personal hygiene can be maintained and to avoid personnel contaminating food. Such facilities should be suitably located and should not be used for other purposes such as storage of food or items that contact food. They should include:

a) adequate means of washing and drying hands, including soap (preferably liquid soap), wash basins and, where appropriate, a supply of hot and cold (or suitably temperature controlled) water;

b) hand washing basins of an appropriate hygienic design, ideally with taps not operated by hands; where this is not possible, appropriate measures to minimize contamination from the taps should be in place; and

c) suitable changing facilities for personnel, if needed.

6.4.3.2 Handwashing basins should not be used for washing food or utensils.

6.4.4 *Temperature*

Depending on the nature of the food operations undertaken, adequate facilities should be available for heating, cooling, cooking, refrigerating and freezing food, for storing refrigerated or frozen foods, and, when necessary, controlling ambient temperatures to ensure the safety and suitability of food.

6.4.5 *Air Quality and Ventilation*

6.4.5.1 Adequate means of natural or mechanical ventilation should be provided, in particular to:

a) minimize air-borne contamination of food, for example, from aerosols and condensation droplets;

b) help control ambient temperatures;

c) control odours which might affect the suitability of food; and

d) control humidity to ensure the safety and suitability of food (for example, to prevent an increase in moisture of dried foods that would allow growth of microorganisms and production of toxic metabolites).

6.4.5.2 Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas; and the systems should be easy to maintain and clean.

6.4.6 *Lighting*

Adequate natural or artificial lighting should be provided to enable the food business to operate in a hygienic manner. Lighting should be such that it does not adversely impact the ability to detect defects of, or contaminants in, food or the examination of facilities and equipment for cleanliness. The intensity should be adequate to the nature of the operation. Light fittings should, where appropriate, be protected to ensure that food is not contaminated by breakages of lighting elements.

6.4.7 *Storage*

6.4.7.1 Adequate and, where necessary, separate facilities for the safe and hygienic storage of food products, food ingredients, food packaging materials and non-food chemicals (including cleaning materials, lubricants, fuels), should be provided. Storage should allow for segregation of raw and cooked foods or allergenic and non-allergenic food.

6.4.7.2 Food storage facilities should be designed and constructed to:

a) facilitate adequate maintenance and cleaning;

b) avoid pest access and harbourage;

c) enable food to be effectively protected from contamination, including allergen cross-contact, during storage; and

d) where necessary, provide an environment which minimizes the deterioration of food (such as by temperature and humidity control).

6.4.7.3 The type of storage facilities required will depend on the nature of the food. Separate, secure, storage facilities for cleaning materials and hazardous substances should be provided.

6.5 Equipment

6.5.1 *General*

Equipment and containers coming into contact with food should be suitable for food contact; designed, constructed and located to ensure that they can be adequately cleaned (other than containers which are

single use only); disinfected (where necessary); and maintained or discarded as necessary to avoid the contamination of food, according to hygienic design principles. Equipment and containers should be made of materials that are non-toxic according to intended use. Where necessary, equipment should be durable and movable or capable of being disassembled to allow for maintenance, cleaning, disinfection and to facilitate inspection for pests.

6.5.2 *Food Control and Monitoring Equipment*

6.5.2.1 Equipment used to cook, heat, cool, store or freeze food should be designed to achieve the required food temperatures as rapidly as necessary in the interests of food safety and suitability, and to maintain food temperatures effectively.

6.5.2.2 Such equipment should also be designed to allow temperatures to be monitored, where necessary, and controlled. Where appropriate, monitoring equipment should be calibrated to ensure that temperatures of food processes are accurate.

6.5.2.3 Where necessary, such equipment should have effective means of controlling and monitoring humidity, airflow and any other characteristics likely to have an effect on the safety or suitability of food.

6.5.2.4 These requirements are designed to ensure that:

a) Harmful or undesirable microorganisms and their toxins are either completely removed or reduced to acceptable levels;

b) Where appropriate, the critical limits set in HACCP or FSMS-based standards (refer to IS 15000 or IS/ISO 22000) can be monitored and verified; and

c) The temperatures and other necessary conditions for ensuring food safety can be achieved and maintained.

7 TRAINING AND COMPETENCE

7.1 Objective

All those engaged in food operations who come directly or indirectly into contact with food should have sufficient understanding of food hygiene to ensure they have competence appropriate to the operations they are to perform.

7.2 Rationale

Training is fundamentally important to any food hygiene system and the competence of personnel. Adequate hygiene training, and/or instruction and supervision of all personnel involved in food-related activities contribute to ensuring the safety of food and its suitability for consumption.

7.2.1 *Awareness and Responsibilities*

Food hygiene training is fundamentally important to the food business. All personnel should be aware of their role and responsibility in protecting food from contamination or deterioration. Personnel should have the knowledge and skills necessary to enable them to handle food hygienically. Those who handle cleaning chemicals or other potentially hazardous chemicals should be instructed in proper use to prevent contamination of food.

7.2.2 *Training Programmes*

7.2.2.1 Elements to take into account in determining the extent of training required include:

a) the nature of hazards associated with the food, for example, its ability to sustain growth of pathogenic or spoilage microorganisms, the existence of potential physical contaminants or known allergens;

b) the manner in which the food is produced, processed, handled and packed, including the likelihood of contamination;

c) the extent and nature of processing or further preparation before consumption of the food;

d) the conditions under which the food will be stored;

e) the expected length of time before consumption of the food; and

f) the use and maintenance of instruments and equipment associated with food.

7.2.2.2 Training programmes should also consider the knowledge and skill levels of the personal being trained. Topics to be considered for training programmes could include the following as appropriate to a person’s duties;

a) the principles of food hygiene applicable to the food business;

b) the measures relevant to the food business that are used to prevent contaminants in food;

c) the importance of good personal hygiene, including proper hand washing and wearing, when needed, appropriate clothing, for food safety;

d) the good hygiene practices applicable to the food business; and

e) appropriate actions to take when food hygiene problems are observed.

