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(पहला पुनरीक्षण)

Code for Hygienic Conditions for Preparation and Supply of Foods/Meals in Schools

(First Revision)

ICS 67.020

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FOREWORD

This Indian Standard (First 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.

Care in handling of food and water is a pre-requisite to ensure better health and prevention from health hazards. Food safety includes food handling, food preparation and storage of food in a proper manner so that the food is acceptable and safe for human consumption. Food can be contaminated at any time from primary production to consumption.

Food safety and quality assurance of meals should be an integral part of food handling procedures at the school/central kitchen. Consumption of contaminated food leads to conditions of diarrhoea, nausea, vomiting, fever and infection and even death in severe cases, thereby perpetuating a vicious cycle of infection and malnutrition and undermining the efforts aimed at improving the nutritional status of children.

Since the food supplied at schools may involve both local and/or centralized preparation, it is imperative that precautionary measures are undertaken at different levels. Keeping this in view, this standard provides the broad contours of food safety and hygiene measures to be adopted in the school/centralized kitchen and include separate sections on general principles for maintenance of cleanliness, hygiene in the premises, food safety measures during procurement, storage and preparation, precautionary measures and personal in addition to the basic infrastructural requirements for central and school kitchen to ensure food safety.

This standard was first published in 1972 with a view to prescribe basic standards for hygienic upkeep of central kitchens and food transport vehicles supplying food to the children in the school under ‘midday meal’ or ‘midday school meal’ or ‘school lunch’ programmes, including maintenance of hygienic conditions at the place of distribution, with the title ‘Code for hygienic conditions for establishment and maintenance of midday school meal programmes’.

The first revision of this standard has been brought out to incorporate modifications taking into account the knowledge acquired in recent times to enhance food safety by implementing improved hygienic conditions. Accordingly, the standard has undergone a comprehensive revision, resulting in a document that covers all the necessary requirements for maintaining hygienic conditions, separately, in school kitchens and central kitchens, for preparation and supply of food and meal in schools. The title of the standard has been modified, taking into consideration the broader scope of the standard, as mentioned in paragraph 4 above.

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

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CODE FOR HYGIENIC CONDITIONS FOR PREPARATION AND SUPPLY OF FOODS/MEALS IN SCHOOLS

(First Revision)

1 SCOPE

This standard prescribes the general hygienic conditions required for establishment and maintenance of kitchens in school and central kitchens for preparation and supply of food and meal in schools with a view to ensuring that the children are supplied with food that has been cooked, prepared, distributed and served under hygienic conditions and is safe for consumption.

2 REFERENCE

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated was 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 this standards:

IS No.	*Title*
IS 10500 : 2012	Drinking water — Specification (*second revision*)

3 TERMINOLOGY

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

3.1 Central Kitchen — A premise where food is cooked and prepared for distribution to one or more schools for consumption by school children. It also includes the kitchen within the premises of those school having facilities similar to a central kitchen.

3.2 Cleaning — Removal of soil, food residues, dust, grease or other objectionable matter.

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

3.4 Contamination — Introduction or occurrence of a contaminant in food or food environment.

3.5 Corrective Action — Action to eliminate the cause of a requirement not fulfilled and to prevent its recurrence.

3.6 Establishment — Any building or area in which food is handled and the surroundings under the control of the same management.

3.7 Food Business Operator — In relation to food business means a person by whom the business is carried on or owned and is responsible for ensuring the compliance of *Food Safety and Standards Act*, 2006 and Rules and Regulations made thereunder.

3.8 Food Handler — Any person who directly handles packaged or unpackaged food, food equipment and utensils, or food contact surfaces and is therefore expected to comply with food hygiene requirements.

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

3.10 Food Ingredient — Any substance, including food additives, used in the manufacturing or preparation of food and which is present, whether maintaining its original aspect or modified, in the end product.

3.11 Food Safety — Means assurance that food is acceptable for human consumption according to the intended use.

3.12 Food Transport Vehicle — Motor transport vehicle, intended to carry and transport the food, cooked and prepared in the central kitchen to the different schools for purposes of serving to the children under the ‘school meal’ programme.

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

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

3.15 Non-Vegetarian Food — An article of food which contains whole or part of any animal including birds, insects, fresh water or marine animals or eggs or products of any animal origin, but

does not include milk, milk products, honey or bees wax or carnauba wax or shellac wax.

3.16 Potable Water — Water that is suitable for human consumption.

3.17 Schools — All types of schools whether pre-primary, primary, elementary, secondary, day care or as the case may be, creche (excluding creches or day care for infants or children up to the age of 22 months), or boarding run by private entities, local bodies, government or aided by government.

3.18 School Kitchen — A premise within the school where food is cooked and prepared for distribution to school children.

3.19 School Meals — All food supplied in the school premises through the school kitchen or central kitchen.

3.20 Shelf Life — Means the period between the date of manufacture and the "Use by" or "Date of expiry" whichever, is earlier as printed on the label.

3.21 Supervisor — Any person who is authorized to supervise the cooking operations, transporting or serving of food.

3.22 "Use by" or "Expiry" — Means the date, which signifies the end of the estimated period under any stated storage conditions, after which the product may not remain safe and the food product probably will not have the quality of safety attributes normally expected by the consumers and the food, shall not be sold or distributed for human consumption.

3.23 Vegetarian Food — Means any article of food other than non-vegetarian food as defined in these regulations.

3.24 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 REQUIREMENTS FOR SCHOOL KITCHEN

4.1 General

The following should be considered when designing:

a) Food products (for example, shelf life, time until consumption, storage conditions, nutritional requirement);

b) Equipment (for example, food grade, non-porous material, easily cleanable); and

c) Kitchen premise (for example, fit for purpose, good segregation, pest free through design, easily cleanable, waste disposal).

4.2 Infrastructural Requirements

4.2.1 The kitchen cum store shall be located in a clean and free from filthy surroundings and shall maintain overall hygienic environment. As far as possible, the layout of the kitchen shall be such that food preparation/processes are not amenable to cross-contamination from washing vegetables/ cereals/pulses/etc.

4.2.2 The premises shall be clean, ventilated and have sufficient free space for movement.

4.2.3 The kitchen shall have raised platforms along with full visibility with sunlight or artificial light.

4.2.4 Ventilation systems natural and/or mechanical including air filters, exhaust fans, wherever required, shall be designed and constructed so that air does not flow from contaminated areas to clean areas.

4.2.5 Properly constructed chimneys are required in the kitchens. Chimneys shall not be the entry point of insects, reptiles, etc.

4.2.6 Kitchen shall be separate from classrooms, preferably located at a safe, but within accessible distance.

4.2.7 Floors, ceilings and walls shall be maintained in a sound condition to minimize the accumulation of dirt, condensation and growth of undesirable molds. They shall be smooth and easy to clean with no flaking paint or plaster.

4.2.8 The floor and skirted walls shall be washed as per requirement with an effective disinfectant.

4.2.9 Floors shall be sloped appropriately to facilitate drainage and the drainage shall flow in a direction opposite to the direction of food preparation.

4.2.10 Windows, doors and other openings shall be fitted with net or screen, as appropriate to protect the premise from flies and other insects/pests/animals.

4.2.11 The premises shall be kept free from all insects. No spraying shall be done during the

cooking of meal, but instead fly swats/flaps shall be used to eliminate flies getting into the premises.

4.2.12 The water used in the cooking shall be potable. Continuous supply of potable water shall be ensured in the premises. In case of intermittent water supply, adequate storage arrangement for water used in food or washing shall be made.

4.2.13 Arrangements for cleaning of containers, tables, working parts of machinery, etc shall be provided.

4.2.14 All utensils shall be kept clean, washed, dried and stored at the kitchen cum store to ensure freedom from growth of mold/fungi and infestation.

4.2.15 All utensils shall be placed well away from the walls to allow proper inspection.

4.2.16 Potential sources of contamination like rubbish, waste water, toilet facilities, open drains and stray animals shall be kept away from kitchen.

4.2.17 A display board mentioning do's and don'ts for the food handlers shall be put up inside at a prominent place in the kitchen in local language for everyone's understanding.

4.2.18 Fuel (kerosene/diesel/fuelwood/charcoal/ LPG) shall be stored/installed safely, so that there is no fire hazard. Clean fuel shall be used to the extent possible.

