



EU-India Capacity Building Initiative for Trade Development (CITD)



Train the Trainers in Food Safety and Nutrition

Hygiene of our Surroundings



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2. Food Establishment: design and facilities: Location, internal structures, ventilation, lighting of rooms, Material used for construction of small equipment
3. Cleaning procedures for equipment, food contact surfaces, rooms and surroundings
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5. Waste disposal and Management
6. Pest control and Management





Street Foods



What are Street Foods?



- Food and Agriculture Organization (FAO) defines street foods as foods and beverages prepared and/or sold by vendors in streets and other public places for immediate consumption without further processing.
- **Popular- easily available and affordable.**
- These meals form a **significant part of the daily diet** and have a major influence on health and well being.
- **The nutritive value and hygiene of these foods is usually neglected or compromised**

A survey on Street Foods of Delhi revealed that...



Most people are unaware about the health hazards of Street foods and find them a convenient and tasty option



■ **18%** consume street food on a daily basis

■ **38% to 45%** students consume it weekly or

monthly

■ **50%** of the students surveyed prefer street food over other kinds of food

■ **74%** buy street food for taste

■ **31%** students buy it for convenience and fairly low cost





Challenges



FSSAI, 2006 Regulation on Water

Use of potable drinking water, (boiled/ filtered water through water purifier etc.) shall be in protected containers of at least 20 litre



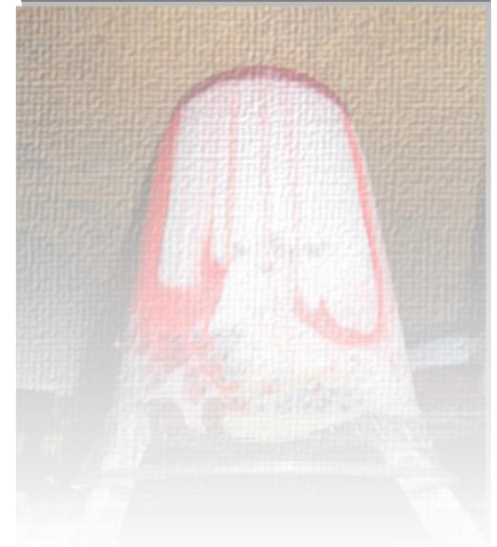
Public health concern

- **The Consumers International Survey** finds that most street food vendors get their **water from municipal systems**.
- The problem arises when stored water is used instead of running water.
- **In India, 99% of street food vendors re-used stored water** multiple times for washing hands and dishes.

Source: An initiative of the World Bank and the Ministry of Health and Family Welfare, GoI



Health risks of street juice arise mostly because industrial ice is used instead of ice made from potable water



Hygienic Environment?

