




FOOD SAFETY AND STANDARDS
AUTHORITY OF INDIA

Inspiring Trust, Assuring Safe & Nutritious Food



BASIC FOOD SAFETY TRAINING MANUAL CATERING

Preface

Food Safety and Standards Authority of India (FSSAI) has set up Food Safety Training & Certification (FoSTaC) system to ensure vast and effective training to food businesses across the value chain. This system will train and certify the Food Safety Supervisor from each Food Establishment as it is envisaged to make this a regulatory requirement. This means food safety license is mandatory for tea stalls, dhabas, fruit and vegetable sellers, grocery shops, canteens, caterers, restaurants, hotels, food processors in the national Capital.

This manual has been created for very small caterers whose annual turnover is less than 12 Lakhs. This manual includes requirements on food safety, production & hygienic practices in a very simple and easy-to-understand language. It is based on the Schedule 4 requirements of FSS (Licensing & Regulation of Food Businesses) Regulation, 2011 along with the industry best practices. The manual is our small initiative to bring together the knowledge both within and outside FSSAI in basic food safety practices.

We hope that this manual serves a wider purpose than the training of the Food Safety Supervisors and help improve the production of safe food at all scales.

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1. LOCATION AND LAYOUT

The establishment must be located away from the industries which emit harmful gases, odour, and chemical etc.

The ceiling roof should be strong.

The floor should be cemented or tiled.

The premise must be adequately lighted and ventilated.

A proper waste disposal system is present.

There should be adequate drainage facility.

2. EQUIPMENT AND FIXTURES

Equipment shall be clean, dry and free from moulds and fungi.

The equipment should be of non-corrosive material.

3. STORAGE SYSTEMS

Appropriate place for storage must be provided.

Raw material, food additives and ingredients must be labeled and placed separately.

4. PERSONAL HYGIENE

The staff shall wear clean and proper aprons, head cover, gloves & footwear.

A person shall not handle food if unwell.

Functional handwash and drying facilities must be provided.

5. WATER SUPPLY

Potable water should be available at all times.

The water should be tested periodically by a NABL Accredited laboratory.

6. PEST CONTROL SYSTEM

Control measures must be taken at all times to prevent insects and rodents contaminating the food.

7. CONVEYANCE AND TRANSPORTATION

The transportation vehicles must be clean and NOT carry any items apart from food.

8. OPERATIONAL FEATURES

9. DOCUMENTATION AND RECORDS

Daily records of receiving, storage, sales are to be maintained.

Good Manufacturing Practices/Good Hygienic Practices must be followed.

10. PRODUCT INFORMATION AND CONSUMER AWARENESS

The packaged food products must have all the requisite information on it.

11. TRAINING

All staff members and supervisors shall have appropriate hygiene training.

General conditions for licensing

All Food Business Operators shall ensure that the following conditions are complied with at all times during the course of its food business.

- 1. Display a Food Safety Display Boards (of appropriate size) at all times at a prominent place in the premises.**
- 2. Employ at least one certified Food Safety Supervisor in each food premise.**
- 3. Maintain factory's sanitary and hygienic standards and worker's Hygiene as specified in the Schedule-4 according to the category of food business.**
- 4. Ensure that the source and standards of raw material used are of optimum quality.**
- 5. Get food and water samples tested regularly for any chemical and/ or microbiological contaminants. (after every 6 months)**
- 6. The manufacturer /importer/ distributor shall buy and sell food products only from, or to, licensed/registered vendors.**
- 7. No Food Business Operator shall sell/distribute/offer for sale/ dispatch/ deliver any product which is not packed, marked and labeled in the manner specified in the regulation.**
- 8. Food Businesses should maintain all records for purchasing, sales, trainings, health check-ups , etc. necessary documents and provide the same at the time of inspection.**

FOOD SAFETY & FOOD SAFETY HAZARDS

Food Safety means assurance that food is acceptable for human consumption according to its intended use.



Food Borne Diseases are the diseases caused due to consumption of a contaminated or spoiled food. Food borne disease is a serious problem that affects every country in the world. It can cause vomiting, diarrhea and fever, and in some cases it can be deadly. Food borne diseases can affect anyone, but some people are at more risk. For example, young children, the elderly, pregnant women and people who are unwell.

It is essential for all food handlers to be cautious and prepare food safely to prevent consumers from food borne illnesses

Food Safety Hazards means biological, chemical or physical agent in food, or condition of food, with the potential to cause an adverse health effect. There are majorly three types of hazards

There are three main types of food safety hazard

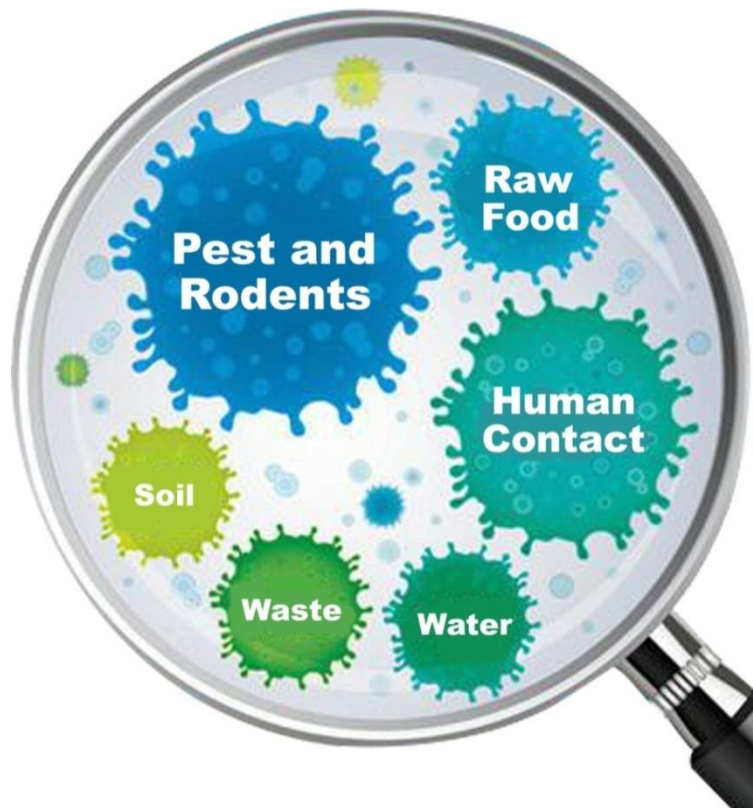


In catering and food service microbiological hazards are the most important.

Bacteria are very small organisms that cannot be seen without a microscope. Some types of bacteria are harmful to people and can cause food borne diseases.

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Harmful to people and can cause food borne disease.

SOURCES OF BACTERIA



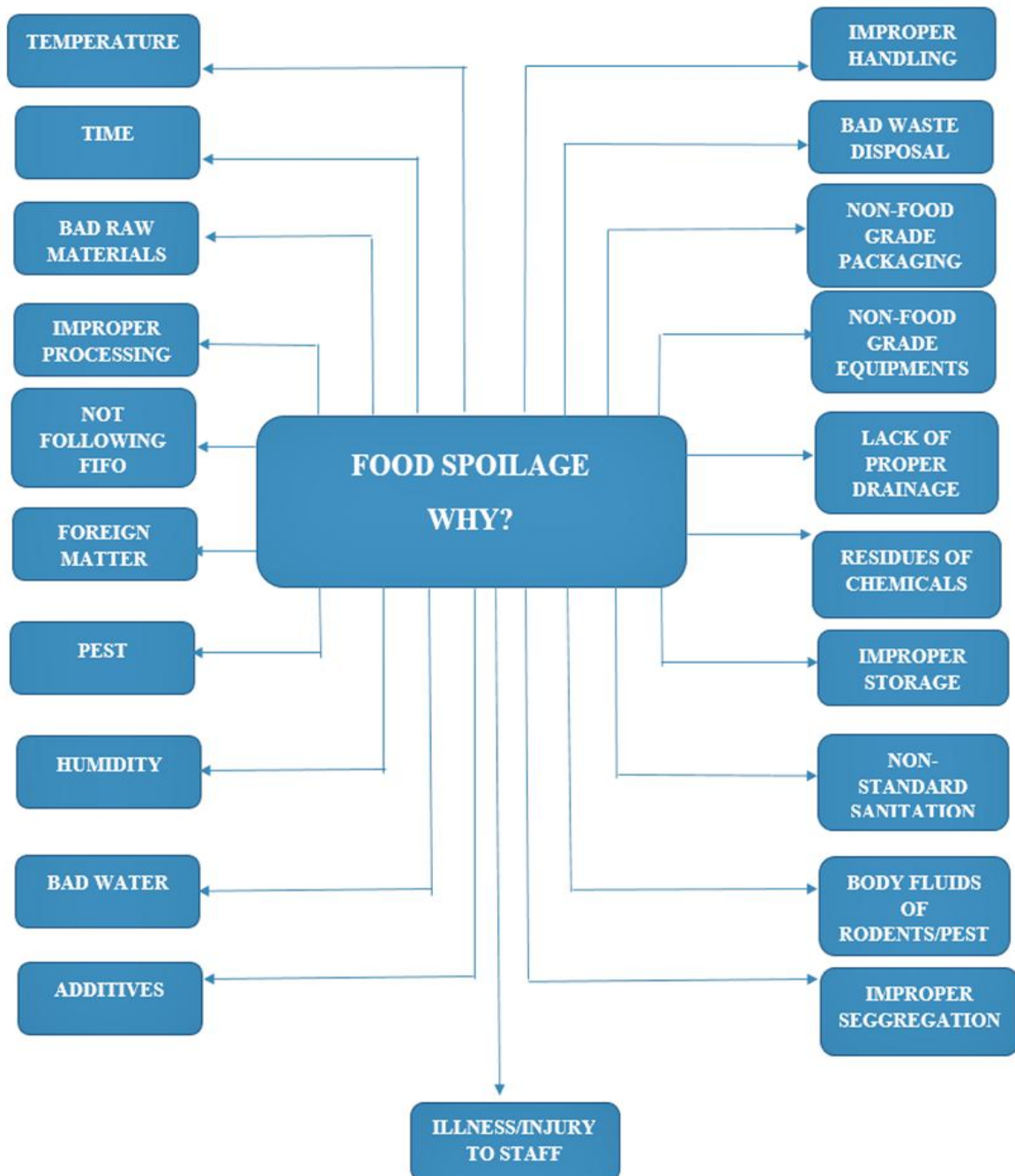
Bacteria can get into the food handling areas through various modes. These are soil, human contact, waste, contaminated water, pest, raw food items such as raw meat, eggs and raw vegetables, etc.