7.2.2.3 In addition, for retail and food service operations, whether personnel have direct customer interaction is a factor in training, since it may be necessary to convey certain information about products (such as allergens) to customers.

7.2.3 *Instruction and Supervision*

7.2.3.1 The type of instruction and supervision needed will depend on the size of the business, the nature of its activities and the types of food involved. Managers, supervisors and/or operators/workers should have sufficient knowledge of food hygiene principles and practices to be able to identify deviations and take necessary action as appropriate to their duties.

7.2.3.2 Periodic assessments of the effectiveness of training and instruction programmes should be made, as well as routine supervision and verification to ensure that procedures are being carried out effectively. Personnel tasked to perform any activities used in food control should be trained adequately to ensure that they are competent to perform their tasks and are aware of the impact of their tasks on the safety and suitability of the food.

7.3.4 *Refresher Training*

Training programmes should be routinely reviewed and updated where necessary. Systems should be in place to ensure that food handlers and personnel associated with the food business, such as maintenance staff, remain aware of all procedures necessary to maintain the safety and suitability of food. Records should be kept of training activities.

8 ESTABLISHMENT MAINTENANCE, CLEANING AND DISINFECTION, AND PEST CONTROL

8.1 Objectives

To establish effective systems that:

a) ensure appropriate establishment maintenance;

b) ensure cleanliness and, when necessary, adequate disinfection;

c) ensure pest control;

d) ensure waste management; and

e) monitor effectiveness of cleaning and disinfection, pest control and waste management procedures.

8.2 Rationale

To facilitate the continuing effective control of food contaminants, pests, and other agents likely to compromise food safety and suitability.

8.3 Maintenance and Cleaning

8.3.1 *General*

8.3.1.1 Establishments and equipment should be maintained in an appropriate condition to:

a) facilitate all cleaning and disinfection procedures;

b) function as intended; and

c) prevent contamination of food, such as from pests, metal shards, flaking plaster, debris, chemicals, wood, plastic, glass, paper.

8.3.1.2 Cleaning should remove food residues and dirt which may be a source of contamination, including allergens. The cleaning methods and materials necessary will depend on the nature of the food business, the food type and the surface to be cleaned. Disinfection may be necessary after cleaning, especially for food contact surfaces.

Attention should be paid to hygiene during cleaning and maintenance operations so as not to compromise food safety and suitability. Cleaning products suitable for food contact surfaces should be used in food preparation and storage areas.

8.3.1.3 Cleaning and disinfection chemicals should be handled and used carefully and in accordance with manufacturer's instructions, for example, using the correct dilutions and contact times, and stored, where necessary, separated from food, in clearly identified containers to avoid contamination of food.

8.3.1.4 Separate cleaning equipment and utensils, suitably designated, should be used for different hygiene zones, for example, food and non-food contact surfaces.

8.3.1.5 Cleaning equipment should be stored in an appropriate place and in such a manner to prevent contamination. Cleaning equipment should be kept clean, maintained and replaced periodically so as not to become a source for cross-contamination of surfaces or food.

8.3.2 *Cleaning and Disinfection Methods and Procedures*

8.3.2.1 Cleaning can be carried out by the separate

or the combined use of physical methods, such as heat, scrubbing, turbulent flow, and vacuum cleaning (or other methods that avoid the use of water), and chemical methods using solutions of detergents, alkalis or acids. Dry cleaning or other appropriate methods for removing and collecting residues and debris may be needed in some operations and/or food processing areas where water increases the likelihood of microbiological contamination. Care should be taken to ensure cleaning procedures do not lead to contamination of food, for example, spray from pressure washing can spread contamination from dirty areas, such as floors and drains, over a wide area and contaminate food contact surfaces or exposed food.

8.3.2.2 Wet cleaning procedures will involve, where appropriate:

a) removing gross visible debris from surfaces;

b) applying an appropriate detergent solution to loosen soil; and

c) rinsing with water (hot water where appropriate) to remove loosened material and residues of detergent.

8.3.2.3 Where necessary, cleaning should be followed by chemical disinfection with subsequent rinsing unless the manufacturer's instructions indicate that, on a scientific basis, rinsing is not required. Concentrations and application time of chemicals used for disinfection should be appropriate for use and applied according to manufacturers' instructions for optimal effectiveness. If cleaning is not done effectively to remove soil, thereby not permitting the disinfectant to contact microorganism effectively or if sub-lethal concentrations of the disinfectant are used, the microorganism may persist.

8.3.2.4 Cleaning and disinfection procedures should ensure that all parts of the establishment are appropriately clean. Where appropriate, programmes should be drawn up in consultation with relevant experts.

8.3.2.5 Written cleaning and disinfection procedures should be used, where appropriate. They should specify:

a) areas, items of equipment and utensils to be cleaned, and, where appropriate, disinfected;

b) responsibility for particular tasks; and

c) method and frequency of cleaning and, where appropriate, disinfection; and monitoring and verification activities.

8.3.3 *Monitoring of Effectiveness*

8.3.3.1 Application of cleaning and disinfection procedures should be monitored for effectiveness and periodically verified by means such as visual inspections and audits to ensure the procedures have been applied properly. The type of monitoring will depend on the nature of the procedures, but could include *p*H, water temperature, conductivity, cleaning agent concentration, disinfectant concentration, and other parameters important to ensure the cleaning and disinfection programme is being implemented as designed and verify its effectiveness.

8.3.3.2 Microorganisms can sometimes become tolerant to disinfecting agents over time. Cleaning and disinfection procedures should follow the manufacturers' instructions. Periodic review with disinfectant manufacturers/suppliers, where feasible, should be conducted to help ensure the disinfectants used are effective and appropriate. Rotation of the disinfectants could be considered to ensure inactivation of different types of microorganisms (for example, bacteria and fungi).