4.2.19 If kerosene/diesel/gas is used for cooking, the food handlers shall be specifically trained in safe handling of stoves, gas cylinders, etc.

4.2.20 Toilets shall be provided with soap to wash hands along with hand drying facility.

4.2.21 Notices requiring hand washing must be displayed in the local language.

4.2.22 Adequate arrangements including installation of fire extinguishers shall be made to deal with incidents of accidental fire in the kitchen area of the school.

4.3 Procurement of Raw Materials

While procuring and receiving the raw material, the supervisor shall ensure that:

a) Raw materials shall be purchased from reliable and FSSAI licensed suppliers;

b) Records of raw materials and source of procurement shall be maintained in a register for inspection;

c) All raw materials should be checked for visible deterioration, off-odour and for any foreign matter. It shall be ensured that ingredients used for cooking such as food grains, pulses, vegetables, cooking oil and condiments, are free from adulteration, contaminants, pest and infestation;

d) Raw materials should be purchased in quantities that correspond to storage/preservation capacity of the establishment;

e) Packaged raw material must be checked for 'expiry date'/'use by date', packaging integrity and storage conditions;

f) Food stuff with shorter shelf life shall be used within their prescribed time limit. Once ingredients are exhausted, the containers shall be cleaned and dried before refilling;

g) Only fresh eggs shall be purchased. It shall be ensured that eggs are not broken or the shell cracked as this leads to contamination;

h) Iodized salt shall be used for cooking meals. Iodized salt shall be carefully stored in air tight containers; and

j) Vegetables, fruits and perishable food commodities shall be procured fresh and storing for longer time/duration shall be avoided.

4.4 Storage of Raw Material

4.4.1 Storage of raw materials, ingredients shall be subject to FEFO (first expire first out) or FIFO (first in, first out) stock rotation system as applicable.

4.4.2 Containers made of non-toxic materials shall be provided for storage of raw materials.

4.4.3 The food materials, including grains, shall be stored on racks/pallets such that they are reasonably well above the floor level (8 cm to 12 cm) and away from the wall so as to facilitate effective cleaning and prevent harbouring of any pests, insects or rodents.

4.4.4 Food grains may be stored in airtight bins or

stacked neatly in gunny bags or bins, while plastic food grade containers are ideal for storage of dals, spices, condiments and other ingredients and stored in an area free of rodents and insects.

4.4.5 Food grains like wheat and rice should not be stored for more than four months.

4.4.6 Perishable items shall not be stored in plastic bags as these get spoilt quickly due to lack of transpiration. Such items have to be stored away from sunlight, in a cool place.

4.4.7 Food grains shall be stored in standard bins while, plastic food grade containers are ideal for storage of *dals*, spices, condiments and other ingredients. Ingredients like iodized salt, condiments, oils, soya bean, pulses, etc shall be stored in airtight containers.

4.4.8 All stored raw materials and ingredients must be kept under dry and cool and ventilated conditions that will prevent spoilage, protect against contamination by pathogenic microorganisms, insects, rodents, foreign bodies, chemicals and damage. This implies that food and non-food materials shall not be stored in the same area and not all food materials can be stored together because of risk of contamination.

4.4.9 Storage of fuels, disinfectants, detergents, cleaning agents shall be strictly away from the stored raw materials and under lock and key.

4.5 Food Safety Measures During Preparation

4.5.1 The cereals and pulses shall be cleaned before cooking to remove any extraneous matter.

4.5.2 Leafy vegetables when added to any preparation shall be thoroughly washed before cutting and shall not be subjected to washing after cutting.

4.5.3 For chopping vegetables a clean chopping board shall be used. Separate chopping boards shall be used for vegetarian and non-vegetarian products.

4.6 Food Safety Measures during Cooking

4.6.1 Cooking must be done with the lid on to avoid loss of nutrients and contamination.

4.6.2 The containers shall be checked for the cleanliness.

4.6.3 Temperature of the meal when served shall be maintained at or more than 75 °C. Microorganisms multiply at a fast pace when the food is kept at temperature between 5 °C and 60 °C which represents the danger zone. Therefore, food shall be served to children immediately after being cooked.

4.6.4 Vegetarian and non-vegetarian items shall be segregated. Refrigerator, wherever available, shall be cleaned at least once a week to remove stains, ice particles and food particles. The temperature in the refrigerator shall be less than 5 °C.

4.6.5 The school management shall ensure that children wash their hands with soap before eating, use clean plates and glasses, avoid littering, and rinse their hands and mouth after eating.

4.7 Testing of Meal

To ensure that food is prepared following proper hygienic conditions, the food should be tested once in six months from a laboratory accredited by accreditation body for the requirements as given in Annex A.

4.8 Water Supply

4.8.1 Continuous supply of potable water confirming to IS 10500 shall be ensured in the premises. In case of intermittent water supply, adequate storage arrangement for water used to cooking food or washing purpose shall be made. Water used for cleaning, washing and preparing food shall be potable in nature.

4.8.2 Water storage tanks, if available, shall be cleaned periodically and records of the same shall be maintained. Non potable water can be used provided it is intended only for cleaning of equipment not coming in contact with food.

4.8.3 Non potable water pipes shall be clearly distinguished from those in use for potable water.

4.9 Testing of Water

Various sources of water are used in the kitchens, that is, bore well/open well/piped water/protected water for cooking, drinking and washing. Potable water quality shall be as specified in IS 10500 and it shall be analyzed at least semi-annually to confirm that it meets the requirements of this standard.

4.10 Food Serving Area

4.10.1 If the meals are served in a dining room, or school veranda/class room or a hall in the schools, this shall be spacious enough, well ventilated and with windows having wire mesh. The room should be cleaned every day before the school starts functioning.

4.10.2 Fruits given for morning snack shall be washed with potable water and given to children.

4.11 Cleaning and Sanitation

4.11.1 The floors of kitchen and the slabs shall be cleaned every day before and after the food is cooked. Special attention shall be paid to the cleaning of obstructed sites including cooking areas and at the junction of floors and walls.

4.11.2 The cooking areas must be kept cleaned at all times. It is important that surfaces in direct contact with food must be both clean and dry before use. Cracks, rough surfaces, open joints, etc must be repaired as soon as possible.

4.12 Cleaning of Utensils, Equipment and Other Materials

4.12.1 Cleaning accessories such as cloths, mops and brushes carry a very high risk of cross contamination. They must, therefore, be thoroughly washed, cleaned and dried after use. Cleaning accessories used in the cooking area/packing area shall not be used in other parts of the kitchen.

4.12.2 Tables, benches and boxes, cupboards, glass cases, etc shall be clean and tidy. Cooking utensils and crockery shall be clean and in good condition. These shall not be broken/chipped.

4.12.3 Utensils shall be cleaned of debris, rinsed, scrubbed with detergent and washed under running tap water after every operation. Wiping of utensils shall be done with clean cloth. Clean cloths shall be used for wiping hands and for clearing surfaces. Cloth used for floor cleaning shall not be used for cleaning surfaces of tables and working areas and for wiping utensils. Dust or crumb from plates or utensils shall be removed into dustbin by using cloth or wiper.

4.12.4 Accessories and containers that come in contact with food and used for food handling, storage, preparation and serving shall be made of corrosion free materials which do not impart any toxicity to the food material and shall be easy to clean and/or disinfect.

4.12.5 Equipment and utensils used in the preparation of food shall be kept at all times in good order and repair and in a clean and sanitary condition. Such utensil or container shall not be used for any other purpose.

4.12.6 Every utensil or container containing any food or ingredient of food shall at all times be either provided with a properly fitted cover/lid or with a clean gauze net or other material of texture sufficiently fine to protect the food completely from dust, dirt and flies and other insects.

4.13 Personnel Hygiene and Health Requirements

4.13.1 Food handlers shall maintain a high degree of personal hygiene and cleanliness.

4.13.2 The person suffering from infectious disease shall not be permitted to work. Annual health checkup shall be undertaken to ensure fitness. Food handlers shall report immediately to their supervisors, if they are suffering from any disease likely to be transmitted via food, for example, diarrhoea or vomiting, infected wounds, skin infections, jaundice or sores.

4.13.3 All food handlers shall, wear clean clothes and keep their finger nails trimmed, clean and wash their hands with soap and water before commencing work and every time after touching, raw or contaminated food or using toilet. All food handlers shall avoid wearing loose items that might fall into food and also avoid touching or scratching their face, head or hair.