F

FOOD SPOILAGE

Food spoilage means that the original nutritional value, texture, flavour of the food are damaged, the food become harmful to people and unsuitable to eat.

Major reasons for food spoilage are –





**PART
II**

**LOCATION, LAYOUT &
FACILITIES**

LOCATION & SURROUNDINGS

**LAYOUT & DESIGN OF FOOD
ESTABLISHMENT PREMISES**

EQUIPMENT & CONTAINERS

FACILITIES

LOCATION & SURROUNDINGS

Location shall ideally be away from-

1. Environmentally polluted area.
2. Industrial activities that produce disagreeable odour, wastes, chemical or biological emissions etc.
3. Areas which are prone to infestations of pests.
4. Areas where industrial wastes cannot be removed effectively.
5. Residential area.
6. From filthy surrounding in a sanitary place and shall maintain over all hygienic environment.
7. Potential sources of contamination like rubbish, waste water, toilet facilities, open drains and stray animals shall be avoided.



Dirty passage being used as Food Storage



Food Preparation area



Urinal without doors



Poor Civic Sense cause airborne bacteria

Appropriate control measures to protect against-Curtains, bird net, screened opening

➤ *In case there are hazards of other environment polluting industry located nearby,*

Take appropriate measures to protect the manufacturing area from any potential contamination.



Garbage lying open – Source of Flies, Insects, Rodents



Open and unattended Garbage Bins

LAYOUT & DESIGN OF FOOD ESTABLISHMENT PREMISES

1. **The designing of premises** shall be such that there should be no cross contamination in food preparation area occur from pre and post manufacturing operations. The material movement should be done in one direction only (i.e. no backward flow), to prevent cross contamination



2. **Floors, ceilings and walls** of the catering establishment must be made of impervious material. They should be smooth and easy to clean with no flaking paint or plaster and maintained in a sound condition to minimize accumulation of dirt, condensation & growth of moulds

Floors, ceilings and walls -



**Cleanable, durable,
impervious to moisture**



**Cracks allow bacteria
and moulds to accumulate**

3. The **doors** in the catering establishment shall be made of smooth and non-absorbent surfaces and they shall be easy to clean and disinfectant. The doors should be fitted with automatic closing springs



4. **Windows, doors & all other openings to outside environment** should be well screened with wire-mesh or insect-proof screen to protect the premise from pests.



5. There should be efficient **drainage system** with appropriate slope and easy to clean and where necessary disinfect and there shall be adequate provisions for disposal of refuse.



Drains should be covered to prevent Insects and rodents

6. The **surfaces of the Vending/ carts**, tables, awning, benches and boxes, glass cases, etc. shall be clean, hygienic, impermeable and easy to clean (like stainless steel), and placed at least 60 to 70 cm. from above ground.



7. **The vending surface** which comes in contact with food or food storage utensils shall be built of solid, rust/ corrosion resistant materials and kept in clean and good condition. They shall be protected from sun, wind and dust.



8. When not in use, food vending surface shall be kept in clean place and properly protected.



LET'S DISCUSS !!



Sonu : Hi Monu, I am planning to start a small restaurant. Since you own a restaurant, can you guide me with the areas that I should avoid in terms of location?

Monu : Canal Banks ,near/facing dumping yard , very close to public toilets abetting , polluted garages/scrap yards are few examples of the areas that you should avoid.

Sonu : Some of my known people have dhabas/small restaurants in such areas. Now, what are the precautions they must take in order to ensure safe food ?

Monu : Oh My GOD ! One should try to avoid such areas. But still some of the important considerations are;



a) Create Physical Barriers (tin sheets/tarpauline/synthetic sheets).These should be washable and sanitizable

b) Don't allow water to stagnate near the surroundings. Ensure dryness either by creating a cement platform or laying paving stones . The purpose is to clean and sanitise them daily.

c) Have traps to catch rodents , use repulsive paints on the platform.

EQUIPMENTS & CONTAINERS

1. The design of **equipment, containers and Machinery**

- Do not use utensils made up of cadmium lead, non-food grade plastic and other toxic materials for cooking and storage.
- Should permit easy cleaning to avoid accumulation of food particles and or microbes.
- Should be made from stainless steel. Copper and brass utensils must have a proper lining.
- All equipment and containers shall be kept clean, washed, dried and stacked at the close of business to ensure freedom from growth of mould/ fungi and infestation.
- Containers used for storage should be closed with a lid.
- All equipment shall be placed well away from the walls to allow proper inspection.
- Store non-food items such as chemicals, etc. away from the food storage containers.
- Use hot water for washing the equipment and use stainless steel as far as possible



Equipments made of corrosion free material



Cooking containers with lids



Storage containers with lids



Storage containers in the kitchen with lids

Water

- Use only potable water for cooking, washing utensils and cleaning surfaces
- Transporting of drinking water (treated water like bottled water, boiled/ filtered water through water purifier, etc.)
- properly covered and protected containers
- stored in clean and covered containers

LET'S DISCUSS !!



Sonu: Often suppliers are bringing new models of containers and equipments that are attractive and cheap. How do I know whether they are food grade and safe for use?

Monu: It's simple, whichever material doesn't transfer its properties to the food say from -50°C to $+150^{\circ}\text{C}$ can be assumed as safe for food business use.



ACTIVITY- 1

1. Brass utensils, when used shall be provided with lining. True/False
2. Windows, doors & all other openings shall be well screened with wire-mesh to protect the premise from
 - a. personals
 - b. sunshine
 - c. pest
 - d. wind
3. What are the requirements of ideal location?
 - a.
 - b.
 - c.
 - d.
4. Material movement is allowed in Direction.
 - a. One
 - b. bi
 - c. Uni
 - d. Multi
5. Equipment and containers for waste, by-products, cleaning chemicals and inedible or dangerous substances, shall be same. True/False



FACILITIES

The facilities required for producing and serving safe and hygienic food include, water supply , utensils and equipment cleaning facilities, raw material washing facilities, potable ice and steam facilities, personnel facilities & toilets, proper ventilation, air quality & lighting systems. The requirements are detailed as follows :

1. Continuous supply of **potable water** shall be ensured in the premises. Water filters maybe installed to ensure clean water supply.



Use water filter to ensure potable water is available for food preparation, cleaning and hand washing

2. In case of intermittent water supply, adequate storage arrangement for water used in food or washing shall be made.



3. **Transporting of drinking water** (treated water like bottled water, boiled/ filtered water through water purifier etc.) shall be in properly covered and protected containers and it shall be stored in clean and covered containers in a protected area away from dust and filth.