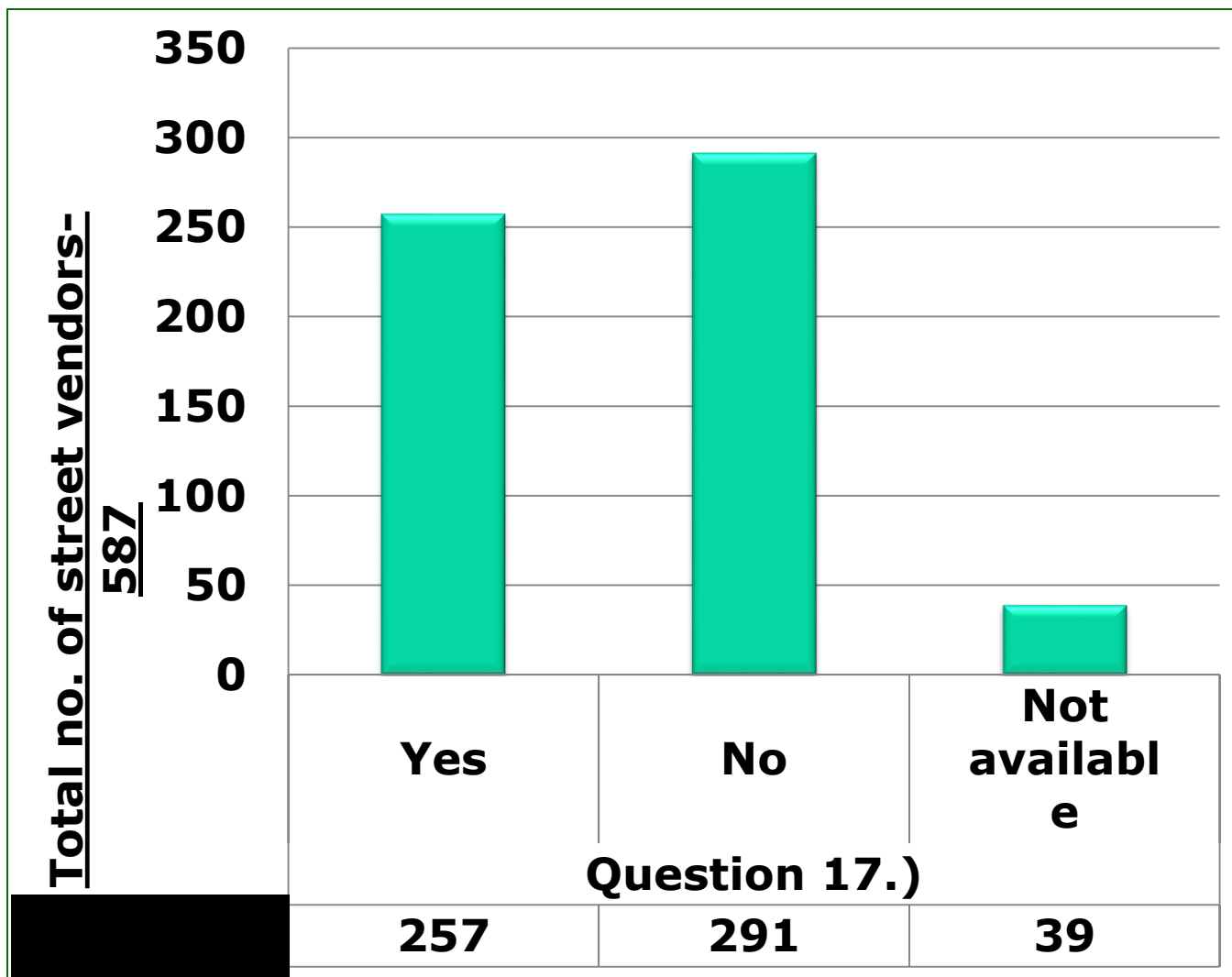


Location and environment of vending stall

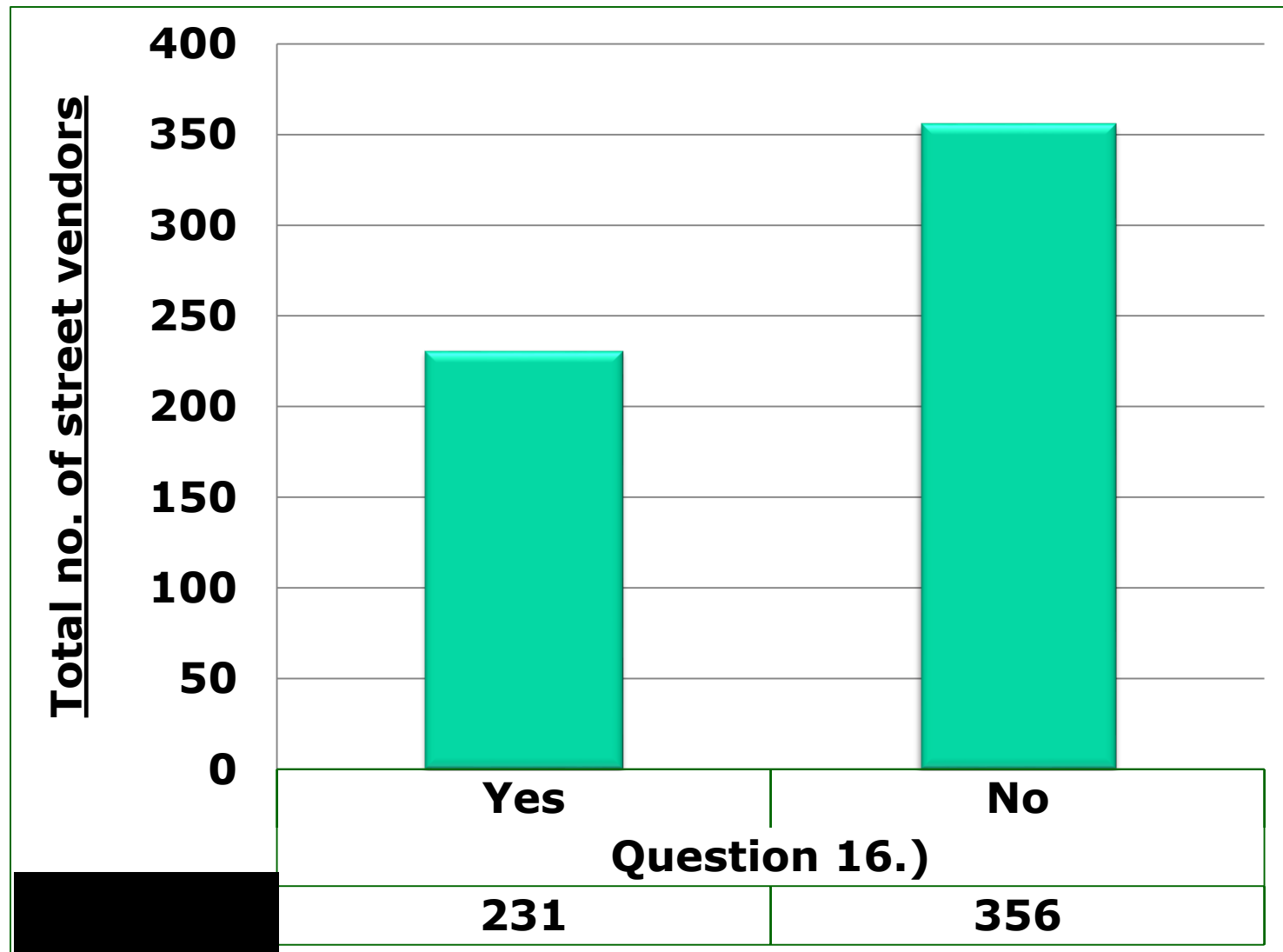
The vending stall should be located in a sanitary place away from unhygienic conditions and should be far from any source of contamination (garbage, waste water, open drains, toilet facilities and animals)



Drains covered/ uncovered ?



Use of Dustbin ?