4.13.4 It shall be ensured that all food handlers are instructed and trained in food hygiene and food safety aspects along with personal hygiene requirements commensurate with their work activities, the nature of food, its handling, preparation, service and distribution. Training programmes shall be regularly reviewed and updated wherever, necessary.

4.13.5 Nail polish or artificial nails shall not be worn because they can become foreign bodies and may compromise on food safety. No watches, rings, jewellery and bangles shall be worn during cooking, serving and distribution where there is a danger of contamination of product.

4.13.6 Glass in any form shall not be allowed in the cooking areas.

4.13.7 Chewing, smoking, spitting and nose blowing shall be prohibited within the premises especially while handling food.

4.13.8 The food handlers shall wear adequate and suitable clean protective clothing, headgear covering hair shall be tied up neatly.

4.13.9 The food handlers shall wash their hands at least each time work is resumed and whenever, contamination of their hands has occurred, for example, after coughing/sneezing, visiting toilet, using telephone, smoking, etc. Certain hand habits, for example, scratching nose, running finger through

hair, rubbing eyes, ears and mouth, scratching beard, scratching parts of bodies, etc should be avoided as these are potentially hazardous when associated with handling food products and might lead to food contamination through the transfer of bacteria from the employee to product during its preparation. When unavoidable, hands shall be effectively washed before resuming work after such actions.

4.14 Pest Control

4.14.1 Good design and maintenance of windows and doors and good housekeeping are essential for effective control of all pests (mainly rodents, birds, and insects). The building shall be kept in good repair and condition to prevent access and to eliminate potential breeding sites.

4.14.2 Holes, drains and other places where pests are likely to gain access shall be kept sealed. Wire mesh screens, for examples, on open windows, doors and ventilators, will reduce the problem of pest entry.

4.14.3 Pest control shall be carried out by suitable trained personnel.

4.14.4 Before pesticides are applied, care shall be taken to protect people, food, equipment and utensils from contamination. Pesticides shall always be kept in its original containers clearly marked and be stored in a locked storage separate from area for production/processing/storage of food.

4.14.5 Records shall be kept of all pesticides used, including name of pesticides, concentration used, and method of application and location of application.

4.15 Drainage and Waste Disposal

4.15.1 Adequate drainage, waste disposal systems and facilities shall be provided and they shall be designed and constructed in such manner so that the risk of contaminating food or the potable water supply is eliminated.

4.15.2 Waste storage shall be located in such manner that it does not contaminate the food process, storage areas, the environment inside and outside the kitchen. Waste shall be kept in covered containers.

4.15.3 Periodic disposal of the refuse/waste shall be carried out.

4.15.4 Waste material generated during the cooking of food shall be kept in a separate container of adequate size with a proper cover preferably one which need not be touched to open. This shall be emptied and washed and dried daily before next use.

5 REQUIREMENTS FOR CENTRAL KITCHEN

The basic sanitary and hygienic conditions are deemed to be necessary for the preparation and distribution of food in schools. The central kitchen where the food is being prepared, handled, processed, stored, distributed by the food business operator, whether the holder of the registration certificate or a license as per the norms laid down in these regulations and the persons handling them, should conform to the sanitary and hygienic requirement, food safety measures and other standards as specified below. It shall also be deemed the food operator's responsibility to ensure adherence to requirements.

5.1 Location and Surroundings

The selection of the right location for the central kitchen is important to minimize any food safety risk and to ensure that neighboring industries and activities does not become a contamination source due to transferring hazards by wind or water or pollution or increasing the risk of pest infestation.

5.1.1 All the potential sources of contamination should be taken into consideration from the local environment before choosing a location for kitchen.

5.1.2 *Central Kitchen*

Shall be located away from:

a) Environmentally polluted areas and industrial activities which produce disagreeable or obnoxious odour, fumes, excessive soot, dust, smoke, chemical or biological emissions and pollutants;

b) Where potentially harmful substances could enter the product;

c) Which pose a serious threat of contaminating food;

d) Areas subject to flooding;

e) Areas prone to infestations of pests; and

f) Areas where wastes, either solid or liquid, cannot be removed effectively.

5.1.3 The site boundaries shall be clearly identified with appropriate access control to prevent the chances of theft and sabotage. Dogs, cats or other

pet animals should not be allowed to enter the premises.

5.1.4 Site shall be maintained in good order. Garden or vegetation, if any, should be tendered or removed and, if possible, no vegetation should be present near food preparing areas. This is to avoid any pest or insect harborage or provide their breeding place.

5.1.5 Roads, yards, parking areas should be cleaned daily. Any water accumulation should be avoided through proper drainage system.

5.2 Premises and Rooms

5.2.1 *Construction, Design, Layout, Internal Structures and Fittings*

5.2.1.1 The central kitchen layout is crucial to produce safe products. A well laid out plan helps to reduce the risk of product contamination caused by pest, microorganism, people and material movement and helps in satisfactory performance of all operations.

5.2.1.2 Central kitchen layout shall be designed, constructed and maintained in order to facilitate good manufacturing and hygienic practices. Planning shall be to ensure food preparation/manufacturing processes are not subject to cross-contamination and shall provide adequate working space with a logical flow of materials, products, personnel and to the extent that is practicable physical separation of raw from processed area. Examples of physical separation may include walls, barriers, or partitions, or sufficient distance to minimize risk.

5.2.1.3 Building shall be made up of durable construction which will poses no threat to the product and also structurally sound, preferably RCC (reinforced cement concrete) or any other suitable material.

5.2.1.4 The premises should have:

a) Raw material receiving area that is controlled and under security check;

b) Designated areas for storing raw materials and ingredients, packaging materials, finished products, food additives and processing aids, and cleaning and sanitization chemicals;

c) Temperature controlled refrigeration room/cold room;

d) Finished product dispatch area that is controlled and under security check;

e) Designated waste treatment & garbage disposal area that is controlled; and

f) Waste water disposal system/effluent treatment plant shall be put in place as approved by State Pollution Control Board.

5.2.1.5 The premises should have sufficient space and proper placement of equipment as is necessary for the maintenance of sanitary operations.

5.2.1.6 Openings (doors/windows) intended for transfer of materials shall be designed to minimize the entry of foreign matter and pests.

5.2.1.7 Fly catchers (insectocutors) are installed at the entry of all doors openings. The location of which should be towards outside of the premises so that all flies/insects are caught even before entry through the door.

5.2.2 *Internal Structure*

This applies to areas used for food handling, cleaning, sanitizing and personal hygiene. Following specific conditions are necessary to be met to protect the safety and suitability of food.

5.2.2.1 *Walls and partitions*

Shall be provided to protect food from contamination. Walls and partitions should also meet the following:

a) The wall/floor junctions, corners and structural supports should be constructed in such a way that adequate cleaning can be done easily. Facilities has sloped/curved juncture between floor and walls, to minimize accumulation of dust;

b) Cavity walls or walls constructed from soft materials should be avoided as they are potential source of pest harborage, shall have a smooth surface up to a height appropriate to the operation;

c) Regular repair should be done for the walls to avoid any paint flakes, etc resulting in cross contamination of food material during handling; and

d) Protective guards can be fitted where wall/structure damages can occur.

5.2.2.2 *Floor*

a) It shall be constructed with non-porous, non-corrosive material, resistance to

cleaning chemicals, easily cleanable and managed to prevent water accumulation;

b) It shall be designed to avoid stagnant water. The slope of floor should be such that water flows directly to drains. Where high and low risk areas exist, slope shall run from high to low risk area. The drainage shall flow in a direction opposite to the direction of food preparation area to avoid contamination;

c) It shall be sufficiently robust to withstand the working activities and be prevented from damage; and

d) It shall be maintained in good repair with no cracks and crevices.

5.2.2.3 *Ceiling and overhead fixtures*

a) It shall be designed and constructed to prevent accumulation of dirt and to facilitate access for cleaning;

b) It should be free of excessive dust, dirt and cobwebs;

c) It shall be free from flaking paint or plaster; and

d) Where there are AC vents, fans, regular and proper cleaning and maintenance program should be present.