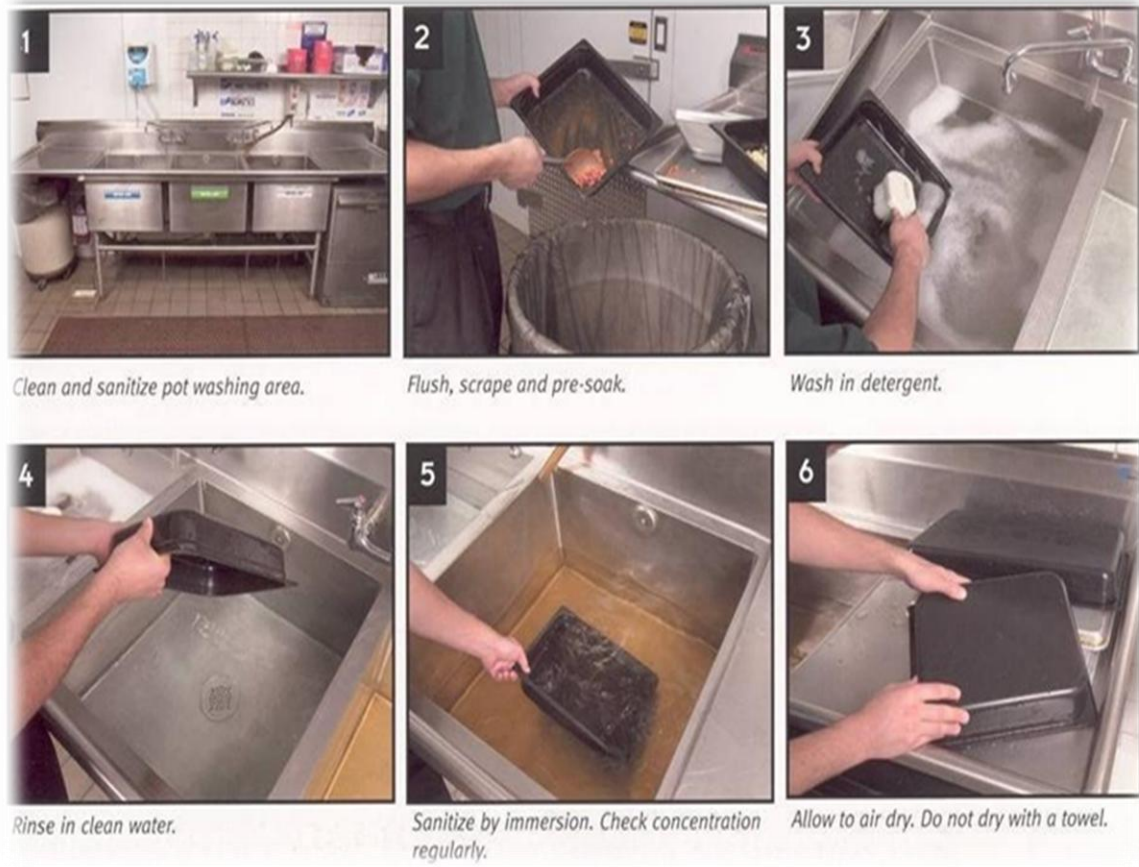


Attach a tap to container of potable water to ensure access to running water

In case water is transported, store potable water in a clean and covered container with a tap

4. **For Cleaning Utensils / Equipment** adequate facilities for cleaning, disinfecting shall be provided with hot and cold water facility, if required.



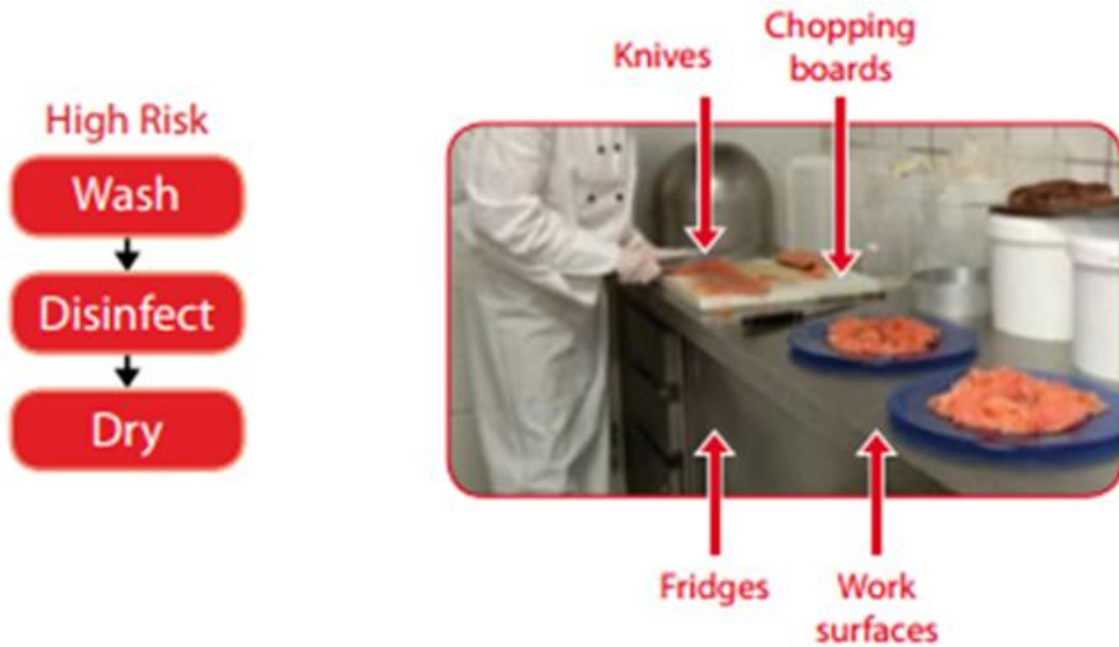


5. There should be a separate sink **for washing of raw materials**. The raw materials must be washed before storing.



Separate sink with potable water facility for washing raw materials

Low and High Risk Cleaning



Some items and areas are 'high risk' because they come into direct contact with food or hands. They need to be disinfected to kill bacteria, whereas 'low risk' items and areas do not.

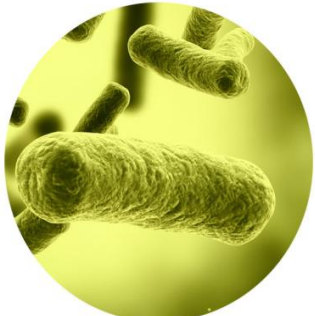
Cleaning and Disinfection



Wash with warm water and detergent.



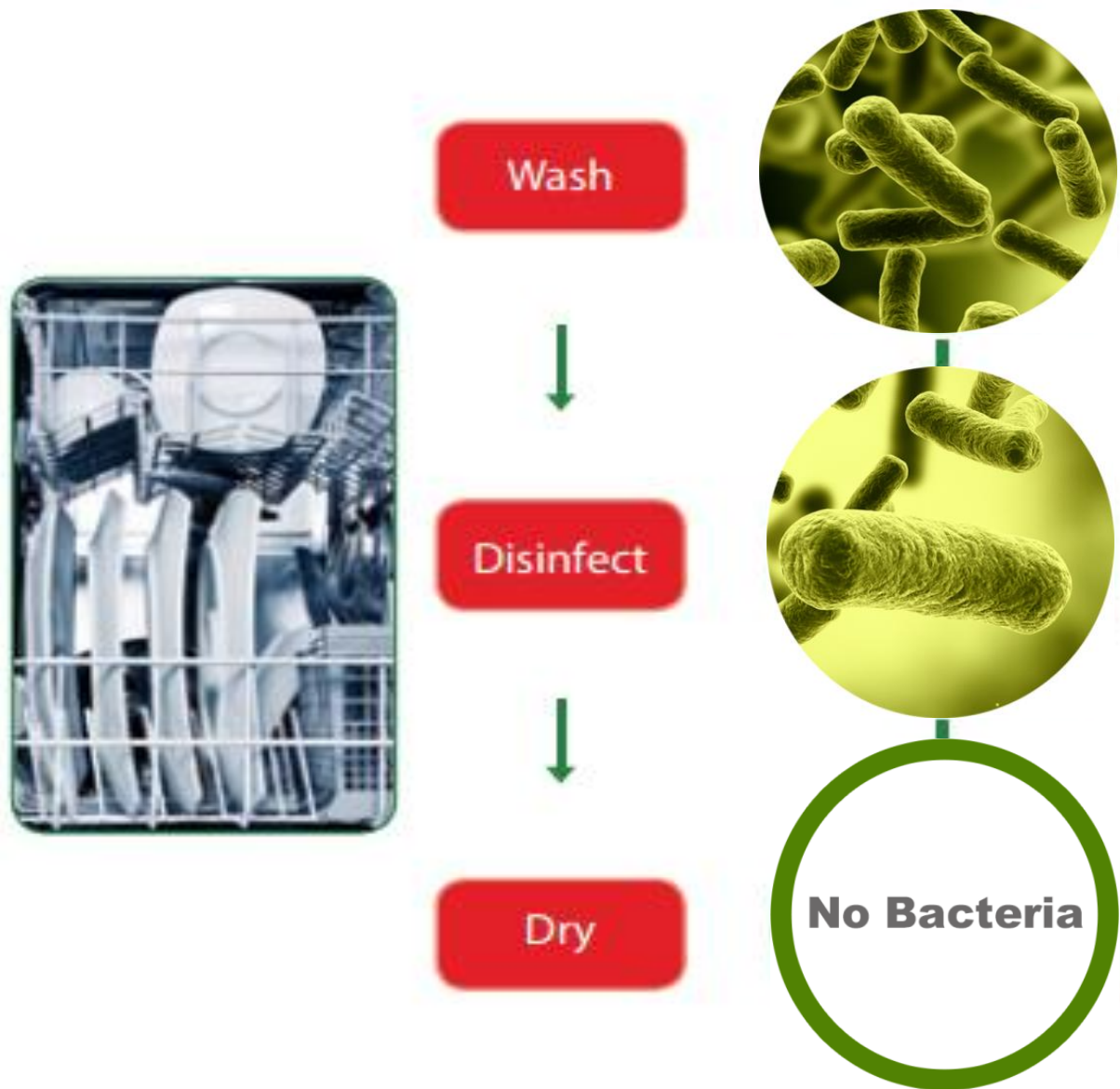
Use a disinfectant, following the instructions.