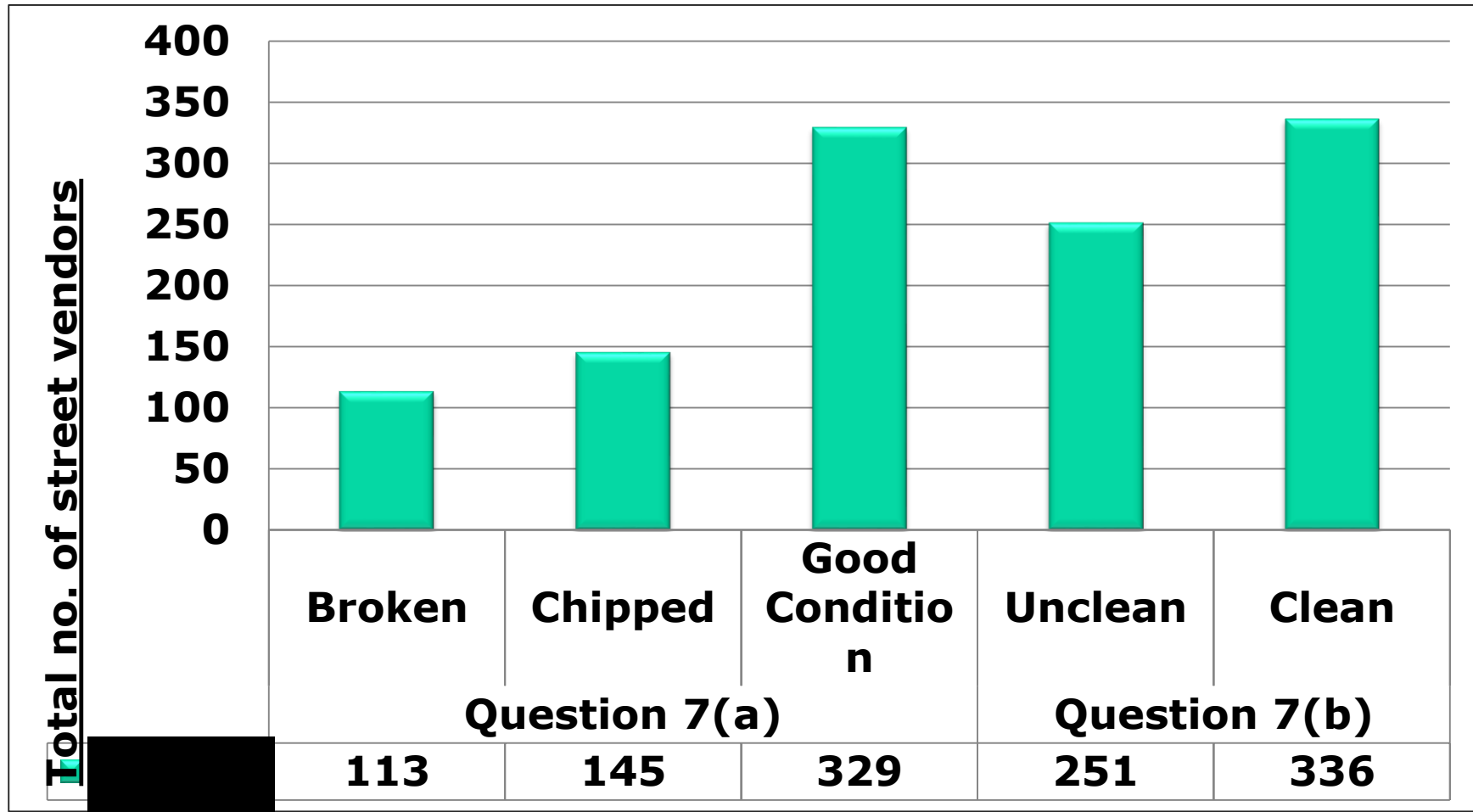


Solid Waste Management

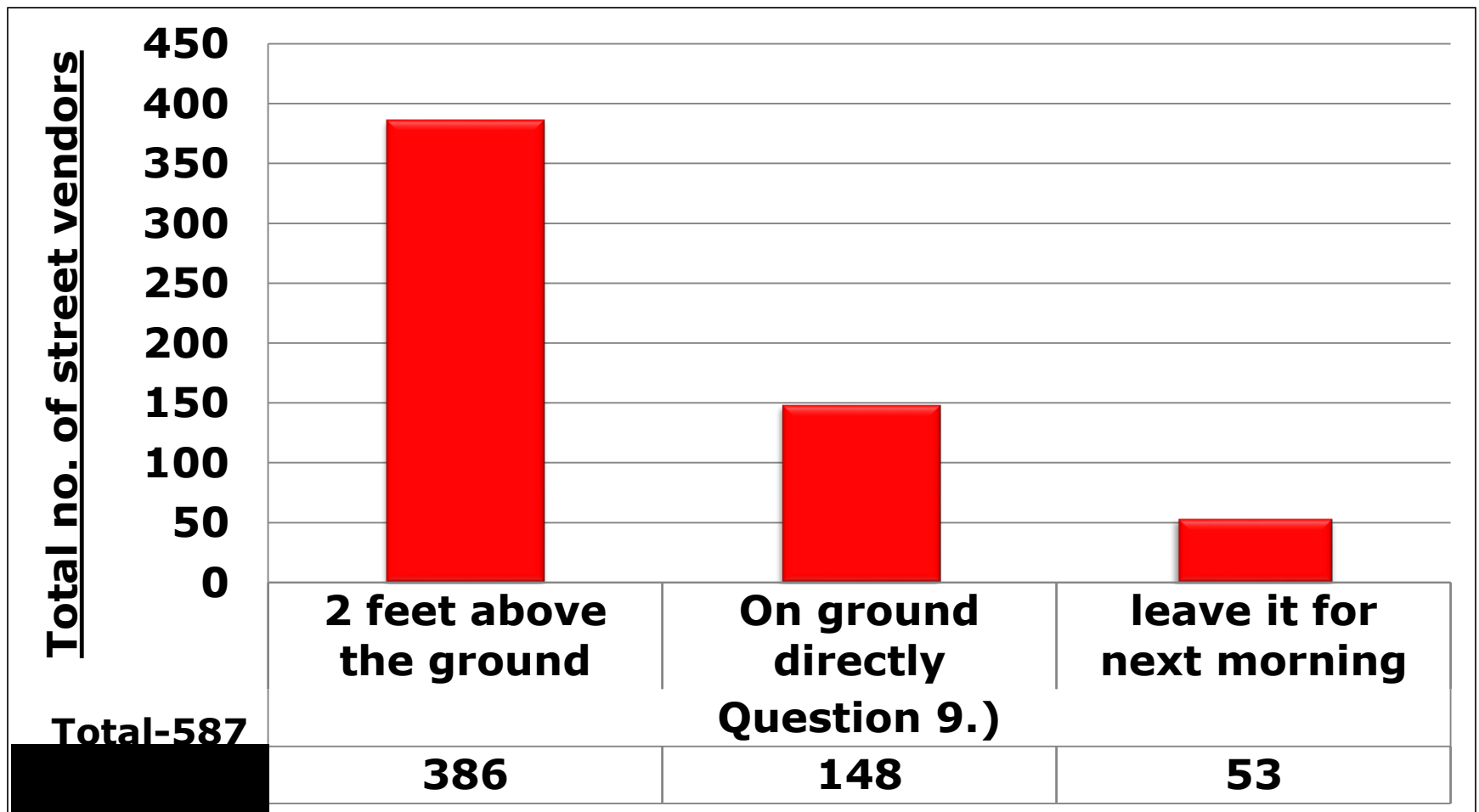


- **0.2-0.5kg** of solid waste is generated **per capita** per day in Indian cities.
- **35 million tons** of municipal solid waste – **every year**
- Lack of **safe disposal of waste**

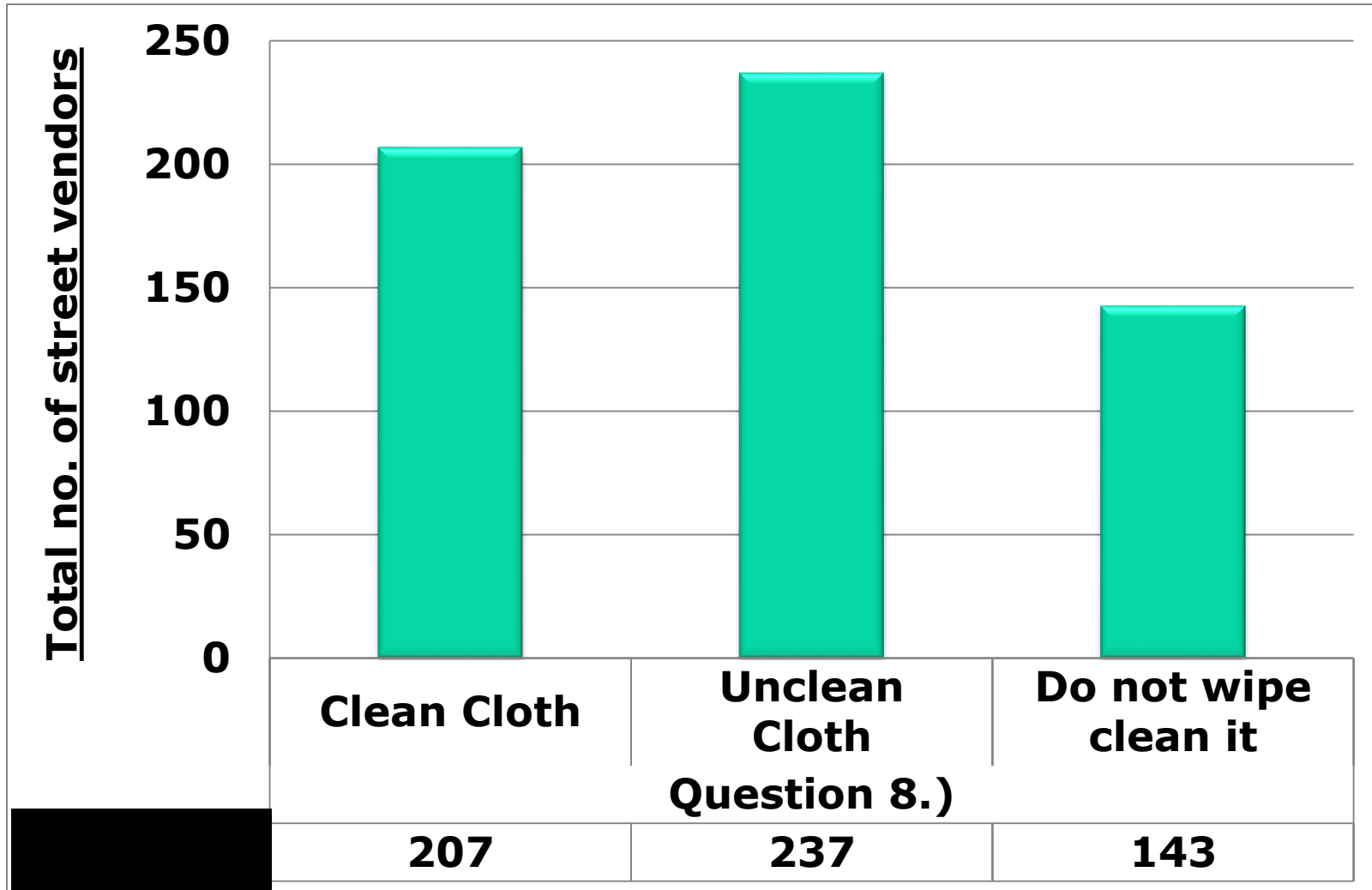
Condition of cooking and serving utensils