5.2.2.4 *Windows, roof vents and all other opening*

a) Window glasses should be protected to avoid glass cross contamination with food materials during food handling;

b) Windows required for ventilation shall be screened with mesh or net to avoid entry of flying insects. Any gap or holes or broken parts thus found shall be replaced or repaired immediately; and

c) The screenings should be regularly cleaned and shall be fitted with removable and cleanable insect proof screens.

5.2.2.5 *Doors*

a) The doors in the establishment shall be made of smooth and non-absorbent surfaces and they shall be easy to clean and disinfectant. Doors can be fitted with automatic closing spring, strip or air curtain;

b) It shall be close fitting, proofed against insect entry and shall be always maintained in good repair conditions;

c) It should be always closed if not in use; and

d) Gaps in between the door and the floor should be closed with suitable material like rubber strips, etc to avoid pest entry.

5.3 Equipment and Utensils

5.3.1 *Equipment Used for Food Handling and Monitoring*

5.3.1.1 Equipment shall be able to meet established principles of hygienic design. It shall be made of suitable material that is, corrosion resistant non-toxic, impervious to grease, water and intended products as well as to cleaning or flushing agents.

5.3.1.2 Every utensil or container containing food products shall at all times be either provided with a properly fitted cover/lid or with a clean gauze net or other material of texture sufficiently fine to protect the food completely from dust, dirt and flies and other insects.

5.3.1.3 Piping and ductworks shall be cleanable, drainable and with no dead ends.

5.3.1.4 Machinery, pipelines, equipment, holding vessels, tanks and silos shall be designed to prevent the accumulation and retention of the product and debris.

5.3.1.5 Equipment shall be designed to minimize contact between operator’s hand and the products and shall be kept in good order, repair and condition to minimize any risk of contamination.

5.3.1.6 Equipment shall be away from wall and off the floor for easy and adequate cleaning and inspection.

5.3.1.7 All measuring instruments/equipment like temperature gauges, pressure gauges, weighing balances, etc shall be calibrated periodically for correct measurement.

5.3.2 *Product Contact Surfaces*

5.3.2.1 These shall be corrosion resistant to both product and cleaning and disinfection materials. Metal contact surfaces made preferably of stainless steel which is non-reactive and stable for all food ingredients including salt, sugar and acid/alkali wash.

5.3.2.2 All welded joints and seams shall be smooth to the surface and free from pits and weld spatter.

5.3.2.3 All hoses, taps, cross connections or similar sources of possible contamination of water supply shall be equipped with anti-backflow devices.

5.3.2.4 Seals, gaskets, O-rings and joint rings shall be designed to minimize product contact and shall be cleanable. All seals, gaskets, O-rings are to be disinfected with chlorine before use.

5.3.3 *Temperature Control and Monitoring Equipment*

5.3.3.1 Equipment used for thermal processes shall be able to meet the temperature gradient and holding conditions given in relevant product specifications.

5.3.3.2 Equipment shall provide for the monitoring and control of the temperature.

5.3.4 *Equipment and Containers Used for Waste and Hazardous Materials*

5.3.4.1 System shall be in place to ensure that waste materials are identified, collected, removed and disposed of in a manner which prevents contamination of products, production areas and environment.

5.3.4.2 Separate area to be defined for keeping waste.

5.3.4.3 Containers for waste and inedible or hazardous substances shall be:

a) Clearly identified for their intended purpose;
b) Located in a designated area;
c) Constructed of impervious material which can be easily cleaned and sanitized. Preferably of plastic or SS bins;
d) Closed when not in immediate use;
e) Locked or otherwise access controlled; and
f) Polyethylene bag collected with waste should be kept inside the waste bins.

5.4 Facilities/Utilities

The facilities are essential services that play a vital role to industry. Quality facilities and utilities provided like water, light, hygiene facilities, etc are a prerequisite for an effective food safety. Various requirements are detailed as below.

5.4.1 *Water Supply*

5.4.1.1 The quantity and supply of water shall be sufficient enough to meet production processes.

5.4.1.2 Water shall be potable in nature, as per IS 10500. Potable water shall be analysed at least semi-annually to confirm that it meets the requirements of this standard.

5.4.1.3 Water used as a product ingredient, including as ice and steam (including culinary steam) or in contact with products or product surfaces shall meet specified quality and requirements as per IS 10500.

5.4.1.3 Where it is necessary to store water, storage facilities shall be adequately designed, made of food grade material, cleaned periodically and maintained to prevent contamination. Records of the same shall be maintained.

5.4.1.4 Where water supply is chlorinated, checks shall ensure that the residual chlorine level at the point of use remains within limits given in relevant specification.

5.4.1.5 A program should be developed to clean and sanitize water pipelines.

5.4.1.6 Separate supply system shall be there for potable and non-potable water sources. Proper identification of potable and non-potable water pipelines shall be maintained through separate colour coding or labelling.

5.4.1.7 Non-potable water pipelines shall be prevented from reflux into the potable system.

5.4.2 *Drains and Waste Disposal*

Refer 5.9 for waste disposal management.

5.4.3 *Personnel Hygiene Facilities*

Personnel hygiene facilities shall be available to ensure that an appropriate degree of personal hygiene can be maintained to avoid any cross contamination. Such facilities shall be suitably located and designated. It includes, hand washing, lavoratories, changing facility, rest and refreshment room. Such facility shall be suitable located and designated.

5.4.3.1 *Hand washing facilities*

a) Facility with warm or hot and cold

potable water with suitable hygienic means of drying hands can be provided in such a position that the employee must pass them when entering the processing areas. This will help employees to automatically get an alert for hand washing without a miss;

b) Where hot and cold water are available,mixing taps should be provided;

c) Hand washing notices shall be posted on walls near hand wash stations;

d) Liquid soap dispensers should be used to wash hands as soap bars are a high potential source of cross contamination;

e) The design of taps should be such that there is no hand contact after washing while closing the taps. Preferably, elbow or foot operated taps are used in food manufacturing unit; and

f) Hand wash stations shall be provided at the entrance of all food handling areas.

5.4.3.2 *Hand drying facility*

a) Hand drier where installed should be in working condition at all the times during working hours;

b) Where paper towels are used, a sufficient number of dispensers and receptacles should be provided near to each washing facility. Paper towel rolls should be covered from top at all time to avoid dust and dirt on them; and

c) The dustbins used to throw the used-paper towels, should be foot-operated. This avoids any direct hand contact (washed hands) to open the dustbin.

5.4.3.3 *Hand sanitize facility*

Self-drying hand sanitizer should be provided and should be used after drying of hands. This is the next step of disinfecting hands after cleaning.

5.4.3.4 *Lavatories*

a) Sufficient number and separate toilets/ urinals for male and female should be provided. Generally, 1 : 25 is followed for facility : employee ratio;

b) Adequate supply of water should be provided in toilets and urinals. Potable water should be used at the toilet wash basin stations, as the employees may need to touch food items while in production areas;

c) All toilet facilities should be clean and sanitized at all times of the working hours;

d) Toilets should be so designed so as to ensure hygienic removal of waste matter; and

e) Toilets should be well lit and ventilated and should not open directly into food handling areas.

5.4.3.5 *Changing facilities*

a) Suitable and sufficient facilities for persons working in the processing areas should be provided for changing their clothes, keeping their personal belongings and cleaning their footwear;

b) Separate areas should be provided for home personal clothes and company uniforms (in case there is a designated full uniform used by employees during processing); and

c) Footwear should be investigated for their cleaning before wearing into processing areas.

5.4.3.6 *Rest and refreshment room*

a) Appropriate facility should be provided for employees. It should not directly open in food handling area; and

b) A display board mentioning' Dos' and 'Don'ts' for workers should be posted in a prominent place inside the premises, in English and local language, for all to understand. This will help all the employees to maintain their alertness on good hygiene practices.

5.4.4 *Ventilation*

5.4.4.1 Adequate ventilation (natural or mechanical) shall be provided to prevent condensation or excessive dust or mold growth.

5.4.4.2 Ventilation system shall be designed such as air moves from 'clean' to 'dirty' areas and is not drawn back to clean manufacturing area.

5.4.4.3 All vents shall be screened to prevent insect entry and shall be maintained clean.

5.4.4.4 It is recommended to have adequate ventilation in sanitary conveniences.

5.4.4.5 Air handling unit should be fitted in process

hall. Air handling unit should have facilities to filter the flushing-in air through filters which reduce dust, humidity and bacterial load to recommended levels.