Dry with a clean paper towel (or air dry).



Other Disinfection Methods



Heat kills bacteria, so if a cleaning method uses very hot water (e.g. a dishwashing machine) the bacteria will all be killed. This is another method of 'disinfection'.

6. **Ice and Steam** for use in production of food shall be made of potable water. They should be handled hygienically to avoid cross contamination. The ice shall be handled using food grade plastic scoop and the ice machine shall be kept clean at all times.

Handling Ice Machine



Clean & hygienic Ice Machine

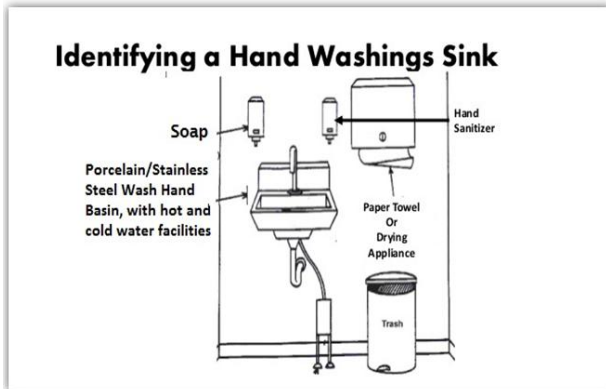


Dirty Ice Machine

7. **Personnel facilities and toilets** are of major importance as the personnels are constantly in touch with the food. Proper hand washing facilities shall be provided. The requirements of a hand washing and drying system include –

- ✓ Porcelain/Stainless Steel Wash-hand basins, preferably knee operated
- ✓ Germicidal liquid soap
- ✓ Sanitizer
- ✓ Supply of hot and /or cold water
- ✓ Wet hands drying system
- ✓ Clean and dry towels, preferably paper towel/rolls
- ✓ Covered Trash Bin, preferably pedal operated with plastic lining

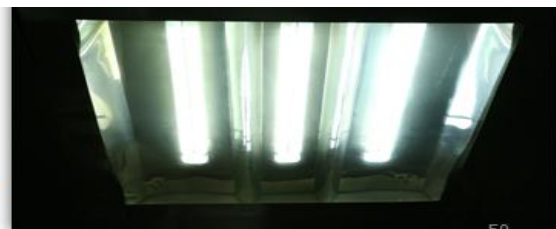
Heat kills bacteria, so if a cleaning method uses very hot water (e.g. a dishwashing machine) the bacteria will all be killed. This is another method of 'disinfection'



Also, separate adequate hygienic laboratories and changing facilities shall be provided for the personnel. The restroom and refreshments rooms shall be separate from food process and service areas to avoid personnel from having their food in restroom.

- 8. Air quality and ventilation system** shall be designed and constructed so that air does not flow from contaminated areas to clean areas.
- 9. Lighting** should be sufficient to the food establishment area. Lighting fixtures should be covered to prevent breakages of electrical fittings to contaminate food.

Lights shall be covered





LET'S DISCUSS !!

Sonu: I don't have a concrete/permanent structure. What should I do?

Monu: Whether you have a tin sheet tarpaulin or any other synthetic material as roof or as a side wall. Please note what you should do -

- a) Ensure that they are not leaking.
- b) They should be washable and cleanable.
- c) They should not allow pest.
- d) As much as possible they should be made of non-absorbent material.



Sonu: Can I use decorative lights on my food counters?

Monu: Lighting should be bright enough and shatter proof and should not mislead the customer at the same time.

Sonu: Can you advise me on exhaust and fresh air?

Monu: Exhaust output must be in such way that the possibility of birds, rodents and other animals must be avoided. Fresh air wherever placed should not bring in pollution from outside or bring unwanted foul smell to the dining area.

Activity 2



1. Only _____ water is used for food preparation.
 - a. Potable
 - b. Non-potable
2. We should wash, _____, dry chopping boards, knives etc.
 - a. Steam
 - b. Disinfect
 - c. Clean
3. Its is preferable to use paper towels to clean knife and chopping boards. True/ False.
4. We should use hot water for dishwashing. True/ False.
5. Ice should be made from normal unfiltered tap water. True/False.



PART
III

FOOD PRODUCTION

RECEIVING

STORAGE

CROSS CONTAMINATION

COOKING

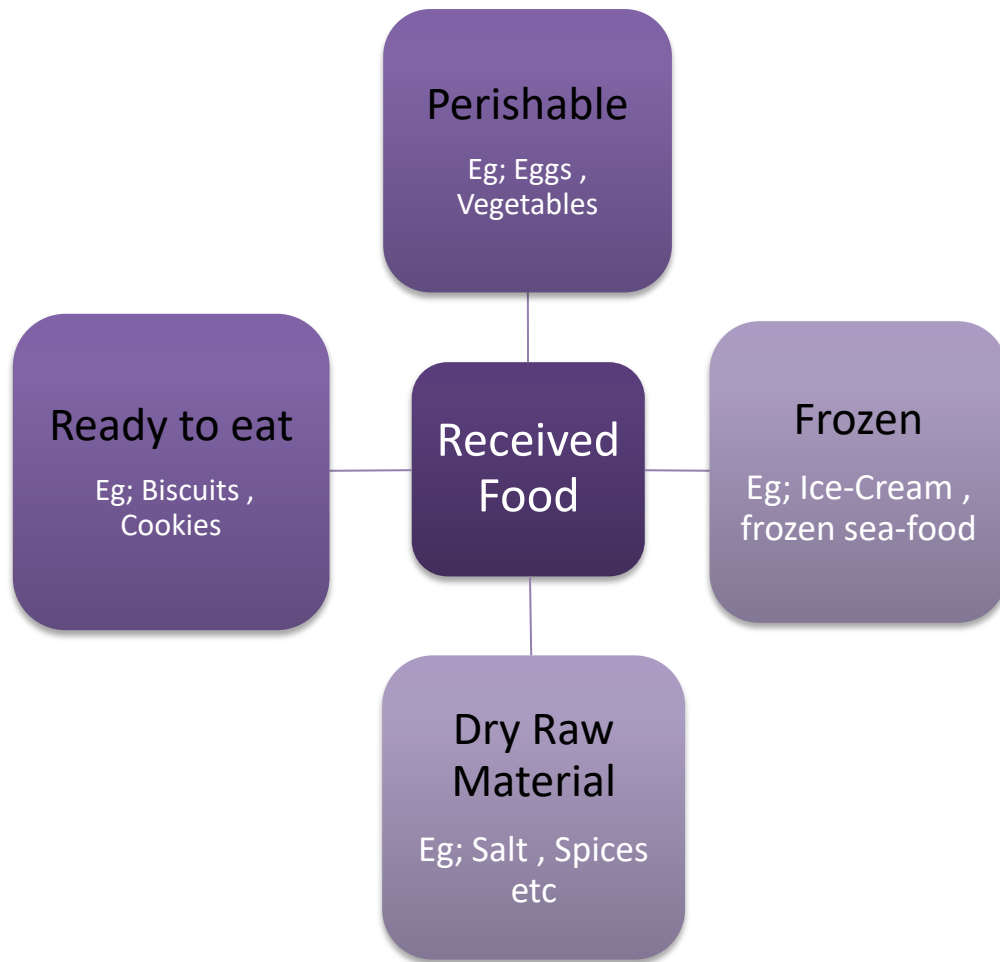
REHEATING

CHILLING

DISTRIBUTION & SERVING WASTE DISPOSAL

RECEIVING

Received Food material may be classified in four categories as follows :



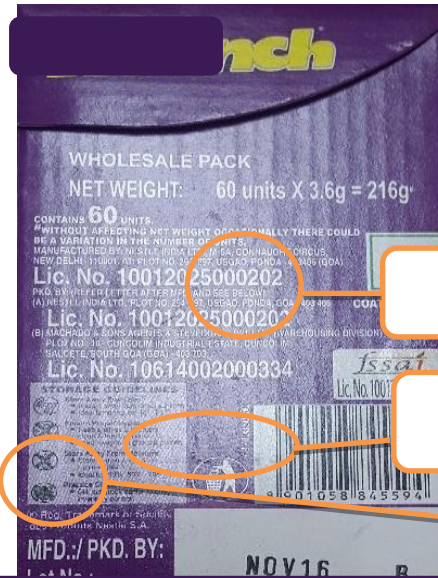
Procurement of raw materials – Ensure that the receiving area is clean.