Storing of washed utensils



Drying of utensils

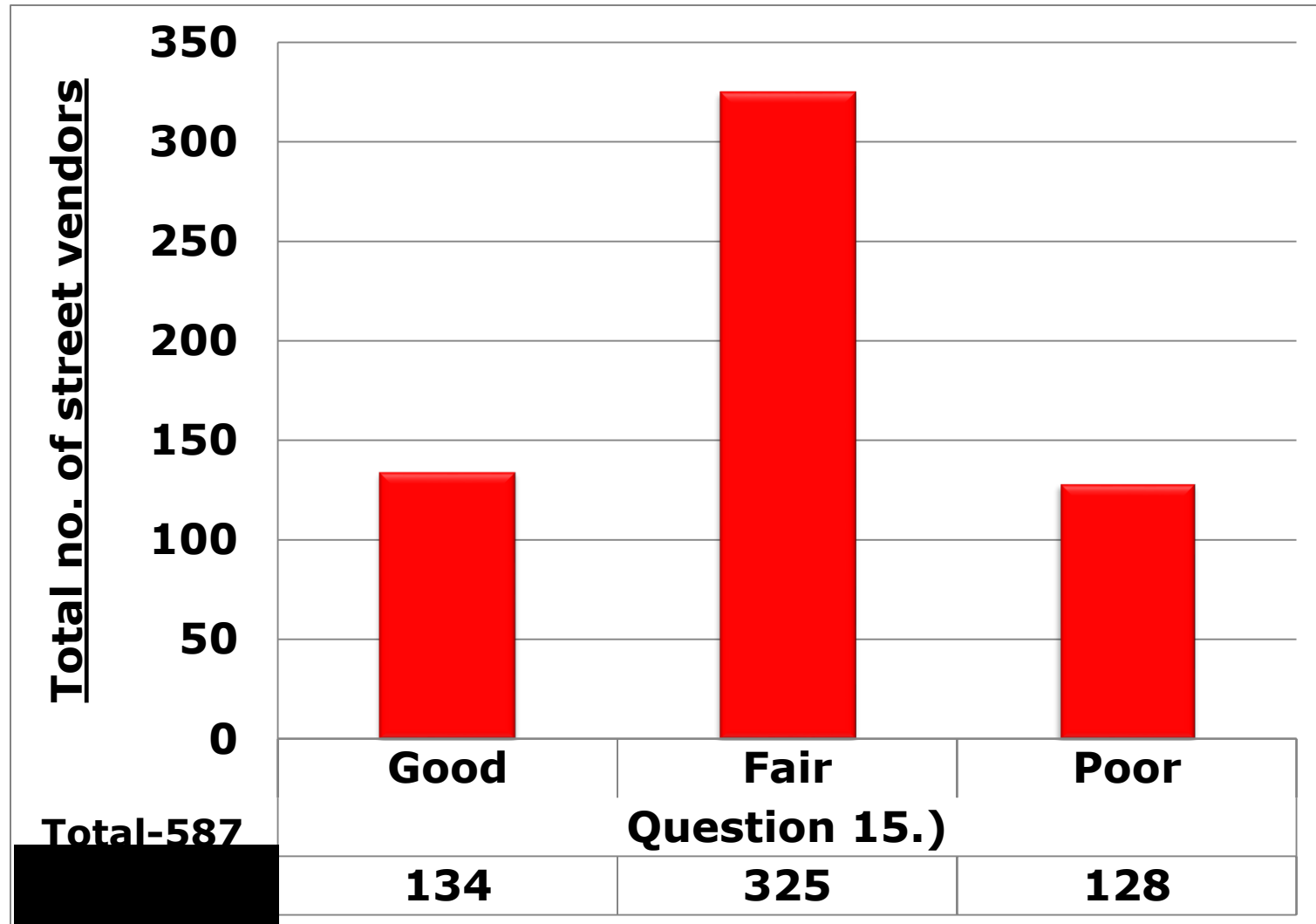


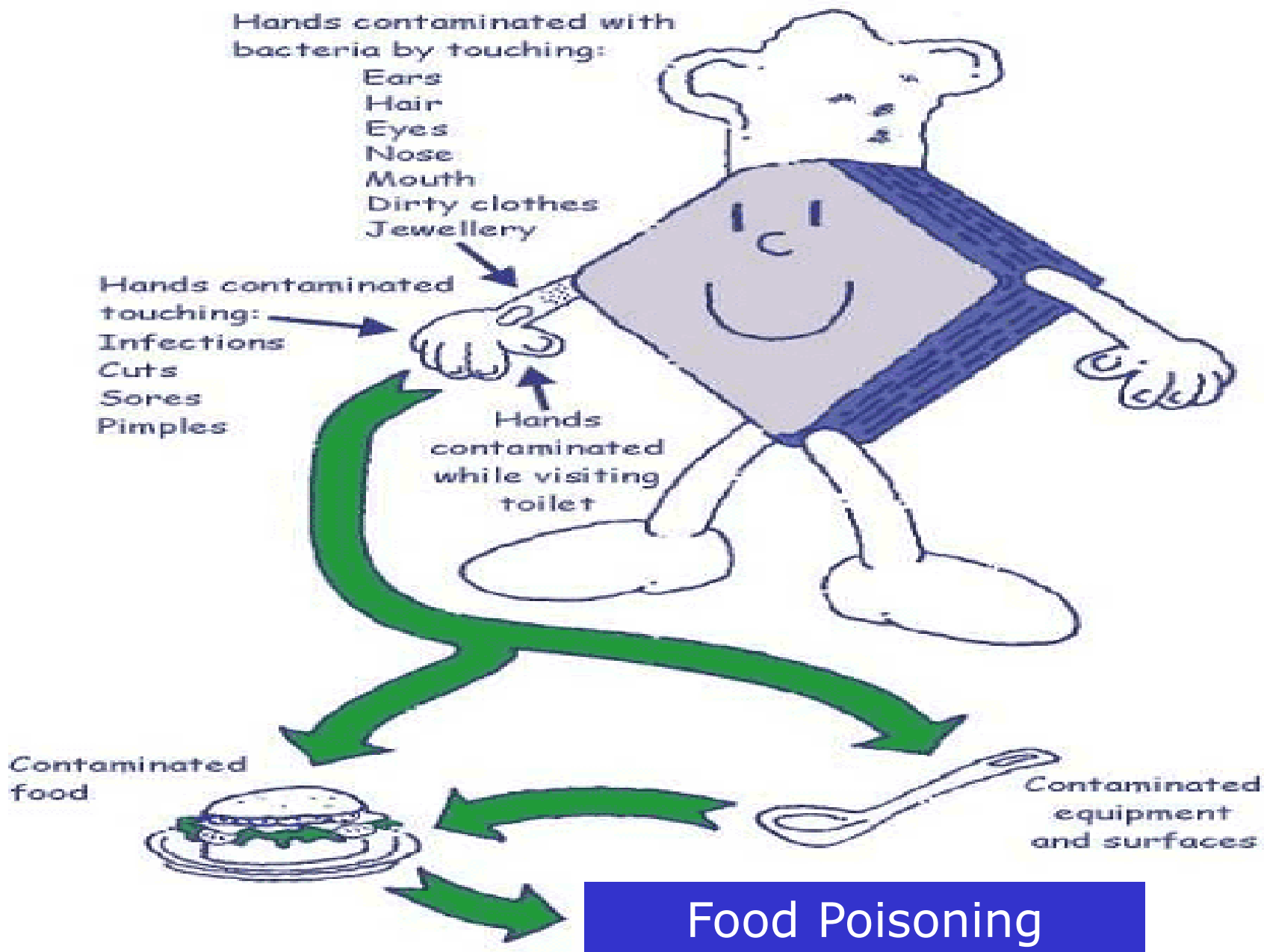
Common unhygienic food handling practices of street foods

- Unhygienic cooking and serving utensils.
- Raw ingredients are not washed well, especially coriander leaves and salad vegetables.
- Food displayed is open to contamination from dust, dirt, flies, customers etc.
- Food is prepared in bulk, many hours in advance and remains in the Danger Zone for long hours.
- Cold storage facilities are inadequate and food is often left open on the ground



Personal hygiene of vendors





Using bare hands to serve food?



Food for thought.....

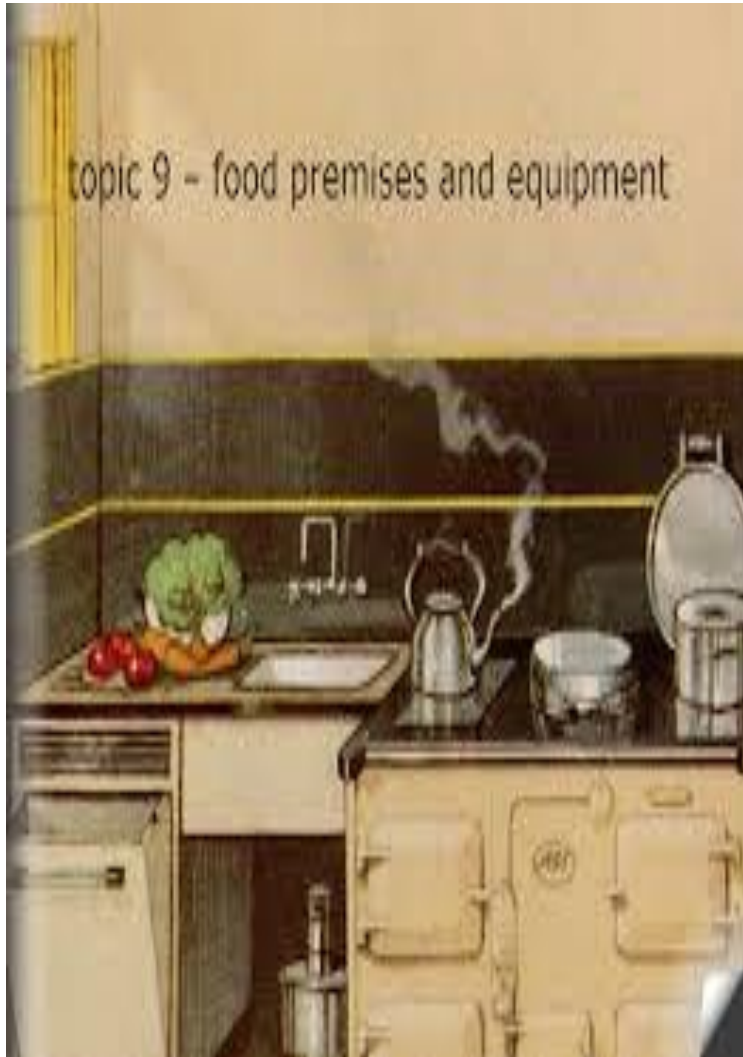
Vendor with skin disease



How safe are foods served on the streets?
Who is safe? The consumer or the vendor?

Unsafe cylinder used for cooking





Hygiene of Food Establishment: Design and Facilities

Introduction

Why is food safety and hygiene important?



To ensure
it is safe!

Potential harm to
anyone consuming it

It's the
law

Loss of
customers
and business

Damage to
reputation

There are very important reasons why we should adopt high standards of food safety and hygiene. Here are some of the main ones.



Did you know?

Harmful organisms can invade the food service establishment through

- Food
- People
- Unsanitary facilities
- Unsanitary equipment
- Disease spreading pests

.....and make them unsafe for humans



Food Establishment: design and facilities

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

- contamination is minimized;
- design and layout permit appropriate maintenance, cleaning and disinfections and minimize airborne contamination;



Kitchen: design and facilities

- Surfaces and materials, in particular those in contact with food, are **non-toxic** in intended use and, where necessary, suitably **durable, and easy to maintain and clean;**
- Where appropriate, suitable facilities are available for **temperature, humidity and other controls;** and
- There is effective **protection against pest** access and harbourage.