5.4.4.6 Air handling system should be monitored and subject to routine maintenance, cleaning and disinfection.

5.4.4.7 System shall be accessible for cleaning, filter changing and maintenance. Air filters shall be changed at an appropriate frequency to ensure their efficacy and so that they do not become a source of contamination.

5.4.4.8 An air quality monitoring program should be implemented to ascertain effective interval for changing filters.

5.4.5 *Lighting*

5.4.5.1 Natural/artificial lighting shall be provided to enable employees work in a hygienic manner.

5.4.5.2 Light fixtures shall be protected to ensure that materials, product or equipment are not contaminated in the case of breakages.

5.4.5.3 Lights shall be positioned so that they do not create a breakage contamination hazard during lifting operation involving forklift trucks or other mechanized devices.

Sl No.	*Functional Area*	*Luminous Flux* (*LUX*)
(1)	(2)	(3)
i)	Preparation and inspection area	540
ii)	Packaging	540
iii)	Processing hall	220
iv)	Locker and rest rooms	220
v)	Raw material storage	220
vi)	Finished goods storage	220
vii)	Maintenance area	110
viii)	Laboratory	300

5.5 Storage

5.5.1 *Finished Food, Packaging Materials, Ingredients and Non-Food Chemicals*

5.5.1.1 Storage areas shall be dry and well ventilated.

5.5.1.2 Raw materials should be kept on plastic or metal pallets.

5.5.1.3 All pallets should be from away walls and off the floor for easy and adequate cleaning and inspection; and to avoid any pest harbourage.

5.5.1.4 Temperature controlled materials should be kept on pallets or in racks in cold room at appropriate temperature specified by the supplier.

5.5.1.5 Separate area shall be defined to keep non-conforming materials.

5.5.1.6 A separate, secure (locked or otherwise access controlled) storage area shall be provided for cleaning materials, chemicals and other hazardous substances.

5.5.2 *Cold Storage Facility*

5.5.2.1 Data logger shall be placed for proper monitoring of product temperature and reports should be generated appropriately.

5.5.2.2 Power backup shall be available.

5.6 Cleaning and Sanitation of Equipment and Premises

Detailed cleaning program shall be developed indicating specific areas to be cleaned, cleaning frequency, procedure, equipment, cleaning material and method.

5.6.1 Cleaning and sanitizing program shall specify at a minimum:

a) Areas, items of equipment and utensils to be cleaned and/or sanitized;
b) Responsibility for the task specified;
c) Cleaning and sanitizing method and frequency;
d) Monitoring and verification arrangements;
e) Post clean inspections; and
f) Pre-start up inspection.

5.6.2 *Cleaning Methods*

5.6.2.1 Requirements for cleaning shall be detailed in documented procedures and shall be readily available for people involved in cleaning.

5.6.2.2 Instructions shall include:

a) Frequency of cleaning;
b) Equipment disassembly and re-assembly instructions;

c) Cleaning methodology;
d) Cleaning chemicals concentration; and
e) Contact time and temperature.

5.6.2.3 Potable water as per IS 10500 shall be used for cleaning of food contact surfaces.

5.6.3 Verification as to the effectiveness of cleaning shall include:

a) Visual inspection;
b) Analytical methods like:
    1) Check *p*H of rinse water to confirm removal of chemicals residue; and
    2) Swabbing using conventional microbiological swabs or rapid methods based on ATP bioluminescence technology.

Cleaning records shall be maintained.

5.7 Maintenance

5.7.1 *Preventive and Corrective Maintenance*

Preventive maintenance programmes shall be in place.

5.7.1.1 The preventive maintenance programmes shall include all devices used to monitor and/or control food safety hazards.

5.7.1.2 Corrective maintenance shall be carried out in such a way that production on adjoining lines or equipment is not at risk of contamination.

5.7.1.3 Maintenance requests which impact product safety shall be given priority.

5.7.1.4 Temporary fixes shall not put product safety at risk. A request for replacement by a permanent repair shall be included in the maintenance schedule.

5.7.1.5 Lubricants and heat transfer fluids shall be food compatible where there is a risk of direct or indirect contact with the product.

5.7.1.6 The procedure for releasing maintained equipment back to production shall include clean up, sanitizing, where specified in process sanitation procedures, and pre-use inspection.

5.7.1.7 Maintenance personnel shall be trained in the product hazards associated with their activities.

5.8 Pest Control System

5.8.1 *Pest Control Programs*

5.8.1.1 Establishment shall have a nominated person to manage pest control activities and/or deal with external appointed contractors.

5.8.1.2 Major pest activities: rodent, lizard, cockroaches, files, insects; shall be controlled.

5.8.1.3 Pest management programs shall be documented and shall identify target pests and address plans, methods, schedules, control procedures and where necessary, training procedures.

5.8.1.4 Program shall include a list of chemicals which are approved for use in specified areas of the establishment.

5.8.1.5 Records of pest management shall be maintained.

5.8.2 *Preventing Access*

5.8.2.1 Building shall be maintained in good repair. Holes, drains and other potential pest access or harbour points shall be sealed.

5.8.2.2 External doors, windows, ventilation openings shall be designed to minimize the potential of pest entry.

5.8.2.3 External doors shall be kept closed when not in use.

5.8.2.4 Site external and internal environment, storage facilities, equipment and associated ancillary areas (including waste handling areas, drainage and overheads) shall be kept clean and free of product accumulations to prevent pest infestations.

5.8.3 *Harbourage and Infestations*

5.8.3.1 Storage practices shall be designed to minimize the availability of food and water to pests.

5.8.3.2 Material found to be infested shall be handled in such a way to prevent contamination of other materials, products or the establishment.

5.8.3.3 Potential pest harbourage (for example, burrows, holes, crevices) shall be sealed.

5.8.3.4 Where outside space is used for storage, stored items shall be protected from weather or pest damages (for example, rodent damages, bird dropping).

5.8.4 *Monitoring and Detection*

5.8.4.1 Place of detectors and traps in key locations to identify pest activity.

5.8.4.2 Detectors and traps shall be designed and located so as to prevent potential contamination of materials, products and facilities.

5.8.4.3 Glue traps may be used in manufacturing areas and rodent baits outside in premises shall be inspected daily so that captured pests may be removed.

5.8.4.4 Use of UV light traps (electronic fly killers) is used where applicable and shall be emptied regularly.

5.8.4.5 External bait stations shall be positioned to keep pest away from building entrances.

5.8.4.6 It is recommended that bait station be placed every 25 metres around the perimeter of the building.

5.8.5 *Eradication*

5.8.5.1 Eradication measures shall be put in place immediately after evidence of infestation is reported.

5.8.5.2 Pesticide use and application shall be restricted to trained operatives and shall be controlled to avoid product safety hazards.

5.8.5.3 Only fully trained qualified personnel should be permitted to apply pesticide application.

5.8.5.4 The use of insecticide within food factories shall be kept to minimum or avoided.

5.8.5.5 Records of pesticide use shall be maintained to show the type, quantity and concentration used; where, when and how applied, and the target pest. These chemicals shall be approved to be used in country.

5.8.5.6 All chemicals used for pest control measures, shall be accurately labelled and stored securely away from raw materials.

5.9 Waste Disposal Management

5.9.1 All food waste and other waste materials shall be removed from time to time from the places where product is handled, or processed or packed.

5.9.2 A refuse bin shall be placed in all appropriate places with a proper cover and shall be emptied regularly. The design of the refuse bin shall be such that no hand touch is required. This avoids cross contamination chances. They shall be washed daily with a disinfectant and dried before next use.

5.9.3 Adequate drainage and waste disposal systems and facilities shall be designed and constructed so that the risk of contaminating food or potable water supply is avoided.

5.9.4 Drains shall be designed to meet expected flow loads, constructed so as to prevent accumulation or back flow of waste water. Drains should be located so that they can be easily and effectively cleaned and inspected.

5.9.5 Drains shall be equipped with appropriate traps to effectively capture contaminants.

5.9.6 Wherever existing, refuse stores are to be designed and managed in such a way as to enable them to be kept clean and free form animals and pests.

5.9.7 Segregation of non-biodegradable waste like plastics/metals/glass materials, bags, containers should be done, before disposal.

5.9.8 Accumulation of food waste, non-edible by products and other refuse shall not be allowed in food handling or storage areas. Removal frequencies shall be managed to avoid accumulation and overflow in food handling, food storage, and other working areas and the adjoining environment except so far as is unavoidable for the proper functioning of the business, with a minimum daily removal.