8.3.3.3 While effectiveness of cleaning and disinfecting agents and instructions for use are validated by their manufacturers, measures should be taken for sampling and testing the environment and food contact surfaces (for example, protein and allergen test swabs, or microbiological testing for indicator organisms) to help verify that cleaning and disinfection programmes are effective and being applied properly. Microbiological sampling and testing may not be appropriate in all cases and an alternative approach might include observation of cleaning and disinfection procedures, including the correct disinfectant concentration, to achieve the necessary results and to make sure protocols are being followed. Cleaning and disinfection and maintenance procedures should be regularly reviewed and adapted to reflect any changes in circumstances and documented as appropriate.

8.4 Pest Control Systems

8.4.1 *General*

Pests (for example, birds, rodents, insects, etc) pose a major threat to the safety and suitability of food. Pest infestations can occur where there are breeding sites and a supply of food. GHPs should be employed to avoid creating an environment conducive to pests. Good building design, layout, maintenance, and location, along with cleaning, inspection of incoming materials and effective monitoring, can minimize the likelihood of

infestation and thereby limit the need for pesticides.

8.4.2 *Prevention*

Establishments should be kept in good repair and condition to prevent pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access should be covered. Roll up doors should close tightly against the floor. Wire mesh screens, for example on open windows, doors and ventilators, will reduce the problem of pest entry. Animals should, wherever possible, be excluded from the grounds of food processing establishments.

8.4.3 *Harbourage and Infestation*

8.4.3.1 The availability of food and water encourages pest harbourage and infestation. Potential food sources should be stored in pest-proof containers and/or stacked above the ground and preferably away from walls. Areas both inside and outside food premises should be kept clean and free of waste. Where appropriate, refuse should be stored in covered, pest-proof containers. Any potential harbourage, such as old and unused equipment, should be removed.

8.4.3.2 Landscaping surrounding a food establishment should be designed to minimize attracting and harbouring pests.

8.4.4 *Monitoring and Detection*

Establishments and surrounding areas should be regularly examined for evidence of infestation. Detectors and traps (for example, insect light traps, bait stations) should be designed and located so as to prevent potential contamination of raw materials, products or facilities. Even if monitoring and detection are outsourced, FBOs should review monitoring reports and, if necessary, ensure they or their designated pest control operators take corrective action (for example, eradication of pests, elimination of harbourage sites or invasion routes).

8.4.5 *Control of Pest Infestation*

Pest infestations should be addressed immediately by a qualified person or company and appropriate corrective action taken. Treatment with chemical, physical or biological agents should be carried out without posing a threat to the safety or suitability of food. The cause of infestation should be identified, and corrective action taken to prevent a problem from reoccurring. Records should be kept of infestation, monitoring and eradication.

8.5 Waste Management

8.5.1 *General*

8.5.1.1 Suitable provision should be made for the removal and storage of waste. Waste should, as far as possible, be collected and stored in covered containers and should not be allowed to accumulate and overflow in food handling, food storage, and other working areas or the adjoining environment in a manner that compromises food safety and suitability. Personnel responsible for waste removal (including hazardous waste) should be properly trained so they do not become a source of cross-contamination.

8.5.1.2 Waste storage areas should be easily identifiable, be kept appropriately clean, and be resistant to pest infestation. They should also be located away from processing areas.

9 PERSONAL HYGIENE

9.1 Objectives

To ensure that those who come directly or indirectly into contact with food:

a) maintain appropriate personal health;

b) maintain an appropriate degree of personal cleanliness; and

c) behave and operate in an appropriate manner.

9.2 Rationale

Personnel who do not maintain an appropriate degree of personal cleanliness, who have certain illnesses or conditions or who behave inappropriately, can contaminate food and transmit illness to consumers through food.

9.3 Food businesses should establish policies and procedures for personal hygiene. FBOs should ensure all personnel are aware of the importance of good personal hygiene and understand and comply with practices that ensure food safety and suitability.

9.4 Health Status

9.4.1 Personnel known or suspected to be ill or carrying a disease likely to be transmitted through food should not enter any food handling area if there is a likelihood of their contaminating food. Any person so affected should immediately report illness or symptoms of illness to the management.

9.4.2 It may be appropriate for personnel to be excluded for a specific time after symptoms resolve or, for some illnesses, to get medical clearance before returning to work. It is recommended to carry out periodical medical examination of a food handler. In the epidemic/pandemic conditions, immunization records of the food handlers should be maintained by the businesses.

9.5 Illness and Injuries

9.5.1 Some symptoms of illnesses that should be reported to management so that the need for possible exclusion from food handling and/or medical examination can be considered include:

a) jaundice;

b) diarrhoea;

c) vomiting;

d) fever;

e) sore throat with fever;

f) visibly infected skin lesions (boils, cuts, etc); and

g) discharges from the ear, eye or nose.

9.5.2 Personnel with cuts and wounds should, where necessary, be assigned to work in areas where they will have no direct contact with food. Where personnel are permitted to continue working, cuts and wounds should be covered by suitable waterproof plasters and, where appropriate, gloves. Appropriate measures should be applied to ensure plasters do not become a source of contamination (for example, plasters of contrasting colour compared to the food and/or detectable using a metal detector or X-ray detector).

9.6 Personal Cleanliness

9.6.1 Personnel should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head and beard covering, and footwear. Measures should be implemented to prevent cross-contamination by personnel through adequate hand washing and, where necessary, the wearing of gloves. If gloves are worn, appropriate measures should be applied to ensure the gloves do not become a source of contamination.