Food Establishment: design and facilities

Summary

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



Essential Hygiene Requirements

1. Location of Food Establishments

Our kitchen or food establishments should normally be located away from:

- Environmentally polluted areas and industrial activities that pose a serious threat of contaminating food;
- Areas subject to flooding unless sufficient safeguards are provided;
- Areas prone to infestations of pests;
- Areas where wastes, either solid or liquid, cannot be removed effectively.
- The design and layout of the kitchen should permit good food hygiene practices, including **protection against cross-contamination** while preparing food.



2. Equipment

Equipment should be located so that it:

- Permits adequate maintenance and cleaning;
- Functions in accordance with its intended use;
and
- facilitates good hygiene practices, including monitoring.



Which Material is recommended for Equipment?

- **Stainless steel**

This is durable and recommended for use in the kitchen both for equipment and utensils. It does not react with constituents of food. Easy to clean and maintain.



- **Brass** – Should be tin-plated before use



Which Material is recommended for Equipment?

- **Copper** – Good conductor of heat and saves on fuel. If used for cooking, it should be tin-plated before use to prevent copper poisoning. Store drinking water in copper urns.



- **Tinning of brass and copper utensils** is necessary to prevent copper poisoning. This results when acidic foods are cooked or stored in brass or copper containers which are not tin plated



- **Copper bottom utensils** – Excellent conductor of heat and is used as a base on steel utensils



Materials used for equipment

- **Aluminium** – Light weight, strong and good conductor of heat. Food containers should be ISI grade or made of Hindalium.



- **Iron** – Iron utensils and spatulas contribute significantly to the iron content of food cooked in them. Ideal metal for tawas, kadhai, tempering spoon and spatulas.



- **Non-stick cookware**- It is coated with Teflon, which helps us cook food in very little oil and prevents food from sticking to the pan. Once coating wears out, pan should be discarded.



Materials used for storage

- **Plastic** – Convenient to use for storing commodities and packing food, once food has cooled; and is light in weight. Gets easily discoloured and absorbs odours of food stored in it. The chemical Bisphenol-A (BPA) used in plastics can be carcinogenic.



- **Plastic bags** - The government has imposed restrictions on use of plastics to preserve our health and to conserve the environment. Plastic bags should be at least 8 by 12 inches (20 by 30 cms) in size and 20 microns in thickness. Do not accept smaller bags from shopkeepers or hot foods packed in such bags.



Materials used for storage

- **PET bottles and jars-** Store dry commodities like spices, and grains in them as they are see through and convenient to use.



- **Packaged water bottles-** Are not meant to be reused. Crush bottle after use and recycle. Repeated use of such bottles should be discouraged as they can be carcinogenic.



Materials used for food preparation

- **Wood**- Used for meat chopping blocks, chopping boards etc can absorb stains, odours and moisture if not cleaned and dried properly. Wood is being replaced by polypropylene which is available in different colours to prevent cross contamination.



- **Glass**- Cleanest and safest as it is non-reactive and can be washed sparkling clean. Can be safely used in the microwave oven to cook or reheat food. Handle with care

- **Ceramic jars** -Used for pickles and collecting cream. Keeps the food cool



3. Internal structures and fittings

- The surfaces of walls, partitions and floors should be made of impervious materials with no toxic effect in intended use;
- Walls and partitions should have a smooth surface up to a height appropriate to the operation;
- Floors should be constructed to allow adequate drainage and cleaning;



4. Internal structures and fittings

- **Working surfaces** that come into direct contact with food should be in **sound condition, durable and easy to clean, maintain and sanitize.** They should have **no cracks or crevices for dirt to build-up or pests to hide.**
- They should be made of smooth, non-absorbent materials, and inert to the food, to detergents and sanitizers.
- Stainless steel table tops or naturally occurring stone such as kadappa, granite or marble platforms built into the wall with sealed edges is recommended



4. Internal structures and fittings

- Ceilings and overhead fixtures should be constructed and finished to minimize the buildup of dirt and condensation, and the shedding of particles;
- Windows should be easy to clean, be constructed to minimize the buildup of dirt and, where necessary, be fitted with removable and cleanable insect-proof screens.
- Where necessary, windows should be fixed;
 - doors should have smooth, non-absorbent surfaces, and be easy to clean and,
 - where necessary, disinfect;



5. Air quality and ventilation

Adequate means of natural or mechanical ventilation through ceiling fans, exhaust fans, coolers or air conditioners should be provided in all areas to:

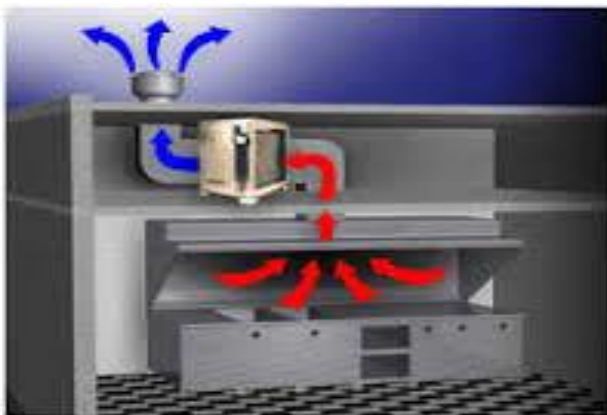
- minimize airborne contamination of food
- control ambient temperatures
- control odours and
- control humidity

An ill-ventilated room not only affects our health and performance, but also promotes multiplication of harmful microbes leading to food spoilage and food poisoning.



Air quality and ventilation

Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas and they should be adequately maintained and cleaned.



The air in Kitchens can be kept free from grease, food odours, cooking fumes and smoke by fitting exhaust fans, chimneys and ventilation hoods over gas ranges and cooking units.

6. Lighting

- Adequate natural or artificial lighting makes dirt visible and facilitates cleaning, enabling us to work in a hygienic manner.
- There should be no gloomy corners or passages where dirt is likely to collect.
- Good lighting in the kitchen to help the food handler see clearly and spot any visible signs of spoilage in food.
- It increases food safety and prevents accidents.
- The light intensity should be adequate with no glare or flicker and minimum shadow to prevent eye strain.
- Lighting fixtures in the kitchen should be protected to ensure that food is not contaminated by breakages.





Cleaning Procedures

Cleaning Procedures

No accumulation of:

- Garbage except in garbage containers.
- Recycle matter except in containers.
- Food Waste
- Dirt
- Greese or
- Other visible matter



How food can become unsafe?

Poor cleaning and sanitizing:

- Equipments and utensils are not washed , rinsed, and sanitized between uses
- Food contact surfaces are wiped clean instead of being washed rinsed and sanitized
- Wiping cloths are not stored in a sanitizer solution between uses
- Sanitizer solution was not prepared correctly



Introduction to Cleaning Facilities

- The food establishment should have adequate facilities, for cleaning food, utensils and equipment.
- Such facilities should have an adequate supply of hot and cold potable water where appropriate.