5.9.9 The disposal of sewage and effluents (solid, liquid and gas) shall be as per the factory/environment Pollution Control Board requirements.

5.9.10 Standard operating procedure should be defined for waste disposal and hazardous waste disposal records to be maintained.

5.9.11 It is recommended as best practice to store bio

degradable and non-degradable waste separately.

5.9.12 Records of waste shall be maintained.

5.10 Personal Hygiene

5.10.1 Personal hygiene plays an integral part to safeguard the food produced from any sort of cross contamination. A good personal hygiene and behaviour prevents the food from contamination and subsequently hazards in the product and hence illnesses to the consumers.

5.10.2 Personal hygiene can be taken care by main aspects like, health and hygiene of food handlers, duties of employers as equal to employees in the area of personal hygiene by providing the appropriate environment and facilities.

5.10.1 *Health Status and Illness Injury*

5.10.1.1 A person known, or suspected, to be suffering from, or to be a carrier of a disease or illness likely to be transmitted to food causing food contamination, shall be prevented from handling food or materials which come in contact with food.

5.10.1.2 Any person affected by illness (jaundice, diarrhoea, vomiting, fever, sore throat with fever, visibly infected lesions and discharges from ear, eye or nose), shall immediately report illness or symptoms of illness to the management for possible exclusion from food handling area and medical examination of the food handler shall be carried out apart from the periodic check-ups, if clinically or epidemiologically indicated.

5.10.1.3 A food handler/worker who comes back to work after a medical leave (infected by a communicable disease) should carry his fitness certificate, authorized by a certified medical practitioner.

5.10.1.4 Medical examination of all food handlers/employees of the establishment shall be done once in a year to ensure that they are free from any infectious, contagious and other communicable diseases. A record of these examinations signed by a registered medical practitioner shall be maintained for inspection purpose.

5.10.1.5 Vaccination of kitchen staff against the enteric group of diseases shall be done once a year and a record towards that shall be kept for inspection.

5.10.1.6 In case of an epidemic, all kitchen staff shall be vaccinated irrespective of the yearly vaccination.

5.10.1.7 In food handling area, personal with open cuts, wounds or burns shall be required to cover them with suitable water proof dressing before starting operations. Any lost dressing must be reported. The dressings should preferably be brightly colored and metal detectable.

5.10.2 *Behavioral and Personal Cleanliness*

Personal cleanliness of food handlers is the most important link in preventing foodborne illness. These personal hygiene habits shall become a part of their behavior.

5.10.2.1 All food handlers shall wear suitable clean protective clothing, head covering, face mask, gloves and footwear.

5.10.2.2 Food handlers shall always wash their hands with soap and clean potable water, disinfect their hands and then dry with hand drier or clean cloth towel or disposable paper.

5.10.2.3 Food handlers shall always wash their hands at the beginning of food handling activities immediately after handling raw food or any contaminated material, tools, equipment or work surface, where this could result in contamination of other food items or after using the toilet.

5.10.2.4 No Food handlers shall be engaged in smoking, spitting, chewing, sneezing or coughing over any food and eating in food preparation and food service areas.

5.10.2.5 The food handlers should trim their nails and hair periodically.

5.10.2.6 Food Handlers shall avoid certain hand habits such as scratching nose, running finger through hair, rubbing eyes, ears and mouth, scratching beard, scratching parts of bodies, etc. When unavoidable, hands should be effectively washed before resuming work after such actions.

5.10.2.7 Street shoes inside the food preparation area should not be worn while handling and preparing food.

5.10.2.8 Food handlers should not handle soiled currency notes/cards to avoid cross contamination.

5.11 Food Operation and Control

5.11.1 *Procurement of Raw Materials*

While procuring and receiving the raw material, the food handler shall ensure that:

a) Raw materials shall be purchased from

reliable and FSSAI licensed suppliers;

b) Records of raw materials and source of procurement shall be maintained in a register for inspection;

c) All raw materials should be checked for visible deterioration and off-odour and for any foreign matter;

d) If material is received in tankers (for example, milk, oil, water, etc) it should be checked for seal integrity and mostly dedicated tankers shall be used;

e) Raw materials should be purchased in quantities that correspond to storage/preservation capacity of the establishment; and

f) Packaged raw material must be checked for expiry date/use by date, packaging integrity and storage conditions.

5.11.2 *Storage of Raw Materials and Food*

5.11.2.1 After receiving and accepting the raw material, there comes the need of storage. The storage facilities shall be designed and constructed to avoid cross-contamination during storage, permit adequate maintenance and cleaning and shall avoid pest access and accumulation. Cold storage facility shall be provided for food that requires being stored below 5 °C.

5.11.2.2 While designing the storage room, segregation shall be there for raw, processed, packaging, rejected, returned or recalled food items, allergen material and distinguishably marked and secured products (hardware and cleaning chemicals). The storage area for raw food shall be separate from the area of work-in-progress, processed, cooked and packaged products. Also, the containers made of non-toxic materials shall be provided for storage of raw materials, work-in-progress and finished/ready to serve products.

5.11.2.3 While procuring and receiving the raw material, the food handler shall ensure that:

a) Storage instructions over food packaging should be followed;

b) Temperature and humidity requisite for respective food materials/products shall be maintained, to enhance shelf life;

c) FIFO (first in first out) and FEFO (first expire first out) stock rotation system as applicable, shall be followed in storage areas, work-in-progress and processed/cooked or packaged food products; and

d) The food materials shall be stored on racks/pallets, well above the floor level and away from the wall.

5.12 Preparation, Cooking and Serving

5.12.1 *Pre-Preparation/Thawing*

5.12.1.1 It includes activities like washing of raw materials, cleaning, cutting, peeling, mixing kneading, pasting, etc. Pre-preparation area shall be clean, free of pests and rodents and in good state of repair. All pre-preparation surfaces shall be kept clean and sanitized before handling food.

5.12.1.2 The preparation shall be performed under suitable conditions in a well illuminated area.

5.12.1.3 The pre-prepared products shall be kept under suitable conditions (for example, refrigeration), and adequately labelled where appropriate.

5.12.1.4 Depending on the product and its intended use, selected, pre-washed, and, if necessary, pre-cut fruits and vegetables should be:

a) washed with potable water, with added disinfectant where appropriate and legally permitted; and

b) rinsed with potable water (where appropriate and legally required).

5.12.1.5 Raw materials shall be cleaned, washed in potable water. Fruits and vegetables to be consumed raw shall be sanitized with 50 ppm chlorine before cutting, peeling and/or serving.

5.12.1.6 Different chopping boards, knifes and utensils shall be used for cooked and raw food, vegetarian and non-vegetarian food. Surfaces coming in contact with food which include chopping boards, knifes, peelers, utensils, etc shall be cleaned thoroughly and if necessary, disinfected after using appropriate sanitization techniques.

5.12.1.7 Vegetarian cutting boards shall be sanitized with 50 ppm chlorine and non-vegetarian cutting board with 100 ppm chlorine.

5.12.1.8 Pre-prepared food products being stored for later use shall be date and time tagged.

5.12.1.9 *Thawing of food*

Shall be done in such a way to minimize the risk of growth of pathogenic microorganisms. Items being thawed shall be labelled with defrost date to indicate

the beginning of second shelf life. After thawing, food must be consumed within 12 hours.

a) Meat, poultry and fish shall be thawed in refrigerator at 5 ºC or in a microwave;

b) Shellfish, seafood and any such special product that need to be thawed in running water shall be done in potable running water maintained at 15 ºC or less. The thawing in running water shall not exceed 90 minutes;

c) Any other means of thawing apart from refrigeration, in running water and microwave is not allowed;

d) Liquid coming from defrosting if posing threat/risk to health should be drained off adequately; and

e) Food once thawed shall not be re-freezed for future use.

5.12.2 *Food Preparation/Cooking/Cooling*

5.12.2.1 Cooking/processing/preparation shall be done only in food grade containers/equipment taking adequate precautions to prevent contamination from foreign matter.

5.12.2.2 Cooking time and temperature shall be of adequate duration at specified minimum temperature to ensure the destruction of vegetative cells of pathogenic microorganism that may be present in food.