9.6.2 Personnel, including those wearing gloves, should clean their hands regularly, especially when personal cleanliness may affect food safety. In particular, they should wash hands:

a) at the start of food handling activities;

b) when returning to work after breaks;

c) immediately after using the toilet; and

d) after handling any contaminated material, such as waste or raw and unprocessed foods where this could result in contamination of other food items.

9.6.3 In order not to contaminate food, personnel should wash hands with soap and water and rinse and dry them in a manner that does not re-contaminate the hands. Hand sanitizers should not replace hand washing and should be used only after hands have been washed.

9.7 Personal Behaviour

9.7.1 When engaged in food handling activities personnel should refrain from behaviour which could result in contamination of food, for example:

a) smoking or vaping;

b) spitting;

c) chewing, eating, or drinking;

d) touching the mouth, nose or other places of possible contamination; and

e) sneezing or coughing over unprotected food.

9.7.2 Personal effects such as jewellery, watches, pins or other items such as false nails/eye lashes should not be worn or brought into food handling areas if they pose a threat to the safety and suitability of food.

9.8 Visitors and Other Persons from Outside the Establishment

Visitors to food businesses, including maintenance workers, in particular to food manufacturing, processing or handling areas, should, where appropriate, be instructed and supervised, wear protective clothing and adhere to the other personal hygiene provisions for personnel. Visitors should be guided through a hygiene policy of the business prior to visits and encouraged to report any type of illness/injury that may pose cross-contamination issues.

10 CONTROL OF OPERATIONS

10.1 Objectives

To produce food that is safe and suitable for human consumption by:

a) formulating design requirements with respect to raw materials and other ingredients, composition/ formulation, production, processing, distribution, and

consumer use to be met as appropriate to the food business; and

b) designing, implementing, monitoring and reviewing effective control systems as appropriate to the food business.

10.2 Rationale

If operations are not controlled appropriately, food may become unsafe or unsuitable for consumption.

10.3 Control of operation is achieved by having an appropriate food hygiene system in place. Practices that can assist in the identification and application of appropriate controls, as well as activities that should take place to ensure the operation is under control are described below.

10.4 Description of Products and Processes

After consideration of the conditions and activities of the food business it may be necessary to pay greater attention to some GHPs that are particularly important for food safety. In this case, the following provisions could be considered.

10.4.1 *Product Description*

10.4.1.1 An FBO that is producing, storing or otherwise handling food should have a description of the food. Products may be described individually or in groups in a manner that does not compromise the awareness of hazards or other factors such as suitability of the products for the purpose intended. Any grouping of food products should be based on them having similar inputs and ingredients, product characteristics [such as *p*H, water activity (a_w)], process steps and/or intended purpose.

10.4.1.2 The description could include, as appropriate:

a) the intended use of the food, for example, whether it is ready-to-eat or whether it is intended for further processing either by consumers or another business, for example raw seafood to be cooked;

b) products intended for specific vulnerable consumer groups, for example, infant formula or food for special medical purposes;

c) any relevant specifications, for example, ingredient composition, a_w, *p*H, type of preservation method used (if any), or important characteristics associated with the food, such as any allergens present;

d) any relevant limits established for the food by the competent authority or, in the absence thereof, set by the FBO;

e) instructions provided for further use, for example keep frozen until cooking, cook to a specified temperature for a specified length of time, product shelf-life (use-by date);

f) storage of product (for example, refrigerated/frozen/shelf stable) and transport conditions required; and

g) food packaging material used.

10.4.2 *Process Description*

The FBO should consider all steps in the operation for a specific product. It may be helpful to develop a flow diagram, which shows the sequence and interaction of all processing steps in the operation, including where raw materials, ingredients and intermediate products enter the flow and where intermediate products, by-products and waste are released or removed. The flow diagram could be used for a number of similar food products that are produced using similar production or processing steps, to ensure all steps are captured. The steps should be confirmed as accurate by an on-site review of the operation or process. For example, for restaurants the flow diagram could be based on the general activities from the receipt of ingredients/raw material, storage (refrigerated, frozen, room temperature), preparation before use (washing, defrosting), and cooking or preparation of food.

10.4.3 *Consideration of the Effectiveness of GHPs*

Having considered the product and process descriptions, an FBO should determine (using information relevant to hazards and controls from various sources as appropriate) whether the GHPs and other programmes they have in place are sufficient to address food safety and suitability or if some GHPs need greater attention. For example, a cooked meat slicer may require specific and more frequent cleaning to prevent the build-up of *Listeria* spp. on its meat contact surfaces, or a conveyor belt used in direct contact with the food, such as in sandwich production, may require an increased frequency of cleaning or a specific cleaning programme. When such increased attention on GHPs is insufficient to ensure food safety, it will be necessary to implement a HACCP system (*see* IS 15000).

10.4.4 *Monitoring and Corrective Action*

10.4.4.1 The FBO should monitor the hygienic procedures and practices as relevant to the business and as applicable to the hazard being controlled. Procedures could include defining methods of monitoring (including defining responsible personnel, frequency and sampling regime if

applicable) and monitoring records to be kept. The frequency of monitoring should be appropriate to ensure consistent process control.

10.4.4.2 When monitoring results indicate a deviation, the FBO should undertake corrective action. Corrective action should consist of the following actions, as appropriate:

a) bringing the process back into control by, for example, altering temperature or timing, or concentration of disinfectant;

b) isolating any affected product and evaluating its safety and/or suitability;

c) determining proper disposition of affected product that is not acceptable to market;

d) identifying the cause that resulted in the deviation; and

e) taking steps to prevent reoccurrence.

10.4.4.3 Records of corrective actions should be retained.

10.4.5 *Verification*

10.4.5.1 The FBO should undertake verification activities as relevant to the business, to check that GHP procedures have been implemented effectively, monitoring is occurring, where planned, and that appropriate corrective actions are taken when requirements are not met. Examples of verification activities could include the following, as appropriate:

a) review of GHP procedures, monitoring, corrective actions and records;

b) review when any changes occur to the product, process and other operations associated with the business; and

c) assessment of the efficacy of cleaning.