- Check for FSSAI License number on the products
- Check the temperature of delivered food-they must be at same temperature as your storage temperature
- Use only grade A eggs, pasteurised milk products and meat from inspected source
- Do not buy/use cans that are dents and packages for leaks and tears.
- Check expiry/best before dates.
- Look for signs that frozen food has thawed and been refrozen
- Check produce for signs of spoilage, insect & dirt
- Check meat products for freshness (bright colour, no odour)
- Buy raw produce as per requirement and storage capacity to avoid food spoilage and waste.





Checking Labelling requirements before receiving



FSSAI License No.

Mfg. Date

Best Before Date

Always check for FSSAI License no., Manufacturing Date

and Best Before Date On Products

INGREDIENTS

NOODLES: Wheat flour, vegetable oil [antioxidant (E320)], salt.

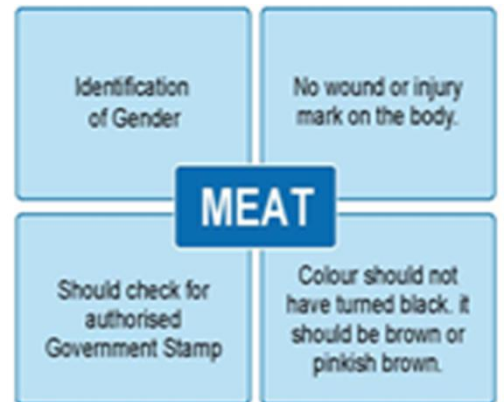
FLAVOUR SACHET: Salt, flavour enhancers (E621, E627, E631)

chicken flavour, hydrolysed vegetable protein (soy, wheat), onion powder, sugar, yeast extract, maltodextrin, parsley, herbs, spices, colour (E160b).

VEGETABLE SACHET:

Dehydrated seasonal vegetables.

SPECIAL FOCUS BEFORE RECEIVING





ACCEPT FISH AND MARINE PRODUCTS AT BELOW 5°C



ACCEPT CLEAN AND INTACT EGGS ONLY



ACCEPT POULTRY PRODUCTS AT / BELOW 5°C



ACCEPT FRESH PRODUCE WITH NO SIGNS OF SPOilage



CLEAN AND SANITIZED TROLLEYS FOR RECEIVING RAW MATERIAL



ACCEPT / RECEIVE PRODUCTS IN CLEAN CRATES

Activity -3



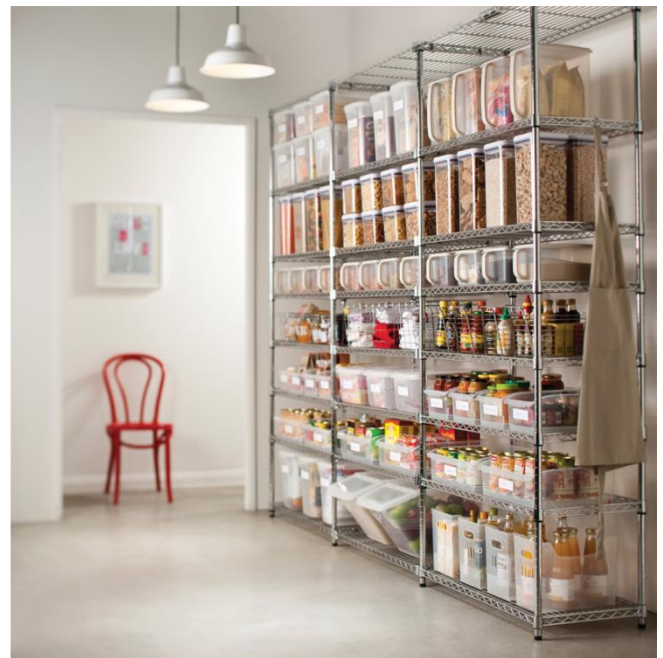
1. Receiving temperature of frozen food should be 0° C or below. True/False
2. Receiving temperature of potentially high risk food should be at or below
 - a. 10° C
 - b. 5° C
 - c. 7° C
 - d. 15° C
3. Raw material or ingredient thereof shall be accepted if it is known to have -
 - a. Good sanitary conditions
 - b. Foreign Object
 - c. Parasite
 - d. Pesticide
4. Every manufacturer, distributor or dealer selling an article of food to a vendor shall give either separately or in the bill, cash memo or label a warranty in
 - a. Form E
 - b. Form D
 - c. Form B
 - d. Form A
5. Packaged raw material must be checked for 'expiry date' / 'best before' / 'use by' date, packaging integrity and storage conditions. True/False

STORAGE OF RAW MATERIALS & FOOD

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.

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

- Frozen food must be stored at -18°C (0°F)
- Refrigerators & Refrigerated display units must be 4°C (40°F) or colder
- Dry storage areas should be from 10°C to 21°C (50°F to 70°F)
- Store raw and ready to eat/cooked food separately
- Never store raw food above ready to eat/cooked food.
- Keep food covered all the time
- Keep all foods labelled
- Rotate stock (FIFO- First in First Out and FEFO- First Expire First Out)
- Store all food 15cm(6 inches) off the floor to facilitate cleaning and deter pest.
- Keep packaging material covered to avoid contamination.
- Rejected material to be kept separately to avoid cross contamination



Store area should be ventilated and well- lit. All items are sorted and kept at their designated place. The floor is kept 15 cm above the ground.

NOTE- Storage area should always be clean and well lighted



Product stored as per temperature requirement



Keep your containers at least 15cm above the ground.



Vegetarian and Non Vegetarian food are packed in clean packs / containers and stored in the segregated area.

STORAGE OF RAW MATERIALS & FOOD



Ensure all primary / secondary food packaging and disposable service items are stored covered at all times.

Separate Fridge is required for Veg and Non- Veg food

If separate refrigerator is available: -

- Sequence in Veg Refrigerator – Ready to eat and salad at the top shelves, cooked vegetables at next top shelves and raw vegetables at the lower shelves.



Raw Food and Prepared Food Storage

Sequence in Non Veg Refrigerator –







Ready to eat and non-veg salad at the top shelf, cooked Non-Veg at next top shelves and raw Non-veg at the lower shelves.

- Cold Storage Temperatures -**
- Cold storage at 1 - 5°C
 - Vegetables and Fruits upto 9°C
 - Frozen Foods at <-18°C
 - Ice Cream at <-12°C



If separate refrigerator is not available:-

Ready to eat and salad at the top shelf, cooked vegetables at next top shelves, Cooked Non-Veg in the next top shelves and raw food at the lower shelves.

Sequence of veg refrigerator			Sequence of non-veg refrigerator		
Top shelf	Ready to eat & veg salad		Top shelf	Ready to eat & non veg salad	
Medium Shelf	Cooked vegetable		Medium Shelf	Cooked non-veg	
Bottom Shelf	Raw vegetable		Bottom Shelf	Raw non-veg	

Activity 4



1. We should check for FSSAI License No. on packaged food products. True/False.
2. FIFO is First In _____.
3. Raw food should be stored above cooked food. True/False.
4. We should only use food grade plastic for storing food products. True/False.
5. Food containers should be kept _____ cm above floor.
 - a. 15 cm
 - b. 20 cm

PRE-PREPARATION

1. Wash all raw vegetables and fruits thoroughly in potable water.
2. All the equipment being used such as chopping boards, knives, peelers, processors etc. should be thoroughly clean.
3. Raw/ cooked food should be handled separate and separate equipment should be used.
4. Vegetarian and non-vegetarian food should be handled separately and separate equipment should be used.



Thawing of Food

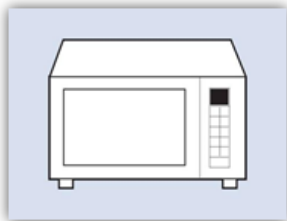
Thawing is a process of defrosting the frozen food. Thawing frozen food correctly is important for keeping food safe to eat. Thawed material should be consumed (Intend is processing) immediately. Do not store back thawed material for future use and only required portion of the food should be thawed at a time. The two most common methods for thawing food -

Thawing-In Refrigerator

Place the frozen food in the perforated pan so that dripping should not contaminate the food. Place the perforated pan in a tray/pan so that food dripping accumulates in the tray/pan and it cannot drip on other food.