5.12.2.3 Cooking which best maintains the nutritional values of food should be used.

5.12.2.4 Vegetarian food shall be cooked to a minimum of 60 ºC for 10 minutes or 65 ºC for 2 minutes core food temperature. Non vegetarian food must be cooked for a minimum of 65 ºC for 10 minutes or 75 ºC for 15 seconds core food temperature.

5.12.2.5 *Allergenic contamination*

Presence of allergens for example, nuts, milk and cereal grains must be identified in food ingredients and products and controls shall be put in place to prevent their presence in foods where they are not labelled.

5.12.2.6 Controls to prevent cross-contact of foods containing allergens with other foods shall be implemented for example, effective segregation of foods containing allergens and other food items during food preparation is important. Where cross-contact cannot be guaranteed, consumers shall be informed.

5.12.2.7 Where cooking or frying of any kind is done, proper outlets for smoke/steam, etc like chimney, exhaust fan, etc shall be provided.

5.12.2.8 Cooked or semi processed high risk food that is to be refrigerated shall be cooled:

a) within 2 hours or less from 60 ºC to 21 ºC; and

b) within a further 4 hours from 21 ºC to 5 ºC.

5.12.2.9 In frying operations, only fats and oils suitable for cooking shall be used. Where cooking fats and oil are reused, they shall be assessed to ensure they are fit for purposes. Fat and oil quality should be verified periodically by checking the texture suspended particles and rancidity.

5.12.2.10 Prior to each operation, reused fats and oils shall be filtered using a specially designed filter in order to eliminate food residues. Food-frying pans should be designed in order to facilitate emptying for example, presence of a spigot).

5.12.2.11 Fat and oil quality shall be verified periodically by checking the odour, the colour, the flavour, and floated elements. Other quality characteristics to be considered are, for example, the smoke point, free fatty acid contents, amount of polar compounds.

5.12.3 *Food Holding*

5.12.3.1 Prepared food shall be held in clean, food grade and where necessary sanitized equipment.

5.12.3.2 Hot holding for vegetarian and non-vegetarian foods intended to be consumed hot shall be done at 65 ºC and above.

5.12.3.3 Desserts and foods intended to be consumed cold shall be held at 5 ºC or below. Frozen desserts must be held at -18 ºC or less.

5.12.4 *Food Reheating*

a) Reheating of food shall be done in such a way that the food is heated uniformly, and it must be assured that core temperature of food shall reach 75 ºC;

b) Food reheating shall be carried out rapidly. The reheating process shall be adequate, and the core temperature of the product shall reach 75 °C within 1 hour after removal from the refrigerator. For reheating, lower temperatures may be used with suitable time and temperature combinations. Heated food

temperature shall be monitored at regular intervals;

c) Indirect heating method like adding hot water or reheating with food warmer or reheating under lamp are not permitted; and

d) High risk food such as raw and cooked meat, fish, poultry, cooked gravies, etc that are reheated shall not be cooled and reheated again for using second time.

5.12.5 *Food Display and Service*

The central kitchen should have food display and service area as mentioned below, wherever applicable.

5.12.5.1 *Food portioning*

Portioning of food shall be done in strict hygienic conditions, in clean and sanitized utensils. High risk food shall be portioned in a refrigerated area, if not should be held out of refrigeration for less than 30 minutes. In large scale food preparation, where cooked and refrigerated food cannot be divided into portions within 30 minutes, portion shall be carried out in an area with temperature 16 ºC to 23 ºC or below. The food product shall be served quickly or stored at 5 ºC or below.

5.12.5.2 Prepared food shall be displayed/served in clean, food grade and (where necessary) sanitized equipment, utensils, serving spoons, cutlery, etc and shall be kept covered.

5.12.5.3 Each food item shall have a separate handling tool such as ladle, spoon tong, etc at the time of serving and there should be no direct handling of ready to eat food through bare hands.

5.12.5.4 Temperature of hot food to be displayed or served hot shall be maintained at 65 ºC or above and cold food shall be maintained at 5 ºC or below. Temperature of frozen item at display or at the time of serving shall be maintained at less than 18 ºC.

5.12.5.5 Hot food can be kept below 65 ºC for up to 2 hours but this can be done only once. If any food product is left after that time it shall be reheated above 75 ºC for a minimum contact time of 2 minutes and put back to hot holding. Such food shall not be reheated again.

5.12.5.6 Cold food can be kept above 5 ºC but below 10 ºC for up to 2 hours but this can be done only once. If any food is left after this, it shall be discarded. Dry savouries can be at displayed at room temperature with the indication of use by date visible to consumers.

5.12.5.7 Cutlery and crockery used of serving food shall be clean and sanitized. Disposable serving plates, cutlery and other items such as straw, stirrers, etc shall be clean and free from contamination. They shall be made from food grade material and dyes only.

5.12.5.8 Dispensing containers used for accompaniments at dining service like salt, pepper, sauces etc shall be clean, sanitized and should be free of foreign matter and pests. While refilling these containers, care shall be taken to avoid contamination.

5.12.5.9 The establishments shall keep employees responsible for payment (cash, card, etc) in this specific function, without simultaneously handling prepared foods. If this is unavoidable, then procedures shall be in place to keep food safe.

5.12.6 *Food Packaging and Wrapping*

5.12.6.1 Packaging and wrapping material (wherever used) coming in contact with food shall be clean and of food grade in conformance with *Food Safety and Standards* (*Packaging*) *Regulations*, 2018.

5.12.6.2 The food packaging/wrapping materials shall be inspected before use to prevent using damaged, defective or contaminated packaging, which may lead to contamination of the product.

5.12.6.3 Wrapping and packaging operations shall be carried out to avoid contamination of the products.

5.12.6.4 Nothing shall be served/packaged/wrapped in newspapers or any other such material which is not declared as food grade.

5.13 Food Transportation

5.13.1 Food transportation vehicle should be designed, constructed, maintained, cleaned, and used in a manner that protects the food from contamination. Regular pest control of these vehicles shall be done.

5.13.2 Any transport of food like carrying raw materials into the food zone or movement of semi processed or processed items within the food zone or transport of prepared food from one place to another shall be protected from pests, foreign matter contamination and environmental pollution.

5.13.3 Food transport equipment that are intended to be in direct contact with food products should be constructed with non-toxic, food grade materials, which shall also be easy to clean and maintain.

5.13.4 High risk (prepared) hot foods shall reach the point of consumption within two hours of preparation. Where food is to be transported over longer periods of time, then the temperature during transport shall be maintained at 65 ºC. Alternatively, the food shall be first chilled to 5 ºC or below and then transported with the temperature during transport maintained at 5 ºC or below.

5.13.5 All high-risk food required to be served in chilled condition must be maintained during transport at 5 ºC or below. If transported at normal temperature, then the food shall be consumed within 4 hours.

5.13.6 All frozen items must be taken only in freezer or such ice boxes maintaining required temperature that is, -18 ºC or below. No trolley, tub or container which is used for carrying any other material like garbage, coal, chemicals, engineering or other supplies shall be used for transport of food materials.

5.13.7 Food vans of caterers must be covered and should have proper locks to prevent entry of rodents and pests and be protected against any other threat to food safety during transport.

5.13.8 Food and non-food products transported at the same time in the same vehicle shall be adequately separated (for example, wrapped and packed) to ensure that there is no risk of food spillage or contact that may contaminate the food.

5.13.9 If different types of food are transported within a vehicle, precaution should be taken to avoid cross contamination. For example, if both raw meat and ready to eat food are transported at the same time, they should be wrapped or kept separate covered and placed so that no cross contamination occurs.

5.14 Testing of Meal

To ensure that food is prepared following proper hygienic conditions, the food should be tested once in six months from a laboratory accredited by accreditation body for the requirements as given in Annex A.

5.15 Transportation

5.15.1 Transportation vehicles, tankers, conveyances, and containers shall be maintained in a state of good repair, cleanliness, and condition consistent with requirements given in relevant specifications.

5.15.2 Bulk containers shall be dedicated to food use only. Where required by the organization, bulk containers shall be dedicated to a specified material. No petroleum or hazardous chemicals tankers shall be engaged for food items transportation.

5.15.3 Bulk tankers, deliveries tankers shall be sealed with plastic/metal seals with numbered seals and thread or lead seals should be restricted.

5.15.4 Conveyances and/or containers used for transporting/serving foodstuffs shall be non-toxic, kept clean and maintained in good condition to protect foodstuffs from any contamination.