10.4.5.2 Records of GHP verification activities should be kept, where appropriate.

10.5 Key Aspects of GHPs

Some key aspects of GHPs such as those described in 10.5.1 and 10.5.2, could be considered as control measures applied at CCPs in the HACCP system.

10.5.1 *Time and Temperature Control*

10.5.1.1 Inadequate time and temperature control, for example, during cooking, cooling, processing and storage, are among the most common failures of operational control. These allow survival or growth of microorganisms that may cause foodborne illness or food spoilage. Systems should be in place to ensure that temperature is controlled effectively where it impacts the safety and suitability of food.

10.5.1.2 Time and temperature control systems should take into account:

a) the nature of the food, for example, its a_w, *p*H, and likely initial level and types of microorganisms, such as pathogenic and spoilage microflora;

b) the impact on the microorganisms, for example, time in growth/dangerous temperature zone;

c) the intended shelf-life of the product;

d) the method of packaging and processing; and

e) how the product is intended to be used, for example, further cooking/processing or ready-to-eat.

10.5.1.3 Such systems should also specify tolerable limits for time and temperature variations. Temperature control systems that impact safety and suitability of food should be validated, and as appropriate, monitored and recorded. Temperature monitoring and recording devices should be checked for accuracy and calibrated at regular intervals or as needed.

10.5.2 *Specific Process Steps*

10.5.2.1 There are many individual processing steps for specific foods which contribute to the production of safe and suitable food products. These vary depending on the product and can include key steps such as cooking, chilling, freezing, drying and packaging.

10.5.2.2 The composition of a food can be important in preventing microbial growth and toxin production, for example, in the formulation of food if preservatives including acids, salts, food additives or other compounds are added. When formulation is used to control foodborne pathogens (for example, adjusting the *p*H or a_w to a level that prevents growth), systems should be in place to ensure that the product is formulated correctly and that the controlling parameters are monitored.

10.5.3 *Microbiological, Physical, Chemical and Allergen Specifications*

Where microbiological, physical, chemical and allergen specifications are used for food safety or suitability, such specifications should be based on sound scientific principles and state, where appropriate, sampling parameters, analytical methods, acceptable limits and monitoring

procedures. Specifications can help ensure that raw materials and other ingredients are fit for purpose and contaminants have been minimized.

10.5.4 *Microbiological Contamination*

10.5.4.1 Systems should be in place to prevent or minimize contamination of foods by microorganisms. Microbiological contamination occurs through a number of mechanisms, including the transfer of microorganisms from one food to another, for example:

a) by direct contact or indirectly by food handlers;

b) by contact with surfaces;

c) from cleaning equipment;

d) by splashing; or

e) by airborne particles.

10.5.4.2 Raw, unprocessed food, where not considered ready-to-eat, which could be a source of contamination, should be separated from ready-to-eat foods, either physically or by time, with effective intermediate cleaning and, where appropriate, effective disinfection.

10.5.4.3 Surfaces, utensils, equipment, fixtures and fittings should be thoroughly cleaned and where necessary disinfected after raw food preparation, particularly when raw materials with a potentially high microbiological load such as meat, poultry, and fish have been handled or processed.

10.5.4.4 In some food operations, access to processing areas may need to be restricted or controlled for food safety purposes. For example, where the likelihood of product contamination is high, access to processing areas should be via a properly designed changing facility. Personnel may be required to put on clean protective clothing (which may be of a differentiating colour from that worn in other parts of the facility), including head and beard covering, footwear, and to wash their hands and where necessary sanitize them.

10.5.5 *Physical Contamination*

Systems should be in place throughout the food chain to prevent contamination of foods by extraneous materials, such as personnel belongings, especially any hard or sharp object(s), for example, jewellery, glass, metal shards, bone(s), plastic, wood fragments, that could cause injury or present a choking hazard. In manufacturing and processing, suitable prevention strategies such as maintenance and regular inspection of equipment, should be undertaken. Detection or screening devices which are appropriately calibrated should be used where necessary (for example, metal detectors, X-ray detectors). Procedures should be in place for personnel to follow in the case of breakages (for example, breakage of glass or plastic containers).

10.5.6 *Chemical Contamination*

Systems should be in place to prevent or minimize contamination of foods by harmful chemicals, for example, cleaning materials, non-food grade lubricants, chemical residues from pesticides and veterinary drugs such as antibiotics. Toxic cleaning compounds, disinfectants, and pesticide chemicals should be identified, safely stored and used in a manner that protects against contamination of food, food contact surfaces, and food packaging materials. Food additives and food processing aids that may be harmful if used improperly should be controlled so they are only used as intended.

10.5.7 *Allergen Management*

Systems should be in place to take into account the allergenic nature of some foods, as appropriate to the food business. Presence of allergens, for example, tree nuts, milk, eggs, crustacea, fish, peanuts, soybeans and wheat and other cereals containing gluten and their derivatives (not an inclusive list; allergens of concern differ among countries and populations), should be identified in raw materials, other ingredients and products. A system of allergen management should be in place at receipt, during processing and storage to address the known allergens. This management system should include controls put in place to prevent the presence of allergens in foods where they are not labelled. Controls to prevent cross-contact from foods containing allergens to other foods should be implemented, for example, separation either physically or by time (with effective cleaning between foods with different allergen profiles). Food should be protected from unintended allergen cross-contact by cleaning and line change-over practice and/or product sequencing. Where cross-contact cannot be prevented despite well-implemented controls, consumers should be informed. Where necessary food handlers should receive specific training on allergen awareness and associated food manufacturing/processing practices and preventive measures to reduce the risk to allergic consumers.