Thawing-In Microwave Oven

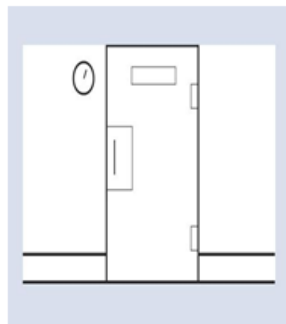
Only small portion of food should be thawed by this method. A product is deemed to be thawed when core temperature lies between 1° C to 5° C. Use thawed product immediately.



**In a microwave oven,
if the food will be
cooked immediately
after thawing**



**Submerge under running
potable water, at or below
15° C**



In a refrigerator, at or below 5° C

LET'S DISCUSS !!



Sonu: Why should I not use wooden cutting boards?

Monu: Wooden cutting boards develop scratches in which microorganisms grow and grow. They are difficult to wash and sanitize.

Sonu : Can I use normal water for soaking or pre-processing because anyway I am going to make only hot food ?

Monu : Use only safe water for soaking and pre-processing because a high load of microorganisms in pre-processing stage makes the food unsafe.



Sonu: How should I sanitize my cutting board and other areas?

Monu: Its very simple, for vegetarian contact and surface boards use 50 ppm chlorine which means 4-5 ml chlorine in 10 Litres of water. For non-vegetarian contact surfaces it is 100 ppm chlorine which means 8-10 ml of chlorine for 10 Litres of water.

Sonu : Are there any important considerations in pre-process?

Monu: Yes, whatever sieve or cloth that is used, it should be pre washed and sanitized to avoid cross-contamination.

CROSS-CONTAMINATION

Cross contamination is one of the most common causes of food poisoning. It happens when harmful germs are spread onto food from other food, surfaces, hands or equipment.

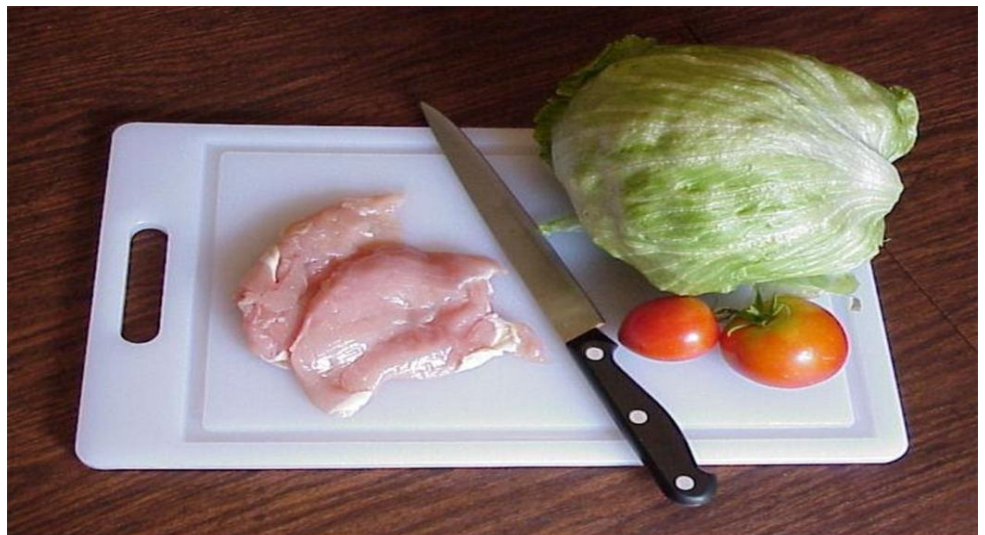
Cross contamination may occur from –

1. Food to food



DO NOT TOUCH COOKED FOOD WITH BARE HANDS

2. Hand to food



DO NOT HANDLE VEG AND NON-VEG PRODUCTS TOGETHER

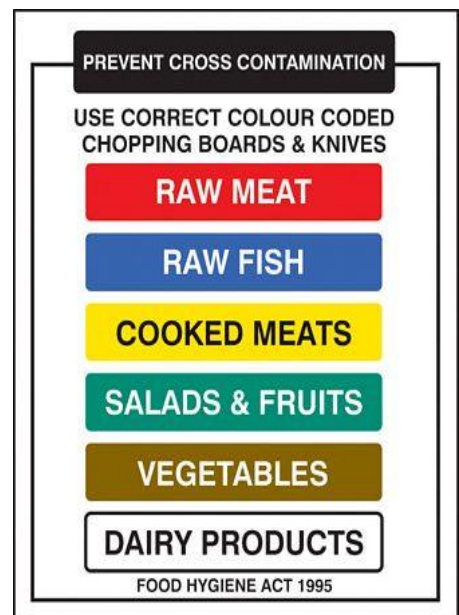
3. Equipment to food



DO NOT USE SAME EQUIPMENTS FOR VEG AND NON VEG

Following should be done to avoid cross – contamination

- Raw food/ meat/poultry and ready-to-eat foods should be kept separate at all times.
- Hands should be thoroughly washed before switching from preparing non vegetarian products to any other activity.
- Work surfaces, chopping boards and equipment should be thoroughly cleaned (intend clean and sanitize) before the preparing of food starts and after it has been used.
- Separate chopping boards and knives for raw fruit/ vegetables/ meat/poultry and ready-to-eat food should be used (For ease, colour code the knives and boards).
- Raw meat/poultry below ready-to-eat food should be kept in the fridge.
- Practice hand hygiene.
- Separate fridge for raw meat/poultry should be kept.
- Staff should be made aware how to avoid cross-contamination.



Practice Hand Hygiene



Bacteria can easily spread from raw food (e.g. raw meat) onto hands, knives, chopping boards, equipment (e.g. fridges).



Hand, equipment and utensils must be thoroughly cleaned in between task.



Raw meat must be kept separate from ready to eat food products

Raw meat can spread bacteria to ready-to-eat food (e.g. salad) unless it is kept separate at all times. Bacteria can spread by contact with hands, utensils or equipment.





**SEPARATE STORAGE OF RAW VEGETABLES AND
NON VEGETARIAN PRODUCTS**



LET'S DISCUSS !!

Sonu: Often suppliers are bringing new models of containers and equipments more attractive and cheap. How do I know whether they are food grade and safe for use?

Monu: It's simple , whichever material doesn't transfer its properties to the food say from -50°C to $+150^{\circ}\text{C}$ can be assumed as safe for food business use.



Activity - 5



1. Handling foods after using the toilet without first properly washing hands, may lead to
 - a. pasteurization
 - b. sanitation
 - c. cross-contamination
 - d. incubation

2. Cross contamination may occur from -
 - a. Food to food
 - b. Utensils to food
 - c. Food handler to food
 - d. Customer to food

3. Raw meat and raw vegetables may be stored together. True/False

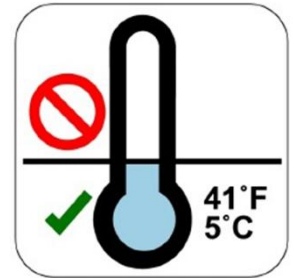
4. As a good hygiene practise, Separate chopping board shall be used for handling raw vegetable and raw meat. True/False

5. Hands should be thoroughly washed before switching from preparing non vegetarian products to any other activity. True/False

COOKING

Since harmful contaminants can't be seen, smelled or tasted, it's important that you cook your food to a safe internal cooking temperature to avoid food poisoning. The cooking process should be adequate to eliminate and reduce hazards to an acceptable level.

- The cooking must be done to reach a minimum internal temperature of 75° C.
- The cooking of veg. & non-veg. products should be segregated to avoid contamination.
- Fresh vegetable juices salads, etc. should be extracted at the time of order and not in advance. In case storing is require, refrigerate at 5° C or below in clean container.

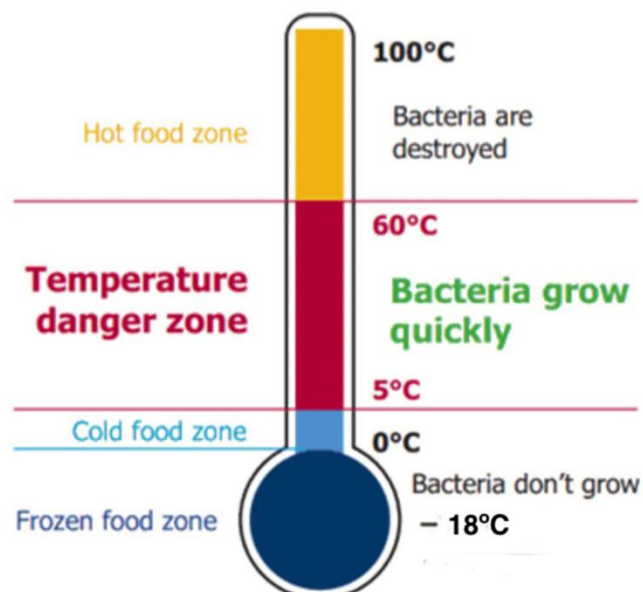


COLD HOLDING



HOT HOLDING

- The temperature danger zone is between 5°C and 60°C, when it is easiest for harmful bacteria to grow in food
- Minimise the time that food spends at these temperatures in order to keep food safe
- Refrigerated food needs to be kept at 5°C or below
- Hot food needs to be kept at 60°C or above