**To complete
the
dishwashing
process**



Rinse the items in Sink 2



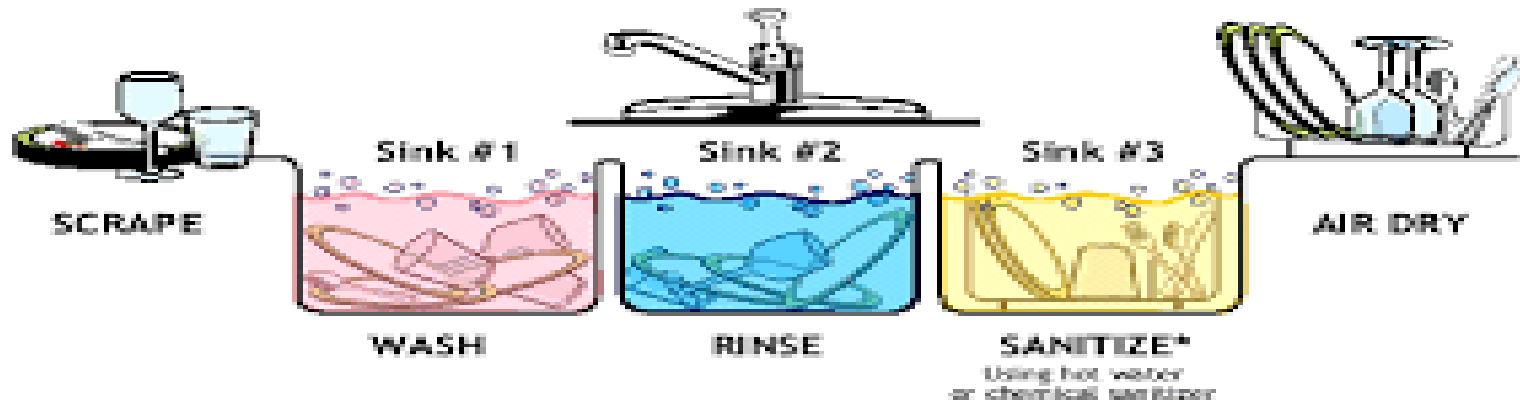
Cleaning Procedures for dishes and equipment

There are three methods to clean all food contact surfaces.

1. THE SINK METHOD – To clean dishes and utensils
2. THE THREE BUCKET METHOD – To clean large equipment
3. THE DISH WASHING MACHINE – To clean crockery, cutlery, glassware and utensils

Dishwashing - 3 sink method

For Multiservice Articles



Cleaning Procedures for dishes and equipment

All methods follow three basic steps:

1. Wash with detergent & scourer
2. Rinse in clean water
3. Sanitize with hot water or chemicals



Cleaning Procedures for dishes

- Scrape and pre-rinse dishes before washing them to remove loose soil
- Wash and scrub in hot detergent water at 52⁰C to melt fat
- Rinse in clean water at 40⁰C till clean to touch
- Sanitize in hot water at 77⁰C for 1 minute or with chemical sanitizer
- Cleaned dishes should be air dried and stored well to avoid contamination.
- Pans and glasses should be stored inverted.
- Food and mouth contact surfaces should not be touched while handling.





Dish cloth and Single service Items



What are Dish cloths?

- Dishcloths are typically square, and are usually made of **cotton** or other absorbent fabric.
- A dishcloth is used in the kitchen to wipe and clean dishes and other surfaces.



How to clean a Dish cloth?

Steps to Clean the Dish cloths:

1. Fill a pot with water.
2. Bring it to a boil.
3. Add the soiled rags to the boiling water.
4. Boil for 15 minutes. The boiling water will kill any mold, mildew, bacteria and germs that may be on the cloths and sanitize them.
5. After boiling, wash and dry as normal.
6. The cloths should always be sanitized and should smell fresh.



SINGLE SERVICE ITEMS

- These are items which are to be used once then thrown away
- Items include:
 - Straws
 - Paper Cups
 - Plastic Cutlery





Waste disposal and Management



What should you feed Ben?



Mixed Paper



**Plastic Containers
(#1-5, 7)**



Cardboard & Boxboard



Metal Cans



Glass Bottles & Jars



Cartons



**Plastic Bags &
Plastic Film**



Shredded Paper



**Styrofoam & Plastic
Utensils**



**Paper Towels &
Tissue Papers**



Toys



Metal Hangers



Diapers



Clothes



What is waste?

Waste can be almost anything, including food, leaves, newspapers, bottles, construction debris, chemicals from a factory, wrappers, disposable diapers, or radioactive materials.



Solid waste are wastes that are not liquid or gaseous

The term solid waste means: Material such as household garbage, food wastes, yard wastes, and demolition or construction debris

Solid wastes are all discarded solid materials from municipal, industrial, and agricultural activities

What is Solid Waste



Objective of Solid Waste Management

The objective of solid wastes management to control, collect, process, dispose of solid wastes in an economical way consistent with the public health protection

Containers for waste disposal

- Containers for waste, by-products and inedible substances should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material.
- Containers used to hold dangerous substances should be identified and, where appropriate, be lockable to prevent malicious or accidental contamination of food.



Disposal of Waste

METHOD OF DISPOSAL	TYPES OF WASTE
Land filling	All types of solid waste
Burial	Garbage, Dead pests
Incineration	Soiled cotton, outdated pesticides
Composting	Garbage, toilet waste
Mechanical (pulpers/compacters)	Soft food waste, dry bulky waste
Vermiculture	Shredded food waste
Biogas	Toilet waste, dung, plant waste
Recycling	Paper, plastic, polythene, glass metal, waste food
Sewers and drainpipes	Waste water, crushed food waste
Soakpits	Waste water
Exhaust fans and chimneys	Strong food odour, smoke, grease



What is vermicomposting?



The peels, stalks, seeds and other inedible or spoilt portions of food can ferment, attract flies and give off a foul odor if it is not disposed off immediately. This organic waste or biomass is bio-degradable and nutrients in the waste can be returned to Mother Nature by a simple process called Vermiculture.

Did you know?

- A special breed of earthworms feeds on our garbage and breaks it down in its gut into simple substances which can be easily assimilated by plants.
- It conserves the humus of the soil by its excreta which is a highly enriched manure containing hundreds of earthworm cocoons to continue the process.
- The burrowing action of the earthworm tills the soil ten times deeper than the traditional plough.
- Fruits and vegetables grown on such soils are healthier, tastier and more nutritious than those grown on farms fertilized by chemical fertilizers.
- Such foods are called 'Organic' and fetch a higher market price.