10.5.8 *Incoming Materials*

Only raw materials and other ingredients that are fit for purpose should be used. Incoming materials including food ingredients should be procured according to specifications, and their compliance with food safety and suitability specifications should

be verified where necessary. Supplier quality assurance activities, such as audits, may be appropriate for some ingredients. Raw materials or other ingredients should, where appropriate, be inspected (for example, visual examination for packages damaged during transportation, use-by-date and declared allergens, or temperature measurement for refrigerated and frozen foods) for appropriate action before processing. Where appropriate, laboratory tests could be conducted to check food safety and suitability of raw materials or ingredients. These tests may be conducted by a supplier that provides a certificate of analysis, the purchaser, or both. No incoming material should be accepted by an establishment if it is known to contain chemical, physical or microbiological contaminants which would not be reduced to an acceptable level by controls applied during sorting and/or processing where appropriate. Stocks of raw materials and other ingredients should be subject to effective stock rotation. Documentation of key information for incoming materials (for example, supplier details, date of receipt, quantity, etc) should be maintained.

10.5.9 *Packaging*

Packaging design and materials should be safe and suitable for food use, provide adequate protection for products to minimize contamination, prevent damage, and accommodate proper labelling. Packaging materials or gases where used should not contain toxic contaminants and not pose a threat to the safety and suitability of food under the specified conditions of storage and use. Any reusable packaging should be suitably durable, easy to clean and, where necessary, to disinfect.

10.6 Water

Water, as well as ice and steam made from water, should be fit for its intended purpose based on a risk-based approach (*see* IS 10500). They should not cause contamination of food. Water and ice should be stored and handled in a manner that does not result in their becoming contaminated, and the generation of steam that will contact food should not result in its contamination. Water that is not fit for use in contact with food (for example, some water used for fire control and for steam that will not directly contact food) should have a separate system that does not connect with or allow reflux into the system for water that will contact food. Water recirculated for reuse and water recovered from, for example, food processing operations, by evaporation and/or filtration should be treated where necessary to ensure that the water does not compromise the safety and suitability of food.

10.7 Documentation and Records

Appropriate records for the food business operation should be retained for a period that exceeds the shelf-life of the product or as determined by the competent authority.

10.8 Recall Procedures — Removal from the Market of Unsafe Food

10.8.1 FBOs should ensure effective procedures are in place to respond to failures in the food hygiene system. Deviations should be assessed for the impact on food safety or suitability. Procedures should enable the comprehensive, rapid and effective identification, and removal from the market by the involved FBO(s) and/or return to the FBO by the consumers of any food that may pose a risk to public health. Where a product has been recalled because of the likely presence of hazards that may represent an immediate health risk, other products which are produced under similar conditions which may also present a hazard to public health should be evaluated for safety and may need to be recalled. Reporting to the relevant competent authority should be required and public warnings considered where product may have reached consumers and when return of product to the FBO or removal from the market is appropriate. Recall procedures should be documented, maintained, and modified where necessary based on the findings of periodic field trials.

10.8.2 Provision should be made for removed or returned products to be held under secure conditions until they are destroyed, used for purposes other than human consumption, determined to be safe for human consumption, or reprocessed in a manner to reduce the hazard to acceptable levels, where permitted by the competent authority. The cause and extent of a recall and the corrective actions taken should be retained by the FBO as documented information.

11 PRODUCT INFORMATION AND CONSUMER AWARENESS

11.1 Objectives

11.1.1 Appropriate information about food should ensure that:

a) adequate and accessible information is available to the next FBO in the food chain or the consumer to enable them to handle, store, process, prepare and display the product safely and correctly;

b) consumers can identify allergens present in foods; and

c) the lot or batch can be easily identified and removed/returned if necessary.

11.1.2 Consumers should be given enough information on food hygiene to enable them to:

a) be aware of the importance of reading and understanding the label;

b) make informed choices appropriate to the individual, including about allergens; and

c) prevent contamination and growth or survival of foodborne pathogens by storing, preparing and using food correctly.

11.2 Rationale

Insufficient product information, and/or inadequate knowledge of general food hygiene, can lead to products being mishandled at later stages in the food chain. Such mishandling can result in illness, or products becoming unsuitable for consumption, even where adequate hygiene control measures have been implemented earlier in the food chain. Insufficient product information about the allergens in food can also result in illness or potentially death for allergic consumers.

11.3 Lot Identification and Traceability

11.3.1 Lot identification or other identification strategies are essential in product recall and also help effective stock rotation. Each container of food should be permanently marked to identify the producer and the lot. The *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020 applies.

11.3.2 A traceability/product tracing system should be designed and implemented according to the IS/ ISO 22005, especially to enable the recall of the products, where necessary.

11.4 Product Information

All food products should be accompanied by or bear adequate information to enable the next FBO in the food chain or the consumer to handle, prepare, display, store, and/or use the product safely and correctly. Information for industry or trade users should be clearly distinguishable from consumer information, particularly on food labels.

11.5 Product Labelling

Prepackaged foods should be labelled with clear instructions to enable the next person in the food chain to handle, display, store and use the product safely. This should also include information that identifies food allergens in the product as ingredients or where cross-contact cannot be excluded. The *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020 applies in this case.

11.6 Consumer Education

Consumer education programmes should cover general food hygiene. Such programmes should enable consumers to understand the importance of any product label information and following any instructions accompanying products, and to make informed choices. In particular, consumers should be informed of the relationship between time/temperature control, cross contamination and foodborne illness, and of the presence of allergens. Consumers should also be informed of the *WHO 5 Keys to Safer Food* and educated to apply appropriate food hygiene measures (for example, proper hand washing, adequate storage and cooking and avoiding cross contamination) to ensure that their food is safe and suitable for consumption.