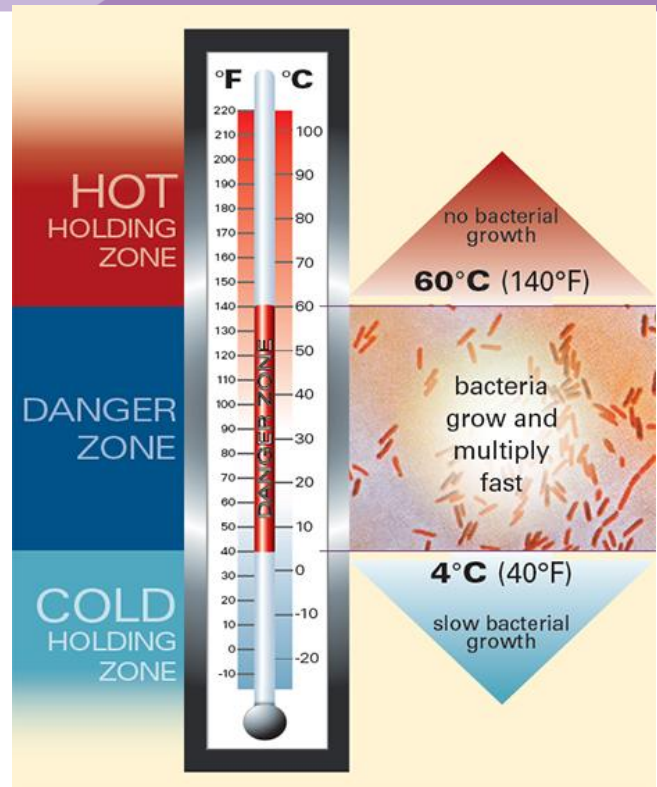


- Food must be kept hot to stop bacteria from growing.
- Hot-holding 65°C higher and
- Cold-holding 5°C or colder.

REMEMBER

Perishable food should not be left out more than

- ✓ 2 hours at room temperature 32 °C or below
- ✓ 1 hour when the temperature is above 32 °C



COOKING LIQUID-BASED DISHES



Heat kills bacteria. If food reaches a high enough temperature during cooking the bacteria will be killed. If a liquid item is boiling throughout then it has reached a safe cooking temperature.

COOKING POULTRY



When cooking meat, colour changes to show that safe temperature has been reached. While meat (e.g. chicken) must have changed all the way through from pink to white.

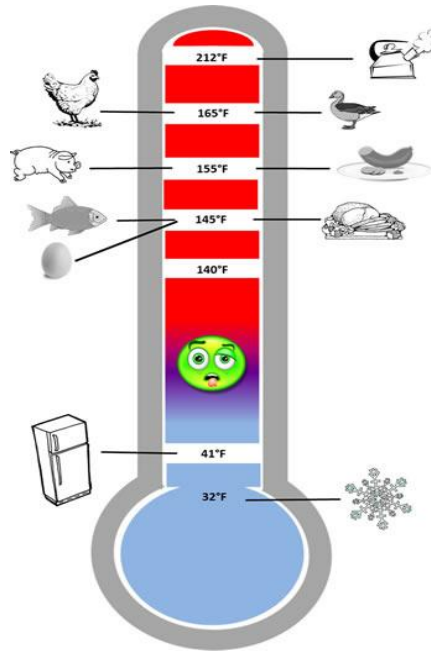
COOKING RED MEAT

COOKING MIXED FOOD ITEMS



When cooking mixed food items (e.g. biryani), it must be steaming hot throughout to show that a safe temperature has been reached

- When re-heating, food must get hot enough to kill bacteria.
- It must be bubbling / steaming throughout to show that a safe temperature has been reached.
- Reheated food can be hold at 60°C or more and discard any food that is reheated and being unused.



CHILLING

Microorganisms grow well in the temperature danger zone, i.e. 60° C to 5° C. Within this range, temperatures between 51 ° C to 21° C allow for the most rapid growth of microorganisms. For this reason food must pass through this range quickly.



The best way of chilling is using blast chillers. If special equipment is not available, food should be chilled as quickly as possible using following methods:

STIRRING



SHALLOW PANS

Chilling Methods



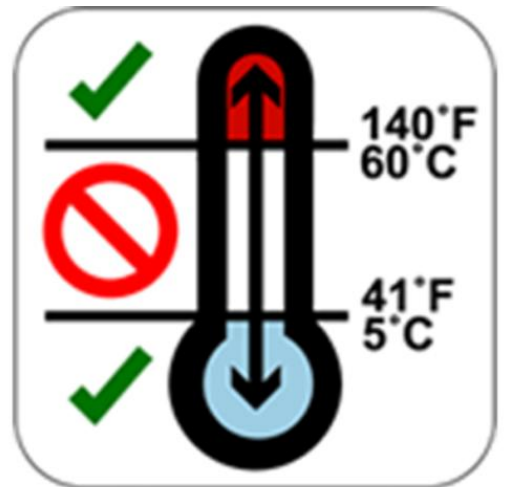
REFRIGERATE



ICEBATH

HOT & COLD HOLDING OF FOOD

When hot-holding and cold-holding, food must be kept hot to stop bacteria from growing. Hot-holding equipment must be able to keep foods at a temperature of 60° C or higher and cold-holding equipment must be capable of keeping foods at a temperature of 5° C or colder.



**HOT FOOD MUST BE HOT HELD
COLD FOOD MUST BE COLD HELD**



FOOD PACKAGING

- Food packaging prevents contamination, allows food to be transported easily and extends shelf life. Packaging also provides a surface for labelling and identification of products.
- Use only food grade plastic for packaging of food.
- The packaging material should not be contaminated from physical hazard (such as dirt, hair etc), chemical hazard (such as process ink, adhesive etc.) & biological hazard (such as bacterial or fungal contamination).
- The food packaging material shall conform to all the Regulations and standards laid down under the Food Safety & Standard Act, 2006.



LET'S DISCUSS !!

Sonu: Can food become unsafe only because of packaging?

Monu: Yes,

- If you pack in newspaper, it can contaminate the food
- If you pack liquid stuff like hot sambhar or gravy in simple polythene covers the food becomes very unsafe.
- If you pack food in hard boxes which are not food grade food becomes unsafe.



Ensure food is packed in food grade containers. Please also remember to print or put the sticker of time and date so that food is not consumed by customer beyond two and half hours.

FOOD DISTRIBUTION/SERVICE

1. Processed / packaged and / or ready-to-eat food shall be **protected** as per the required storage conditions during transportation and / or service.
2. Handling of food should be minimal. It should be ensured that utensils, crockery, cutlery and specially hands of the food handlers/seller are clean and sanitized.
3. *Food must be transported in clean vehicles.*
4. *Food Containers must be opened only before the serving of food to children.*





KEEP POTS AND PANS COVERED FOR HOT FOODS



STIR HOT AND COLD FOOD SERVICE TO MAINTAIN TEMPERATURES

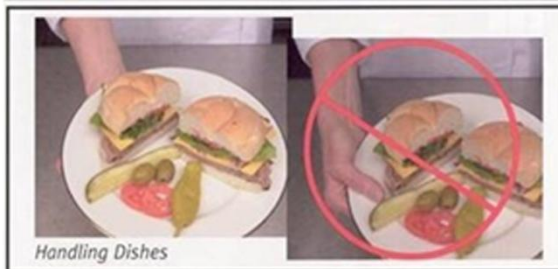


FOR HOT FOODS, HEAT SERVICE CONTAINERS IN OVEN



CHILL SERVICE CONTAINERS IN REFRIGERATORS

HYGIENIC TECHNIQUES



Handling Dishes



Handling Glasses



Handling Cups



Handling Utensils



Serving Ice

RISK ASSOCIATED WITH TRANSPORTATION

In Delhi, since food is cooked at central kitchen and then distributed to various school locations.

- Additional food grade packaging materials/containers are required. When not clean, can cross contaminate the food. Should be able to withstand and maintain the desired temperature (of food) during transportation. Failing to which will increase the bacterial growth in food.
- Lack of facility in schools to reheat the food prior to serving.
- Food may get spoiled if exposed to danger zone for more than 3 hours.
- Increased ambient temperatures through out the year adds to severity of issue.