5.16 Product Information and Awareness

5.16.1 *Product Information and Labelling*

5.16.1.1 All incoming, in-process and finished products shall be suitably identified for product identification, stage of processing, inspection and test status, etc so as to avoid their inadvertent use. Lot identification shall be done to facilitate traceability, product recall, effective stock rotation, etc.

5.16.1.2 All packaged food products shall be labelled with requisite information as per FSSAI regulations, so as to ensure that adequate and accessible information is available to next person in the food chain to enable them to handle, transport store, process, prepare, display or use the food products safely and correctly and that the lot or batch can be easily traced and recalled if necessary. This should also include information that identifies food allergens in the product as ingredients or where cross contamination cannot be excluded.

5.16.2 *Information Awareness and Complaint Handling*

5.16.2.1 Information like food allergens, vegetarian and non-vegetarian food, etc should be presented to school children/students/teachers etc in such a way so as to enable them to understand its importance and make informed choices. Information may be provided by labelling or other means, such as brochures/menu cards, websites, education programmes and advertisements, and may include storage, preparation and serving instructions applicable to the product.

5.16.2.2 The food business operator should have a system to handle product complaints with identified person or people responsible for receiving, evaluating, categorizing, investigating and addressing complaints. Complaints shall be accurately categorized according to safety concerns and other regulatory concerns, such as labelling and shall be investigated by appropriately-trained technical personnel.

5.16.2.3 An effective complaint handling system should comprise the following:

a) Policy and complaints handling procedure;

b) Clear identification of all possible complaint sources;

c) Complaint capturing and categorizing based on the health and safety risk;

d) Investigation and root cause analysis (RCA);

e) Corrective action;

f) Complaint trending and analysis; and

g) Continual improvement.

5.17 Training and Management

5.17.1 *Awareness and Responsibilities*

5.17.1.1 Responsibilities and authorities are defined and communicated within the organization to ensure the effective operation and maintenance of the food safety management.

5.17.1.2 All personnel shall have responsibility to report problems with the food safety and hygiene to identified person(s). Designated personnel shall have defined responsibility and authority to initiate and record actions.

5.17.2 *Training Programmes*

5.17.2.1 All food handlers (permanent or contractual) are to be assessed for existing competence /awareness/skills/knowledge.

5.17.2.2 All personnel responsible for monitoring, corrections and corrective actions of the food safety and hygiene are trained.

5.17.2.3 Training program should be developed with training calendar.

5.17.2.4 Systems should be in place for assessing effectiveness of training.

5.17.2.5 Records of training shall be maintained.

5.17.3 *Instruction and Supervision*

5.17.3.1 Periodic assessments of the effectiveness of training, instructions programmes as well as routine supervision and checks should be made to ensure that food hygiene and food safety procedures are being implemented correctly and effectively by all personnel.

5.17.3.2 Managers and supervisors of food processes should have the necessary knowledge and skills in food hygiene principles (GHP) and practices to be able to judge potential risks and take necessary action to remedy deficiencies.

5.17.4 *Refresher Training*

Training programmes shall be routinely reviewed and updated wherever necessary. Systems should be in place to ensure that food handlers remain aware of all procedures necessary to maintain the safety and suitability of food.

5.18 Management and Supervision

5.18.1 Food business operator shall appoint a food safety team leader who, irrespective of other responsibilities, shall have the responsibility and authority.

5.18.2 Food business operator shall appoint trained and competent managers and supervisors for management and supervision of food safety systems.

5.18.3 Food business operator management shall provide and maintain documented standard operating procedure for food safety systems compliance and its supervision at site through records/checklists on routine basis to control any possible hazards throughout supply chain.

5.18 Audit, Documentation and Record Keeping

5.18.1 *Self-Evaluation and Review*

5.18.1.1 The food business operator shall conduct a self-evaluation process to review the effectiveness of the implemented food safety system at periodic intervals though internal and external audits or other mechanisms, but at least once in a year.

5.18.1.2 The food business operator shall analyze the results of verification activities, including the results of internal and external audit and take necessary actions and to provide evidence that any corrections and corrective actions that have been taken are effective.

5.18.2 *Documentation and Records*

Food business operator shall ensure that documents required by the processes shall be controlled and only approved documents shall be used by competent authority.

ANNEX A

(*Clauses* 4.7 *and* 5.14)

TESTING OF MEAL

Following microorganisms shall be tested on the prepared meal as per the test methods given in the table.

Sl No.	*Parameter*	*Requirement*	*Method of Test*
(1)	(2)	(3)	(4)
i)	*E. coli*	Absent	IS 16067 (Part 1)/ ISO 16649-1
ii)	Coliform count	Absent	IS 5401 (Part 1)/ ISO 4832 and IS 5401 (Part 2)/ ISO 4831
iii)	*Staphylococcus spp*.	Absent	IS 5887 Part 8 (Sec 1)/ ISO 6888-1 or IS 5887 Part 8 (Sec 2)/ ISO 6888-2
iv)	*Salmonella spp*.	Absent	IS 5887 (Part 3/Sec 1)/ ISO 6579-1
	NOTE — Testing of these microorganisms has also been prescribed by the Food Safety and Standards Authority of India (FSSAI) in the guidance document for hygiene rating for food business operators.		

ANNEX B

(*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 (APEDA), New Delhi	SHRI DEVENDRA PRASAD
Association of Certification Bodies of India (ACBI), Mumbai	SHRI SATISHKUMAR GUPTA
CSIR - Central Food Technological Research Institute (CFTRI), Mysuru	DR ALOK K. SRIVASTAVA DR ASHA MARTIN (*Alternate*)
Confederation of Indian Food Trade and Industry (CIFTI-FICCI), New Delhi	DR RICHA PRITWANI
Confederation of Indian Industry (CII), New Delhi	SHRI SAM THOMAS DR KHURSHID ALAM KHAN (*Alternate*)
Consumer Action and Network Society (CANS), Jaipur	DR ANANT SHARMA
Department of Animal Husbandry and Dairying (DAHD), New Delhi	SHRI C. SEN SHRI GOUTAM KUMAR DEB (*Alternate*)
Directorate General of Supplies and Transport (DGST), Delhi	SHRI S. C. JOSHI LT COL B. B. SAHU (*Alternate*)
Directorate of Marketing and Inspection (DMI), Faridabad	DR D. M. GOVINDA REDDY SHRI SHIVNANDAN (*Alternate*)
Export Inspection Council of India (EIC), New Delhi	SHRI WASI ASGHAR SHRI ANGSHUMAN SAHA (*Alternate*)
GS1 India, New Delhi	SHRI SUBRATO DEY SHRI ANKIT ARORA (*Alternate*)
Indian Institute of Packaging (IIP), Mumbai	DR TANWEER ALAM DR NILAY KANTI PRAMANIK (*Alternate*)
Marine Products Export Development Authority (MPEDA), Kochi	DR SREENATH P. G. SHRI V. VINOD (*Alternate*)
Ministry of Health and Family Welfare , New Delhi	DR NARESH PANCHAL DR B. S. CHARAN (*Alternate*)
National Accreditation Board for Certification Bodies (NABCB), New Delhi	SHRI ANAND DEEP GUPTA
National Dairy Development Board (NDDB), Anand	SHRI S. D. JAISINGHANI DR JITENDER SINGH (*Alternate*)

Organization	*Representative(s)*
Quality Care Services Private Limited, New Delhi	SHRI SOHRAB
The Federation of Hotel and Restaurant Associations of India, New Delhi	SHRI RAHUL LALL DR VENKAT PASUPATHY (*Alternate*)
Voluntary Organization in Interest of Consumer Education (VOICE), New Delhi	SHRI M. A. U. KHAN SHRI H. S. WADHWA (*Alternate*)
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Member Secretary
SHRIMATI VARSHA GUPTA
SCIENTIST 'D'/JOINT DIRECTOR
(FOOD AND AGRICULTURE), BIS

Panel Responsible for Review and Revision of IS 6541 : 1972 Code for Hygienic Conditions for Establishment and Maintenance of Midday School Meal Programme, FAD 15 : Panel 2

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Confederation of Indian Industry, New Delhi	SHRI SAM JOHN
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Ministry of Women and Child Development, New Delhi	SHRIMATI SHALINI GUPTA

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