12 TRANSPORTATION

12.1 Objectives

During transportation, measures should be taken where necessary to:

a) protect food from potential sources of contamination, including allergen cross-contact;

b) protect food from damage likely to render the food unsuitable for consumption; and

c) provide an environment which effectively controls the growth of pathogenic or spoilage microorganisms and the production of toxins in food.

12.2 Rationale

Food may become contaminated or may not reach its destination in a suitable condition for consumption, unless effective hygiene practices are taken prior to and during transport, even where adequate hygiene practices have been taken earlier in the food chain.

12.3 General

Food should be adequately protected during transport. The type of conveyances or containers required depends on the nature of the food and the most appropriate conditions under which it should be transported.

12.4 Requirements

Where necessary, conveyances and bulk containers should be designed and constructed so that they:

a) do not contaminate foods or packaging;

b) can be effectively cleaned and, where necessary, disinfected and dried;

c) permit effective separation of different foods or foods from non-food items that could cause contamination where necessary during transport;

d) provide effective protection from contamination, including dust and fumes;

e) can effectively maintain the temperature, humidity, atmosphere and other conditions necessary to protect food from harmful or undesirable microbial growth and deterioration likely to render it unsafe or unsuitable for consumption; and

f) allow any necessary temperature, humidity and other environmental conditions to be checked.

12.5 Use and Maintenance

12.5.1 Conveyances and containers for transporting food should be kept in an appropriate state of cleanliness, repair and condition. Containers and conveyances for bulk food transport should be designated and marked for food use and used only for that purpose, unless controls are taken to ensure that the safety and suitability of the food are not compromised.

12.5.2 Where the same conveyance or container is used for transporting different foods, or non-foods, effective cleaning and, where necessary, disinfection, and drying should take place between loads. Care should also be taken to separate vegetarian and non-vegetarian food items adequately during transportation.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 10500 : 2012	Drinking water — Specification (*second revision*)
IS 15000 : 2024	Hazard analysis and critical control point (HACCP) — Requirements for any organization in the food chain (*second revision*)
IS 15930	Requirements for good agricultural practices — IndiaGAP:
(Part 1) : 2011	Crop base
(Part 3) : 2019	Combinable crop base
(Part 4) : 2019	Tea base
(Part 5) : 2017	Coffee base
(Part 7) : 2018	Poultry base
(Part 8) : 2017	Cattle and sheep base
IS/ISO 22000 : 2018	Food safety management systems — Requirements for any organization in the food chain (*first revision*)
IS/ISO 22005 : 2007	Traceability in the feed and food chain — General principles and basic requirements for system design and implementation

ANNEX B

(*Foreword*)

COMPARISON OF CONTROL MEASURES APPLIED AS GHPs AND CCPs WITH EXAMPLES

	Control Measures Applied as Good Hygiene Practices (GHPs)	**Control Measures Applied at Critical Control Points (CCPs)**
Scope	General conditions and activities for maintaining hygiene, including creating the environment (inside and outside the food business) so as to ensure production of safe and suitable food. Generally, not specific to any hazard but results in reduction of likelihood of hazards occurring. Occasionally a GHP activity may target a specific hazard, and this may be a GHP that requires greater attention (for example, cleaning and disinfection of food contact surfaces for control of *Listeria monocytogenes* in a ready-to-eat food processing environment).	Specific to production process steps and a product or group of products, and necessary to prevent eliminate or reduce to acceptable level a hazard determined as significant by the hazard analysis.
When identified?	After consideration of the conditions and activities necessary to support the production of safe and suitable food.	After a hazard analysis has been completed, for each hazard identified as significant, control measures are established at steps (CCPs) where a deviation would result in the production of a potentially unsafe food.
Validation of the control measures	Where necessary, and generally not carried out by FBOs themselves (*Guidelines for the Validation of Food Safety Control Measures* CXG 69-2008). Validation data provided by competent authorities, published scientific literature, information provided by manufacturers of equipment/food processing technology, etc is adequate, for example, cleaning compounds/products/equipment should be validated by the manufacturer and it is generally sufficient for the FBO to use cleaning compounds/products/equipment according to manufacturers' instructions. The FBO should be able to demonstrate it can follow manufacturers' instructions.	Validation should be carried out (*Guidelines for the Validation of Food Safety Control Measures* CXG 69-2008).
Criteria	GHPs may be observable (for example, visual checks, appearance) or measurable (for example, ATP tests of equipment cleaning, concentration of disinfectant), and deviations may require an evaluation of the impact on safety of the product (for example, whether the cleaning of complex equipment such as meat slicers is adequate).	Critical limits at CCPs which separate acceptability from unacceptability of the food: a) measurable (for example, time, temperature, *p*H, a_w); or b) observable (for example, visual checks of conveyor belt speed or pump settings, ice covering product).

	Control Measures Applied as Good Hygiene Practices (GHPs)	Control Measures Applied at Critical Control Points (CCPs)
Monitoring	When appropriate and necessary, to ensure procedures and practices are applied properly. Frequency dependent on the impact on the product's safety and suitability.	Necessary to ensure critical limit is met: a) continuously during production; or b) if not continuous, at appropriate frequency that ensures to the extent possible the critical limit has been met.
Corrective actions when deviation has occurred	a) For procedures and practices: necessary; and b) For products: usually not necessary. Corrective action should be considered on a case-by-case basis, as failure to apply some GHPs, such as failure to clean between products with different allergen profiles, not rinsing after cleaning and/or disinfecting (where needed) or post maintenance equipment checks indicating missing machinery parts, may result in action on product.	a) For products: necessary pre-determined actions; b) For procedures and practices: necessary corrective actions to restore control and prevent reoccurrence; c) Specific written corrective actions should be developed for each CCP in the HACCP plan in order to effectively respond to deviations when they occur; and d) The corrective actions should ensure that the CCP has been brought under control and food that is potentially unsafe is handled appropriately and does not reach consumers.
Verification	When appropriate and necessary, usually scheduled (for example, visual observation that equipment is clean before use).	Necessary: scheduled verification of implementation of control measures, for example, through record review, sampling and testing, calibration of measuring equipment, internal audit.
Record keeping (for example, monitoring records)	When appropriate and necessary, to allow the FBO to assess whether GHPs are operating as intended.	Necessary to allow the FBO to demonstrate ongoing control of significant hazards.
Documentation (for example, documented procedures)	When appropriate and necessary to ensure GHPs are properly implemented.	Necessary to ensure the HACCP system is properly implemented.