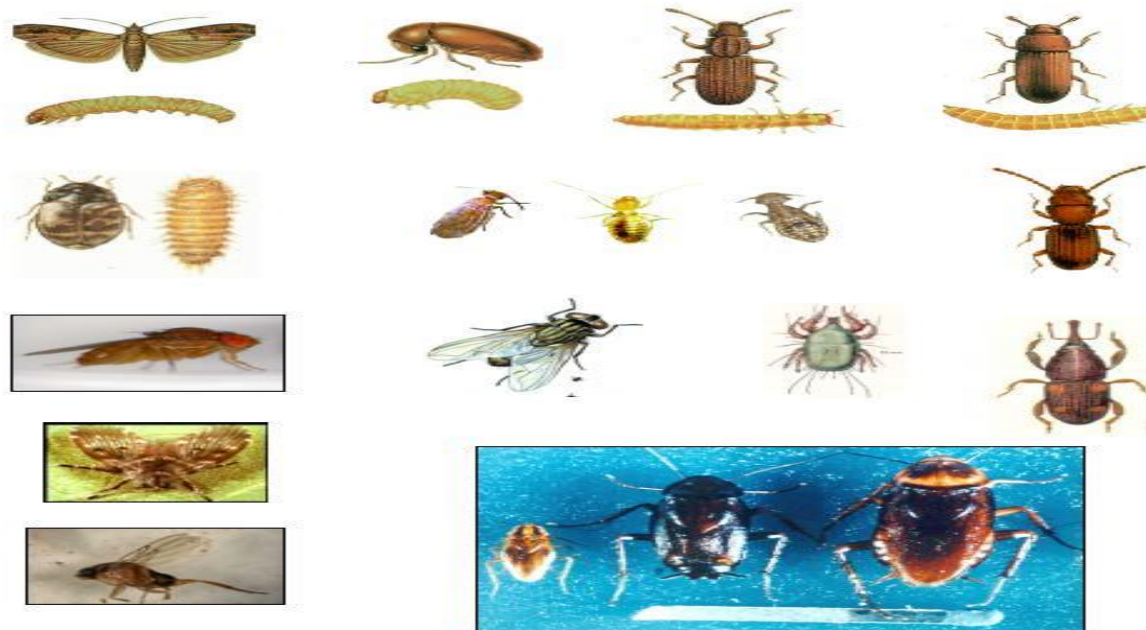


Pest control & Management



What are Pests?

STORED PRODUCT PESTS, COCKROACHES AND OCCASIONAL INVADERS



Any animal, plant or microorganism that causes harm or damage to people or their animals, destroy their crops . A pest is an organism that causes an epidemic disease in humans which is associated with high mortality. Insects, mites, ticks (and other arthropods), mice, rats, and other rodents, slugs, snails, nematodes, cestodes/ tapeworms.

Do not let the fly have its meal before you



1. Flies cannot chew solid food so they vomit on food to liquefy it. They suck up the liquid vomit containing harmful microbes.

2. While feeding they drop excreta which contains pathogens. Fly specks include light drops of vomit and dark particles of excreta
3. They have sticky hair on their limbs which helps them carry bacteria from one place to another



Stored Grain Pests



They attack and destroy stored grains making them inedible causing heavy losses

ACTIVITIES



ACTIVITY 1

Match the items in column 1 with an appropriate answer from column 2.

	Column 1		Column 2
1	Brass utensils without tin plating	A	Good source of iron in food
2	Aluminium cooking utensils	B	Used in microwave ovens
3	Stainless steel	C	Durable and non-reactive
4	Empty Bisleri bottles	D	Copper poisoning
5	Copper bottom utensils	E	Should have ISI mark
		F	Absorbs stains, odour and moisture
		G	Improves conduction of heat
		H	Should be crushed and recycled



ACTIVITY 1- with answers

Match the items in column 1 with an appropriate answer from column 2.

	Column 1		Column 2
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ACTIVITY 2

Put a ✓ tick mark on the correct statements

1. Floors and walls in kitchens need not be tiled.
2. All windows in a kitchen should have removable and cleanable insect-proof screens.
3. There should be no cracks and crevices in equipment and work surfaces.
4. Work table tops in a kitchen should be made of aluminium.
5. Food preparation area should be away from garbage dumps



ACTIVITY 2- answers

Put a ✓ tick mark on the correct statements

1. Floors and walls in kitchens need not be tiled.
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3. There should be no cracks and crevices in equipment and work surfaces. ✓
4. Work table tops in a kitchen should be made of aluminium.
5. Food preparation area should be away from garbage dumps ✓



ACTIVITY 3

Put a ✓ tick mark on the correct statements

1. The air in a crowded room needs to be kept circulating
2. A poorly ventilated room can give us a headache and make us irritable
3. Ventilation hoods give us cool fresh air
4. If natural light and natural ventilation is there in a busy kitchen, no artificial lighting or ventilation is needed
5. Equipment which is difficult to assemble and reassemble should not be cleaned often



ACTIVITY 3- answers

Put a ✓ tick mark on the correct statements

1. The air in a crowded room needs to be kept circulating ✓
2. A poorly ventilated room can give us a headache and make us irritable ✓
3. Ventilation hoods give us cool fresh air
4. If natural light and natural ventilation is there in a busy kitchen, no artificial lighting or ventilation is needed
5. Equipment which is difficult to assemble and reassemble should not be cleaned often



ACTIVITY 4

Match the items in column 1 with an appropriate answer

	Column 1		Column 2
1	Cleaning the refrigerator	A	Single sink method
2	Cleaning glasses & plates in a 5 star hotel	B	Fortnightly
3	Cleaning classroom	C	Dusting and damp dusting
4	Cleaning Furniture	D	Three bucket method
5	Cleaning cupboards	E	Using an abrasive cleaner
		F	Dishwashing machine
		G	Sweeping and mopping
		H	Wiping with a dish cloth



ACTIVITY 4- with answers

Match the items in column 1 with an appropriate answer from

Column 1	Column 2
1 Cleaning the refrigerator	A Single sink method
2 Cleaning glasses & plates in a 5 star hotel	B Fortnightly
3 Cleaning classroom	C Dusting and damp dusting
4 Cleaning Furniture	D Three bucket method
5 Cleaning cupboards	E Using an abrasive cleaner
	F Dishwashing machine
	G Sweeping and mopping
	H Wiping with a dish cloth



ACTIVITY 5 with answers

How should you ideally dispose off the following single service items:-

- Bisleri water glasses - (Crush and recycle)
- Leaf plates – (Vermi-compost /Biogas)
- Plastic spoons – (Recycle)
- Aluminium disposable cartons – (Collect separately, Crush and recycle)



Activity 6

MAKING VERMICOMPOST IN THE SCHOOL/HOME

Material Required: a pit or a medium sized bin, a handful of vermicastings, brickbat, soil, garden waste, food waste

Method: Make a small hole at the bottom of the bin and put a layer of brickbat to make it self draining.

- Half fill the pit/bin with garden soil to which vermicastings have been applied.
- Each student should take turns to shred the food waste, spread it in a thin layer on the designated pit, cover the food waste with garden waste(dry leaves collected after sweeping the yard, weeds, twigs etc.) and sprinkle water on top.
- Keep repeating thin layers of food waste and garden waste.
- Sprinkle water on top to keep the soil moist.
- The earthworm cocoons hatch and worms feed on organic waste converting it to compost within a few months.
- Vermiculture can also be done in existing potted plants.





EU-India Capacity Building Initiative for Trade Development (CITD)



Thank you