Do's & Don't Do's to Ensure food safety during transportation of cooked foods

- **Timely preparation and transportation of foods to their destinations at proper temperatures (outside of the Temperature Danger Zone of 5 °C - 63 °C). Maintain proper temperatures all the way to the event: hot foods above 63°C and cold foods below 5 °C, till food is consumed.**
- Avoid use of soiled and non insulated food carriers (food contamination, temperature abuse). Use clean delivery vehicles, clean food carriers, and thermometers to monitor hot and cold food temperatures
- **Avoid bare hands contacting ready-to-eat foods (hand and microbial contamination).**
- **Avoid cold foods left out for too long waiting to be transported (bacterial growth).**
- **Prevent cross-contamination between raw foods and ready-to-eat foods during preparation handling and transport, by using color-coded or dedicated equipment.**
- **Use Clean and sanitize containers throughout the preparation period and during transportation of food.**
- *Select central kitchen location so that transit time for food is minimised (30-40 mins max).*
- **Reheat the prepared food to 74 °C before loading into transit vehicle, maintain above 63 °C till it is served within 3 hours.**
- **Use of food thermometers are essential to ensure that food is transported at right temperature.**
- **Food samples should be tested at set frequency at NABL accredited labs.**
- **Throw the food which was kept in danger zone for 4 hours or more.**
- **Personal hygiene of cooks and helpers should be of highest degree as the MDMS food is consumed by small children with under developed immunity.**

Time and temperature control during Transportation & serving

- Time and temperature is the key to keeping food safe.
- Never cook food in advance.
- If you cook some food ahead of time, **divide large portions of food into small, shallow containers for storage in the refrigerator (maintain temp between 4-6 °C)** . This will help the food cool quickly and safely.
- **Cooked food should be stored out of danger zone and consumed within 3 hours from cooking.**
- If temperature of food drops to less than 63 °C, food shall be thoroughly reheated to 74 °C for at least 15 sec. Reheating can be done only once.
- **Serving temperature of MDMS food shall be above 63 °C.**



WASTE DISPOSAL

- Waste storage shall be kept in covered containers.
- It shall be removed at regular intervals as per local rules and regulations.
- It shall be emptied and washed daily with a disinfectant and dried before next use.
- Waste disposal area shall be located away from food processing area to avoid contamination



**Dispose Wet and Dry Food
Separate**





PART
IV

PERSONAL
HYGIENE

1. All food handlers shall wear suitable clean protective clothing, head covering, face mask, gloves and footwear.
2. All food handlers must be certified through a registered medical practitioner atleast once a year. Medical Report should come in the prescribed format as available on FSSAI website .
3. 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.
4. 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. 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.
6. The food handlers should trim their nails and hair periodically.
7. 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.
8. Street shoes inside the food preparation area should not be worn while handling & preparing food.
9. Food handlers should not handle soiled currency notes/cards to avoid cross contamination.



- **WEAR CLEAN PROTECTIVE CLOTHING**
- **TIE YOUR HAIR AND WEAR HEADGEAR**
- **COVER YOUR FACE WITH FACE MASK WHILE PREPARING FOOD**
- **COVER YOUR HANDS WITH GLOVES**
- **WEAR PROTECTIVE BOOTS**

Basic requirements for personal hygiene –

Do (क्या करें)

Hair should be properly tucked inside the cap
बाल अच्छी तरह टोपी से दकें

No earrings or necklace/chains
कान की बालियाँ, गले का हार वर्जित है

No outer pockets
बाहरी जेब न रखें।

wear neat and clean clothes
साफ सुथरे कपड़े पहनें

No wrist watch / rings
घड़ी और अंगूठी मना है

Cover all wounds
जखम पर पट्टी लगाएँ

Nails should be short and clean
नाखून छोटे और स्वच्छ रखें

Torn clothes should be repaired or replaced
फटे हुए कपड़े न पहने

Wear clogs and safety shoes
सेफ्टी बाले जूते पहनें

Don't (क्या न करें)

Hair Coming outside the cap
टोपी से बाहर निकलते हुए बाल

Earring and necklace / Chains
कान की बालियाँ और गले का हार

Outer pockets and contents
बाहरी जेब और सामान

Dirty clothes
गंदे कपड़े

Wrist watch/Rings
घड़ी/गहने

Open and bleeding wounds
खुले जखम

Long and painted nails
बड़े और रंगे हुए नाखून

Torn clothes
फटे हुए कपड़े

Bare feet/slippers
खुले पैर/चप्पल



Here's a Procedure for How to Properly Wash Hands and When to Wash Hands.



Wash hands like this



When to wash your hands

After Using the Toilet, Urinal or anytime you visit the restroom for any reason

Before and After Handling or Preparing any Food Item

Before and After handling raw meats, raw poultry or other raw foods

After Sneezing, Coughing or Scratching Any Part of Your Body

Before Serving Food, Beverages, Setting or Waiting Tables

After Handling a Tissue or Handkerchief

After Cleaning, Washing Dishes or Bussing Tables

After Touching Your Face, Hair, Clothes or Any Part of Your Body

Employees are required to wash your hands **BEFORE beginning work, **BEFORE** working with foods and **AFTER** any activity that could contaminate the food and equipment you are working with.**

After Eating, Drinking and After Breaks

After Smoking, Chewing Gum or Chewing

Before Putting Gloves on, or Anytime You Take Gloves Off

General Hygiene & Health of Food Handlers

Food handlers should NOT EAT OR TASTE FOOD in food handling area

Food handlers should NOT EAT CHEWING GUM OR PAN MASALA in food handling area

Staff with cough and sneezes must NOT HANDLE FOOD, alternatively must wear a face mask

SPITTING is prohibited in food handling area

DO NOT SMOKE



LET'S DISCUSS !!

Sonu: You have told so much about personal hygiene. What about gloves?

Monu: Using hand gloves is required only if you are engaged in one activity. Avoid using gloves if you are touching non-food objects and food stuffs at the same time.



1 in 5 PEOPLE
DON'T WASH
THEIR HANDS

OF THOSE THAT
DO, ONLY
30%
USE SOAP!

WHEN TO WASH HANDS

BEFORE:



Before touching ready-to-eat foods

AFTER:



FOOD SAFETY

Personal Hygiene Essentials

 Keep yourself clean and wear clean protective clothing when working with food.	 Wash your hands thoroughly before handling food.	 Keep your nails clean and short. Don't bite them. No nail varnish or false nails.	 Keep your hair clean and tidy. Cover with a hairnet or hat when working with food. Don't scratch your head.
 Don't cough, sneeze or touch your mouth and nose while working with food.	 Don't smoke when working with food.	 Don't eat when working with food.	 Don't wear earrings, hairrips, rings, bracelets or wristwatches.
 Cover cuts with a waterproof dressing.	 Don't wear strong aftershave or perfume.	 No factory clothes outside.	 Report pest sighting.

▲ Bad Hygiene Leads To Bad Products ▲



PART
V

PEST
CONTROL

PEST CONTROL

A pest is any living organism that causes damages or discomfort, or transmits or produces diseases.

The Major Pest includes –

1. Insects (Cockroaches)
2. Rodents (mice, rats, squirrels etc.)
3. Flies/birds
4. Stored product pests (Flour beetle, sawtooth grain beetle, cigarette beetle, Indian meal moth etc.).



Pests carry and spread bacteria. They must be prevented from getting into any food storage or handling area, for example by checking deliveries and removing waste regularly.



Pest Control Measures

- Screen doors and windows to keep flies out
- Fill in all holes, in the premises
- Check deliveries for infestations
- Eliminate water and food sources, fix leaky faucets and do not leave water in sinks or buckets
- Rotate stock, use FIFO



- Keep garbage covered
- Get pest control done by professional agencies only.
- Never spray chemicals while food is present in the kitchen



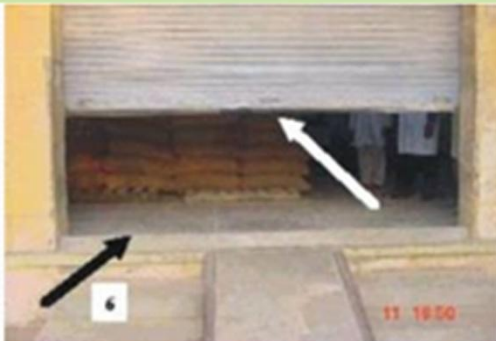
Some of the potential sources of pest entrance



Broken glass of the window



Open exhaust



Gap in between shutter & floor



Space in blinds on exhaust

Some of the pest control methods (4 D's Approach)



Deny entry



Deny food



Deny shelter

PEST
CONTROL



Destruction

Some of the pest control methods



Food materials shall be stored in pest-proof containers stacked above the ground and away from walls

Some of the pest control methods



•Rat cage protected by steel frame



•Glueboard for insect trapping in production
•maintain 1.5m radius gap



•End seal for pipelines not in use



•Insectocutor used outside production area
•maintain 3m radius gap



•Tamper resistant bait station secured onto ground
•hook up baits



•Mesh and grit for drainage

Activity - 7



1. Signs of pest infestation are _____.
 2. List 2 measures to control pest infestation
 - a. _____
 - b. _____.
 3. We should always get pest control done from a professional and never do it ourselves. True / False.
 4. We should never spray insect repellents or any other chemicals while food is kept in the kitchen. True / False.
-