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ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Food Hygiene, Safety Management and Other Systems Sectional Committee, FAD 15

Organization	*Representative*(*s*)
ICAR - Central Institute of Fisheries Education, Mumbai	DR C. N. RAVISHANKAR **(*Chairperson*)**
Agricultural and Processed Food Products Export Development Authority, New Delhi	SHRI DEVENDRA PRASAD
Association of Certification Bodies of India, Mumbai	SHRIMATI CHINMAYEE DEULGAONKAR SHRI SATISHKUMAR GUPTA (*Alternate*)
Confederation of Indian Food Trade and Industry, New Delhi	DR RICHA PRITWANI
Confederation of Indian Industry, New Delhi	SHRI SAM JOHN DR KHURSHID ALAM KHAN (*Alternate*)
Consultants Consortium of Chennai, Chennai	SHRI APPAJI RAO SHRI KAUSTUBH ARUN (*Alternate*)
Consumer Action and Network Society, Jaipur	DR ANANT SHARMA
CSIR - Central Food Technological Research Institute, Mysuru	DR DEVENDRA J. DR USHARANI DANDAMUDI (*Alternate*)
CUTS International, Consumer Unity and Trust Society, Jaipur	SHRI DEEPAK SAXENA SHRI GEORGE CHERIYAN (*Alternate*)
Directorate General of Supplies and Transport, Delhi	COL SURESH V. LT COL B. B. SAHU (*Alternate*)
Directorate of Marketing and Inspection, Faridabad	DR D. M. GOVINDA REDDY
Export Inspection Council of India, New Delhi	SHRI WASI ASGHAR SHRI ANGSHUMAN SAHA (*Alternate*)
Food Safety and Standards Authority of India, New Delhi	DR SATYEN KUMAR PANDA
GS1 India, New Delhi	SHRI SUBRATO DEY SHRI ANKIT ARORA (*Alternate*)
ICAR - Central Institute for Fisheries Technology, Kochi	DR GEORGE NINAN DR B. MADHUSUDANA RAO (*Alternate*)
ICAR - Indian Veterinary Research Institute (IVRI), Bareilly	DR I. PRINCE DEVADSON DR HIMANI DHANZE (*Alternate*)
ICMR - National Institute of Nutrition, Hyderabad	DR G. M. SUBA RAO
ITC Limited, Bengaluru	SHRI KRISHNA KUMAR JOSHI
Marico Limited, Mumbai	DR PRABODH S. HALDE SHRI SHAILESH GHODEKAR (*Alternate*)
Marine Products Export Development Authority, Kochi	SHRI RAKESH THOMAS KURIAN SHRI V. VINOD (*Alternate*)
Ministry of Fisheries, Animal Husbandry and Dairying, Department of Animal Husbandry and Dairying, New Delhi	SHRI C. SEN SHRI GOUTAM KUMAR DEB (*Alternate*)

Organization	*Representative*(*s*)
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Mother Dairy Fruit and Vegetable Private Limited, Noida	SHR ANUJ KOUNDAL
National Accreditation Board for Certification Bodies, New Delhi	SHRI ANAND DEEP GUPTA
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Quality Care Services Private Limited, New Delhi	SHRI SOHRAB
TIC Council India, Gurugram	DR SEEMA SHUKLA
Voluntary Organisation in Interest of Consumer Education (VOICE), New Delhi	SHRI M. A. U. KHAN SHRI H. S. WADHWA (*Alternate*)
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BIS Directorate General	SHRIMATI SUNEETI TOTEJA, SCIENTIST 'F'/ SENIOR DIRECTOR AND HEAD (FOOD AND AGRICULTURE) [(REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRIMATI VARSHA GUPTA
SCIENTIST 'E'/DIRECTOR
(FOOD AND AGRICULTURE), BIS

Panel Responsible for Review and Revision of IS 15000 : 2013, Hazard Analysis and Critical Control Point (HACCP) — Requirements for any Organization in the Food Chain (*first revision*) FAD 15 : Panel 8

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Export Inspection Council of India, New Delhi	SHRI WASI ASGHAR
ICAR - Indian Veterinary Research Institute (IVRI), Bareilly	DR RAVI KANT AGRAWAL

(*Continued from second cover*)

The text indicates where such situations are likely to arise using the phrases ‘where necessary’ and ‘where appropriate’. In practice this means that, although the requirement is generally appropriate and reasonable, there will nevertheless be some situations where it is neither necessary nor appropriate on the grounds of food safety and suitability. In deciding whether a requirement is necessary or appropriate, an assessment of the risk should be made, preferably within the framework of the HACCP or FSMS approach. This approach allows the requirements in this standard to be flexibly and sensibly applied with a proper regard for the overall objectives of producing food which is safe and suitable for consumption. In doing so it takes into account the wide diversity of activities and varying degrees of risk involved in producing food. The controls described in this standard are internationally recognized as essential to ensure the safety and suitability of food for consumption.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006, the *Legal Metrology Act*, 1985 and the Rules and Regulations framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

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This Indian Standard has been developed from Doc No.: FAD 15 (24908).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi