

MODULE 3

HYGIENE OF FOOD PREPARATION AND VENDING PREMISES AND EQUIPMENT

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TRAINING OBJECTIVE

The objective of this module is to familiarize trainees with the rules of hygiene for street food preparation and vending premises and to encourage the application of those rules.

It deals with two of the five sources of food contamination. Having studied raw materials (module 2), this module focuses on the food preparation environment and the equipment.

Street food preparation and sale can in practice occur in the same place (especially on stationary food preparation/vending sites) or in different locations. The rules of hygiene are similar in both cases.

On completion of this module, street food operators should be able to:

- understand the principles of hygiene that determine the selection, location and organization of their place of work;
- determine the equipment and utensils required for the preparation and sale of food;
- understand the different methods of sanitizing and maintaining the equipment and workplace;
- understand the relevance of using specific equipment and applying rules of hygiene to ensure food safety.

KEY WORDS

Perishable food – Disinfection – Wastewater – Food hygiene – Refuse
Utensil/Equipment – Cleaning – Dishes – Pests – Pesticides – Food safety.

3.1. 3.1. FOOD PREPARATION ENVIRONMENT

The preparation and sale of street food should take place in a hygienic and well organized setting. Observing good rules of hygiene in the design, building and organization of the workplace helps to deal effectively with potential hazards and to ensure food safety.

A. ENVIRONMENTAL HYGIENE AND LOCATION OF PREPARATION AND VENDING PREMISES

Depending on the nature of the food preparation and vending operations and associated risks, the premises and utensils should be designed and fitted in such a way that:

- they are easy to maintain and disinfect;
- food contamination is kept to a minimum.

Observing of rules of hygiene in the design and building of the workplace, selecting an appropriate location and installing adequate facilities are necessary for keeping potential hazards at bay.

Street food preparation and vending sites should be at least 15 metres from refuse dumps and latrines.

Street food operators should keep the following basic principles in mind:

- the food should be prepared in a clean and well lit area, sheltered from sun, dust and wind, and far from all sources of contamination, such as solid waste, domestic animals, insects, rodents, etc.;
- fixed or mobile vending points should be located in an area where the risk of contamination from refuse, wastewater and other harmful or toxic substances is nil or minimal. If that risk cannot be totally eliminated, the displayed food should be covered and protected from contamination.

B. ESTABLISHMENT AND ORGANIZATION OF WORK PREMISES

A good location and organization of workplace are essential to ensure hygienic street food preparation and vending premises. Street food operators should keep the following principles in mind:

- the point of sale should not obstruct traffic or pedestrians and should not expose customers to road traffic or other hazards;
- the point of sale should be designed and installed for easy cleaning and maintenance;
- the place used for the preparation and sale of food should not also serve as accommodation or for storage of non-food products;
- the workplace should be orderly, with the raw materials and ingredients carefully placed on a clean kitchen table or counter;
- the food should be prepared in a clean and well kept place, sheltered from dust, sun, rain and wind, and far from all sources of contamination, such as solid waste (vegetable and fruit peel, leftover food, etc.) and liquid waste (wastewater, fish and meat fluids);
- the presence of domestic animals and unnecessary and potentially dangerous objects should be avoided;
- displayed food should be covered and protected from contamination;
- disorder should be avoided in the work area;

- the workplace should be organized in such a way that waste disposal is far from the cooking area;
- cleaning equipment (brooms, buckets, mops, etc.) that is often dirtied should be kept away from the work area;
- raw materials bought at the market should be unwrapped and carefully stowed away.

The work area should be kept clean by:

- removing dustbins, bags, wrapping and large waste;
- avoiding sweeping the floor in a dry state as this can raise dust which contaminates the food;
- regularly repairing damage to the floor;
- after food preparation, disinfecting the floor with chlorinated water (Annex 1).

C. PEST CONTROL

Pests (mice, cockroaches, termites, etc.) are a major threat to food safety and sanitary quality. Pest infestation can occur when there are breeding grounds and a source of food. Good hygienic practices should be adopted to avoid creating an environment favourable to pests. Good sanitization, inspection of raw materials and surveillance can minimize the risks of infestation and therefore limit the use of pesticides (insecticides, raticides, etc.). Pests should therefore be kept away from food preparation and vending sites.

▶ How to keep pests out:

- Food preparation and vending sites should be constantly kept clean and in good condition to eliminate potential breeding grounds.
- Openings and channels of access for pests should be protected or closed.
- To the extent possible, animals should be excluded from food preparation and vending sites.

▶ How to avoid attracting pests:

- The presence of food and water attracts pests. Food likely to attract pests should be placed in sealed containers, raised from the ground and stored away from walls. Areas inside and outside places with food should be kept clean.
- Waste should be kept in containers with lids to block access to pests.
- The presence of pests should be regularly checked in neighbouring premises and areas.
- Pest infestation should be promptly dealt with. Chemical, physical or biological treatment should be applied without risking food safety.

LEARN MORE

Streetfood centres:

It is possible to group street food vendors in specially designed centres. Grouping them makes it possible to provide common utilities and facilities (clean water, electricity, waste disposal, drains, toilets, parking area). It also means that shared equipment can be provided from a central point and cleaned there.

The rules on food hygiene that apply to open air markets and, in certain respects, to restaurants and fixed stalls, would apply to such centres.

D. WASTE MANAGEMENT

Humans produce all kinds of refuse when trading. Without care, that refuse can endanger consumer health. It is in fact a major source of contamination of food products and food preparation and vending premises.

Effective measures are therefore needed for the hygiene and sanitation of food preparation and vending sites and raw material and ingredient storage areas to prevent the contamination of food and surroundings. Good waste management is required in the form of their proper treatment and removal. Waste treatment and disposal systems should prevent food contamination from waste and from workers handling that waste. All waste should be handled and removed in such a way as to prevent the contamination of food, water and environment. Special care should be taken to keep insects, rodents, dogs, cats and other animals away from food waste.

Contamination of food, water and environment can be avoided by putting waste in waterproof covered bins. Care should be taken that the bins are not allowed to overflow and are emptied daily. To the extent possible, liquid waste, such as wastewater, should be separated from solid waste.

Liquid waste (except oils and fats) should drain into a sewer through a device (e.g. filter) that retains any solids present. Fatty waters should be eliminated by appropriate means, such as grease tanks. Solid waste should be placed in closed dustbins that are emptied at least once a day into the municipal refuse skip.

GOLDEN RULES

The following rules of hygiene will ensure good waste management:

- never throw food waste on the ground to avoid attracting insects, rodents and domestic animals (cats and dogs);
- eliminate solid and liquid waste separately;
- clean private refuse bins every day;
- prevent animals licking plates and utensils used in food preparation and sale.

3.2. FOOD PREPARATION AND VENDING EQUIPMENT AND UTENSILS

A. EQUIPMENT AND UTENSILS REQUIRED

The utensils used for preparing street food can be divided into two types: traditional and modern. The utensils are simple and are often the same as the ones used in the home.

▶ Traditional utensils

These are designed and made by local artisans. They include:

- implements to clean, peel and wash raw materials: winnowing basket, knife, gourd;
- implements for grinding and grating: hand-grater, pestle and mortar; grinding stone;
- implements for fermentation, decantation, sieving and filtration: jar, flask, sieve, basket, cloth;
- Utensils for mixing, kneading, extraction and cooking: earthenware or cast-iron cooking pot, wooden or clay tub, couscous pot, wood or cast-iron ladle, clay stove.

▶ Modern utensils

These are generally made of metal or plastic and include:

- basin, bucket, bowl, pan, sieve, skimmer, frying pan, strainer, plate, cup, fork, spoon;
- plate or hammer mill, mechanical grater, press;
- cookers, ovens, ...

Much of this equipment is still imported from Europe, US or Asia and is expensive. It is nevertheless gradually replacing the traditional utensils.

Utensils used for food preparation and sale should not be used for anything else. Utensils (pans, pots, etc.) should be kept clean. They should be made of materials that do not release toxic or dangerous substances (copper lead, etc.) into food or beverages, especially when these are acidic. The use of stainless steel, for example, is recommended.

Utensils should be in good condition and should have no hollow, groove or protrusion so they can be easily cleaned. Dented equipment and old utensils with damaged surfaces should be avoided, as these are more difficult to clean properly and become breeding grounds for microbes. For cleaning, it is better to use brushes than cloths and sponges which are themselves difficult to clean properly. For the same reasons of hygiene and sanitation, cooked and uncooked foods should be handled with different utensils.

Cutting boards should be kept in good order and without cracks, so they can be easily cleaned. A special board should be reserved for raw meat. A plastic cutting board is much easier to clean and keep in good order than a wooden board, which is difficult to clean properly.

Each vendor/handler should make sure that defective, damaged, cracked, rusty, chipped and generally unsuitable utensils and dishes are thrown away.

B. MAINTENANCE AND STORAGE OF EQUIPMENT

The good maintenance and proper storage of equipment and utensils used for food preparation and sale are essential for food safety. Bowls and plates should be turned upside down when not in use to avoid catching dust and foreign bodies. They should also be dried on a raised rack after washing and rinsing in clean water (**Illustrations 3.1, 3.2, 3.3 and 3.4**).

Recipients with table condiments should be kept clean and protected from pests. Washed and clean utensils and dishes should be handled, stowed and, for itinerant vendors, carried separately from dirty utensils and dishes and other sources of contamination.

GOLDEN RULES

- For the preparation and sale of street food I must use utensils that will not corrode, that can be repeatedly cleaned and disinfected, and that are made of materials that do not release toxic substances, such as stainless steel.
- All my cooking, serving and eating utensils (pots, pans, dishes, knives, forks, spoons, etc.) must be kept constantly clean. I wash them by hand as they are used in water and detergent and rinse them with clean water. They should also be treated with chlorinated water and again rinsed with clean water to avoid contamination (Annex 2).
- Washed boards, plates, pans and other recipients should be turned upside to dry and to avoid catching dust and foreign bodies.
- I regularly replace dented, cracked, scratched and rusty utensils to prevent them from becoming havens for dirt and breeding grounds for microorganisms.
- My dishes are washed in a different area to the food preparation area.
- Washed utensils are stowed in a clean area protected from pests.

LEARN MORE

CLEANING AND DISINFECTING

Cleaning removes food residues that can be sources of contamination. Cleaning methods and implements vary according to type of food, and disinfection might be needed after cleaning.

Cleaning can be done separately or jointly with physical treatment, including heat, scouring and suction and chemical treatment using the properties of detergents, acid or alkaline solutions.

Cleaning entails:

- removing visible surface residues;
- applying a detergent solution to remove dirt and bacterial film and to keep these in solution or in suspension;
- rinsing with clean water to remove detached dirt and detergent residues;
- disinfecting, then rinsing;
- draining or drying.

As a general rule, thorough decontamination of cooking utensils requires cleaning with detergent (washing-up liquid, special soap) and disinfecting with disinfectant (chlorinated water, commercial acid or alkaline products). There are products that combine cleaning with disinfecting, but for street foods we recommend using detergent for dishes followed by immersion in relatively strong chlorinated water (see the technical sheet on chlorinate bleach: **Annex 1**).

Application of a cleaning and/or disinfecting product should follow four conditions that can be remembered as TACT (mnemonic technique to help trainer recall: Temperature, Action, Concentration and Time);

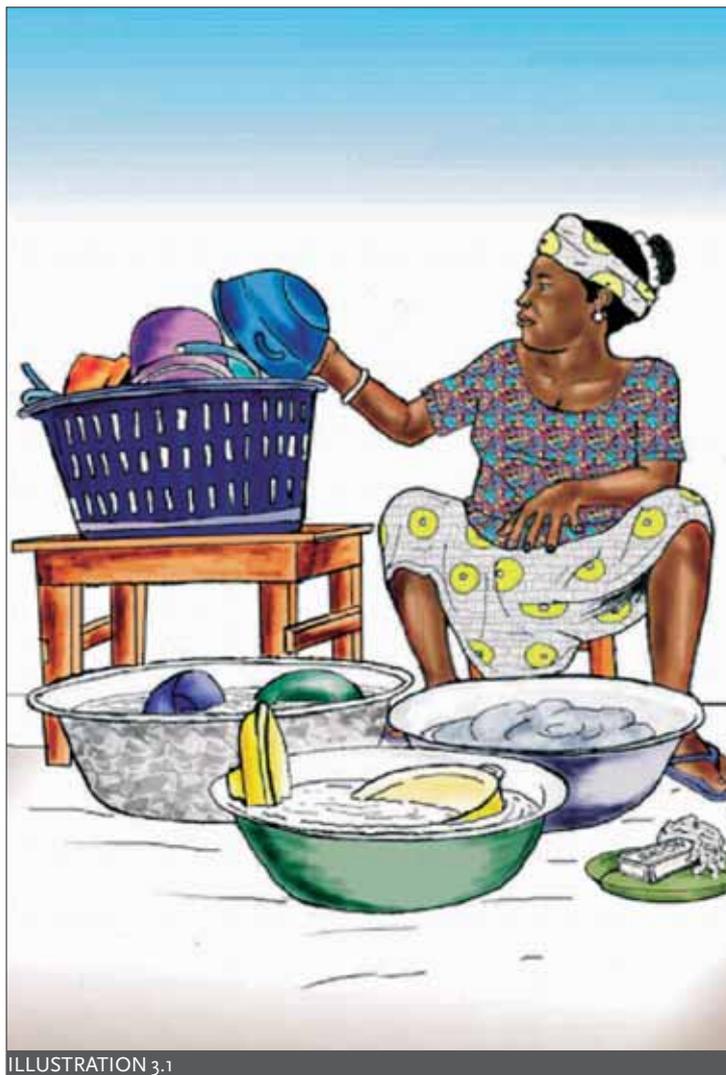
- the product should be diluted and placed in contact with the utensil in water at a specific **Temperature** (often indicated on the label). The instructions for use need to be observed as a product acts differently in cold and hot water;
- soaking should be accompanied by **Action** in the form of energetic brushing to remove dirt and enable the product to act on all parts;
- the product should be used at a certain **Concentration**, often indicated on the label (see instructions for chlorine bleach: **Annex 1**);
- the utensils should be left to soak for a given **Time** (as recommended by the manufacturer).

Exercise 3

1. How can we organize the monitoring and detection of pests?
2. How can we eliminate pests without the risk of food poisoning?

DESCRIPTION

A woman draining her dishes in a raised plastic basket (practice to be encouraged).



MESSAGE

After washing and rinsing in clean water without detergent, I dry my dishes in a raised plastic basket.

DESCRIPTION

In clean surroundings, a woman washes her dishes in a basin of soapy water. She has two other basins with clean water for rinsing. There is also a dish with a bar of soap (**practice to be encouraged**).

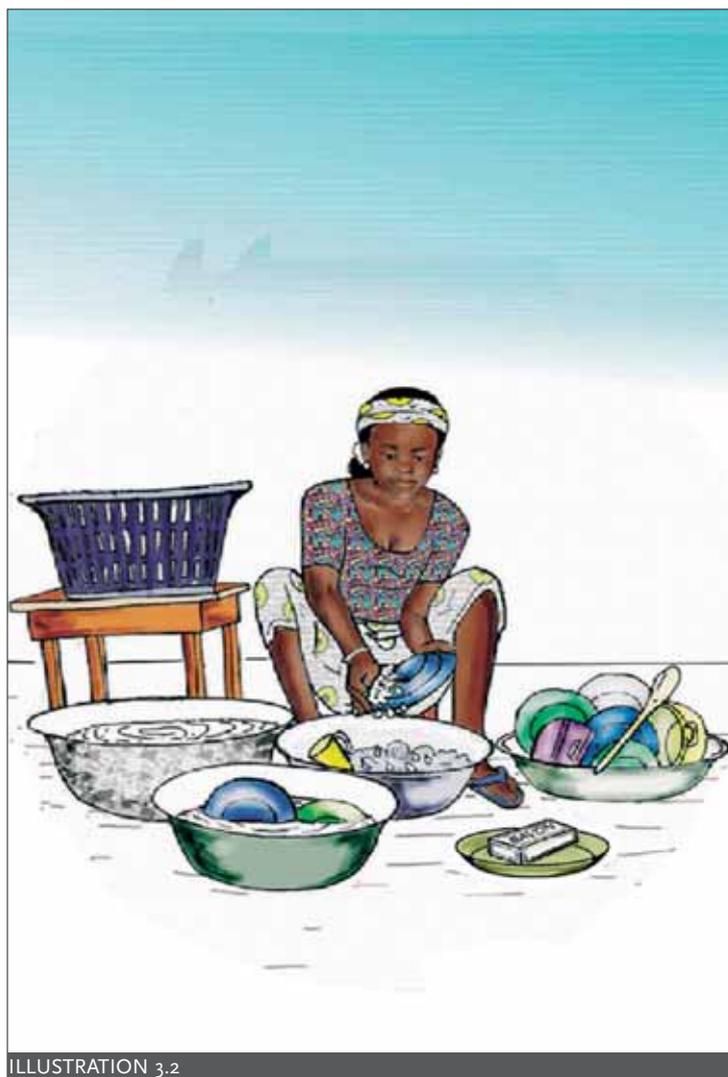


ILLUSTRATION 3.2

MESSAGE

I always avoid washing up in unclean surroundings to reduce microbial contamination. After washing, I rinse my dishes in two basins of clean water.

DESCRIPTION

A woman carefully ordering her cooking utensils to make best possible use of space; the cutting boards and saucepans are hung from nails in the wall; the dishes are stacked in plastic mesh baskets (**practice to be encouraged**).



ILLUSTRATION 3.3

MESSAGE

Carefully order your cooking utensils and lids to have more space in your kitchen.

DESCRIPTION

A woman washing up on the ground in unhygienic conditions (practice to be discouraged).



ILLUSTRATION 3.4

MESSAGE

I avoid washing up in unhygienic surroundings to reduce microbial contamination.

MODULE 4

PERSONAL HYGIENE AND HYGIENIC METHODS AND PRACTICES IN THE STREET FOOD SECTOR

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TRAINING OBJECTIVE

This module deals with the two last areas of potential contamination: risk relating to workers (personnel) and practices (methods and techniques of food preparation). Even if the hygiene rules applying to raw materials, the environment and conditions of food preparation, preservation and distribution are observed, there is still no assurance of sanitary quality and safety of end product because the vendor or handler may be unaware of the basic rules of hygiene applying to their person, conduct and work methods.

The objective of this module is to provide trainees with basic notions of hygiene concerning their person, conduct and work methods.

On completion of this module, street food operators should:

- be familiar with the notions of hygiene associated with food preparation and sale;
- master the principal notions of personal hygiene, hygienic clothing and proper conduct recommended for street food handlers;
- apply the rules of hygiene for street food handling and sale.

KEY WORDS

Street food – Food hygiene – Contamination – Bacteria – Food handler
Food safety – Dishes.

4.1. PERSONAL HYGIENE

The safe handling of street food calls for the application of rules of hygiene of person, clothing, conduct and practices.

Persons who do not meet an appropriate level of personal cleanliness, who have certain infections or who behave improperly can contaminate food and transmit diseases to consumers.

A. PERSONAL HYGIENE

A street food handler should be clean and keep his person clean throughout the food preparation and sale process so as not to taint the food. He should immediately cease activity when affected by diarrhoea or vomiting or when incurring boils, injuries or lesions on exposed skin.

Women street food vendors should avoid brushing their hair or arranging their braids or earrings on the premises (**Illustration 4.1**).

It is difficult to get workers to report health problems if they think they will be penalized (loss of wages, etc.). The employer needs to fully understand the importance of taking a sick employee off food preparation and vending duties. That employee could instead be temporarily assigned to other work not involving direct contact with food. An agreement to that effect will encourage the reporting of health problems.

B. HYGIENIC CLOTHING

Street food handlers should wear appropriate clean clothing that does not trail in the food. They should also wear a clean apron, preferably white or light in colour (**Illustrations 4.2, 4.3**).

It is important to distinguish between work clothes and normal clothes. The beginning of the workday should be marked by a change in clothing. Work clothes should be clean so the food is not tainted during preparation. There should be arrangements with employees for work clothes to be systematically washed after the day's work. Work clothes should preferably be light in colour, which makes it easier to check their cleanliness. The clothes should help the handler not to contaminate the food he is preparing and should therefore not trail in the food, hamper movement, or have pockets from which objects can fall into the food.

Hair is another source of contamination, so hair should be kept very short or should be covered with a clean headscarf.

Gloves are also recommended as they are easier to clean and disinfect than the skin of the hand, which is rough and can harbour microorganisms under the nails. However, gloves also need to be washed, like hands, especially if in contact with money or objects that can contaminate food. Wearing gloves does not mean disregarding the suggestions for general hygiene. It is, however, unusual to see gloves worn in the street food sector.

Visitors admitted to food preparation or handling areas should wear clean clothing and observe the other rules and practices of good hygiene.

DESCRIPTION

A woman having her hair done while serving food
(practice to be discouraged).

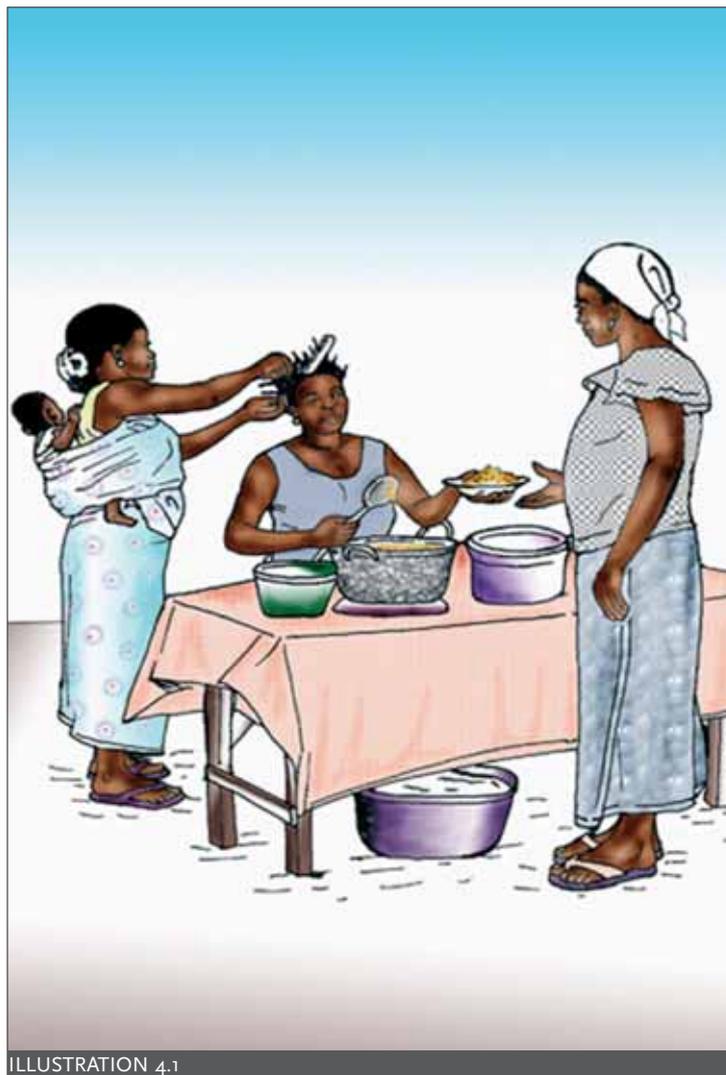


ILLUSTRATION 4.1

MESSAGE

For my personal hygiene and the safety of the food I sell, I make sure I am clean and avoid doing my hair where the food is prepared and sold.

DESCRIPTION

A woman wearing clean clothing, an apron and headscarf. Her assistant is also very clean (**practice to be encouraged**).



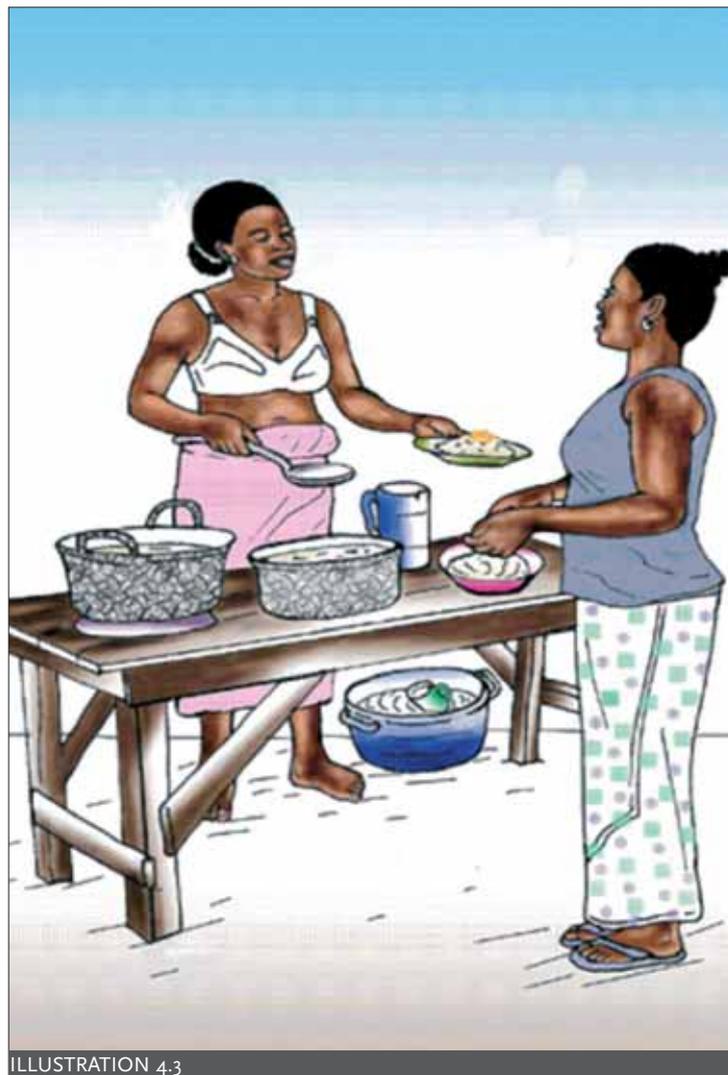
ILLUSTRATION 4.2

MESSAGE

Where food is prepared and sold, a vendor should always be clean and properly dressed to avoid contamination.

DESCRIPTION

A woman serving food while improperly dressed
(practice to be discouraged)



MESSAGE

I should not be dirty or improperly dressed to avoid contaminating the food I am selling.

C. HYGIENIC CONDUCT

All food handlers should wash their hands with soap and water:

- after handling raw products;
- after touching cooked food;
- after going to the toilet;
- after touching dirty objects such as a dustbin or money;
- after being in contact with toxic substances, such as pesticides.

The food handler should refrain from all unhygienic practices during the preparation and sale of food and will especially avoid:

- tasting food directly from the ladle (**Illustrations 4.4 and 4.5**);
- smoking or chewing tobacco, chewing betel or chewing-gum or picking his teeth;
- serving customers with his hand (**Illustrations 4.6 and 4.7**);
- chatting during the transaction (**Illustration 4.8**);
- touching his mouth, tongue, nose, eyes, etc., during food preparation and sale;
- spitting, blowing his nose, sneezing or coughing above or near the food (**Illustration 4.9**).

GOLDEN RULES

- It is forbidden to eat in the kitchen when it has not been fitted for that purpose.
- Operators should carefully wash (e.g. take a shower) in the morning before work and in the evening after work.
- It is essential to wear work clothes and head covers (scarves, caps); wearing gloves is recommended for food handling operations.
- Efforts should be made to wash work clothes every day.

DESCRIPTION

A woman directly tasting a sauce (or other food) from the cooking spoon (practice to be discouraged).



ILLUSTRATION 4.4

MESSAGE

To avoid contamination, do not directly taste the food you are preparing from the cooking or serving spoon.

DESCRIPTION

A woman tasting food placed in the palm of her hand
(practice to be encouraged).



ILLUSTRATION 4.5

MESSAGE

Taste sauces (or other food) from the palm of your clean hand.

DESCRIPTION

A woman using her bare hand to serve customers (**practice to be discouraged**).
The customer objects (**practice to be encouraged**).



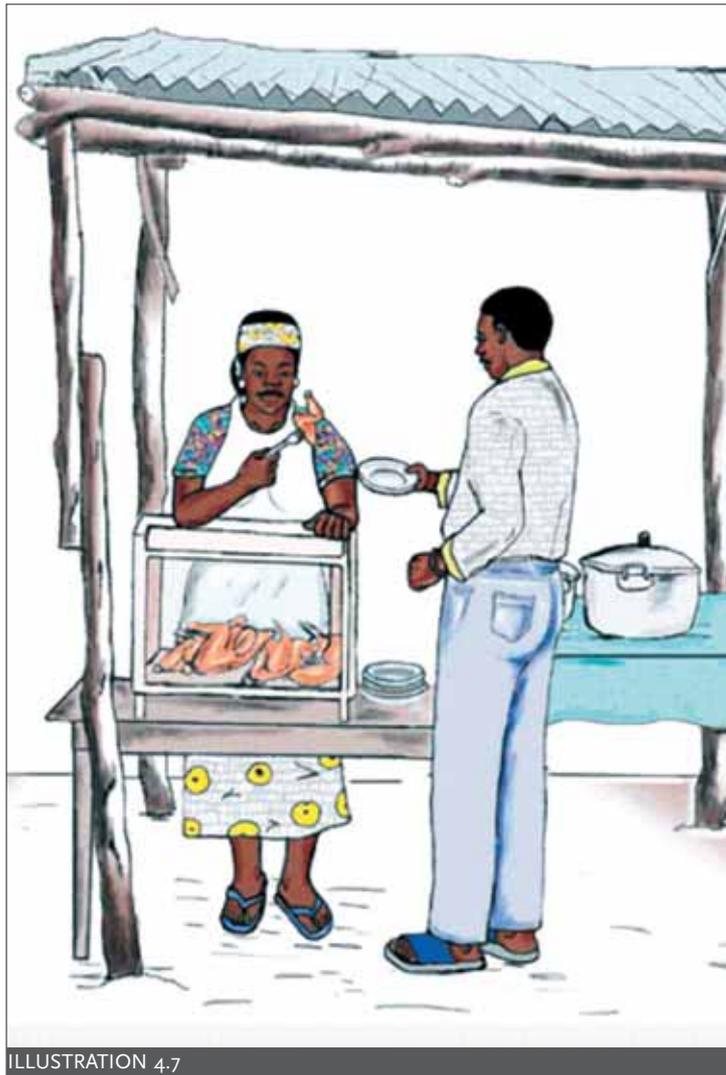
ILLUSTRATION 4.6

MESSAGE

I avoid serving customers with my bare hand.

DESCRIPTION

A woman serving a customer with a fork
(practice to be encouraged).

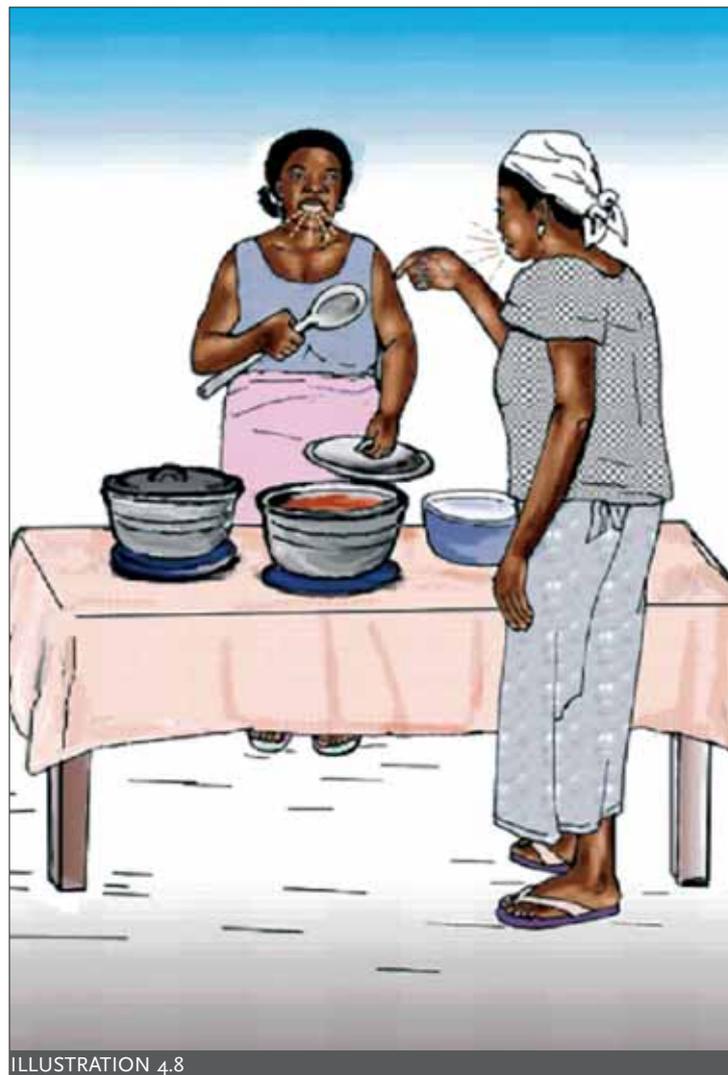


MESSAGE

To avoid contamination from my bare hand, I serve customers with an implement (spoon, fork, ladle,...).

DESCRIPTION

A woman talking and sputtering over the food she is serving (practice to be discouraged).

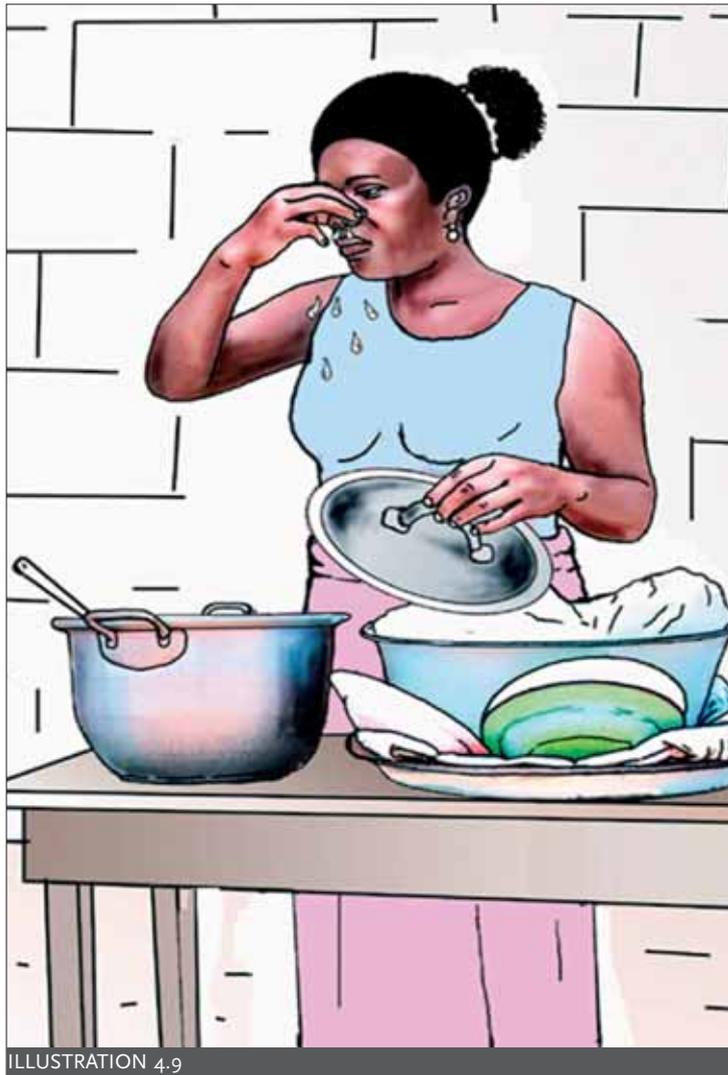


MESSAGE

I avoid talking over the food I am serving.

DESCRIPTION

A woman blowing her nose over her food
(practice to be discouraged).



MESSAGE

For food safety and hygienic premises, I avoid blowing my nose near the food.

4.2. HYGIENIC METHODS AND PRACTICES IN THE PREPARATION AND SALE OF STREET FOOD

These are important measures and precautions that need to be rigorously applied during food preparation and sale to ensure its quality and safety. They are essential for the hygiene of food prepared and sold on the street.

A. PREPARING FOOD

Some vendors/handlers prepare their products at home for subsequent cooking at vending point in front of the customer. This practice tends to inspire customer confidence and, in many cases, to improve flavour and customer satisfaction. But the food still needs to be prepared according to the basic rules of hygiene in order to be safe.

Sickness from contaminated food is usually the result of unhygienic conditions and practices. The following preparation practices and conditions should therefore be avoided:

- food prepared and kept too long before sale. This gives bacteria time to grow to dangerous levels. The ideal temperature for microbial growth is between 10 and 60°C;
- food are not sufficiently heated: the minimum temperature of 70°C required to make a product safe is not reached;
- the persons handling the food are infected and thus contaminate it.

One important principle when preparing food is to **avoid direct or indirect contact between raw food and cooked or prepared food**. This does not include the addition of salt, chilli, pepper and other condiments to cooked food shortly before eating.

N.B. Indirect contact can also be by cutting board, knife or hands passing from unclean raw product to cooked product.

The following precautions can be taken to reduce food contamination:

- raw materials and ingredients should be carefully washed in lots of water before use;
- cereals, pulses, vegetables and fruits (especially if consumed raw) should be soaked in clean water (preferably running water) and carefully washed to remove contaminants sticking to their surface (**Illustrations 4.10 and 4.11**);
- raw vegetable and fruit dishes (e.g. salads and peeled or sliced fruits) should be prepared making sure that the basic product is clean (careful washing in clean water) and that cutting board, hands and knives are also clean;
- meat, fish and similar foods should be separated and therefore not in contact with other products to be consumed raw;
- it is important to process primary produce quickly so that microbes do not have time to grow to harmful levels. Remember that at 37°C the microbial population of a food product doubles every 20 minutes; a single germ can become one billion germs in just 10 hours;
- if products are to be processed by heat (fried, grilled, roasted, etc.), they need to be properly cooked, which means that the temperature throughout those products should reach at least 75°C. The temperature therefore needs to be checked in the parts that are difficult to heat (centre of the food item, in larger pieces, etc.).

In practice, and given that there is usually no thermometer available for street food preparation, the following indicators can be checked:

- for grilled meat: the meat is no longer pink at the centre and the cooking juices released are clear and not pinkish;
- for dishes in sauce: the sauce boils, with the duration of boiling depending on the size of food items;
- food should not be reheated more than once, and only the portion to be served should be reheated;
- implements used to taste food should be washed immediately after each use.

Frozen products are increasingly used as raw materials in the street food sector. This permits product diversification and adds flexibility to the management of supplies. But it also raises the problem of keeping those products (freezers are rarely available in the street food sector) and of mastering the rules of handling and use. These are new products so there is no traditional know-how to guide vendors/handlers on how to use, store and defreeze them correctly.

Defrosting should follow certain conditions:

- in a refrigerator or thaw cabinet maintained at 4°C;
- under clean running water maintained at a temperature not exceeding 21°C for a maximum of four hours;
- in a microwave oven, but only when the food is to be transferred into a traditional appliance for continued cooking or when the whole cooking process takes place without interruption in the microwave oven.

Frozen products need to be thawed before use. Defrosting can be skipped when recommended by the manufacturer, especially vegetables. In contrast, large chunks of meat or poultry need to be defrosted before cooking.

Certain rules apply to beverages:

- drinking water and water used for hot or cold beverages should be safe water, clean boiled water or water disinfected by chemical agent before use;
- ice should be made from safe water. It should be handled and stored away from all sources of contamination.

Food handlers should always be mindful of the key notions of hygiene relating to street food, especially the preparation and sale of food for children.

GOLDEN RULES

To ensure that street food has a high standard of hygiene:

- cook the food well;
- consume the food immediately after cooking;
- keep cooked food in a good state of hygiene and at an appropriate temperature (in a cool area or refrigerator at 4°C or, if hot, above 65°C according to keeping period and type of food);
- reheat refrigerated food properly;
- avoid contact between uncooked and cooked food, including indirect contact through utensils or containers;
- frequently wash your hands during food preparation, especially after handling unclean food or toxic products, going to the toilet, scratching your head, nose, etc.;
- make sure all kitchen areas and surfaces are spotlessly clean;
- protect food against insects, rodents and other animals.

DESCRIPTION

A woman sorts, washes and blanches leafy vegetables before use (practice to be encouraged).

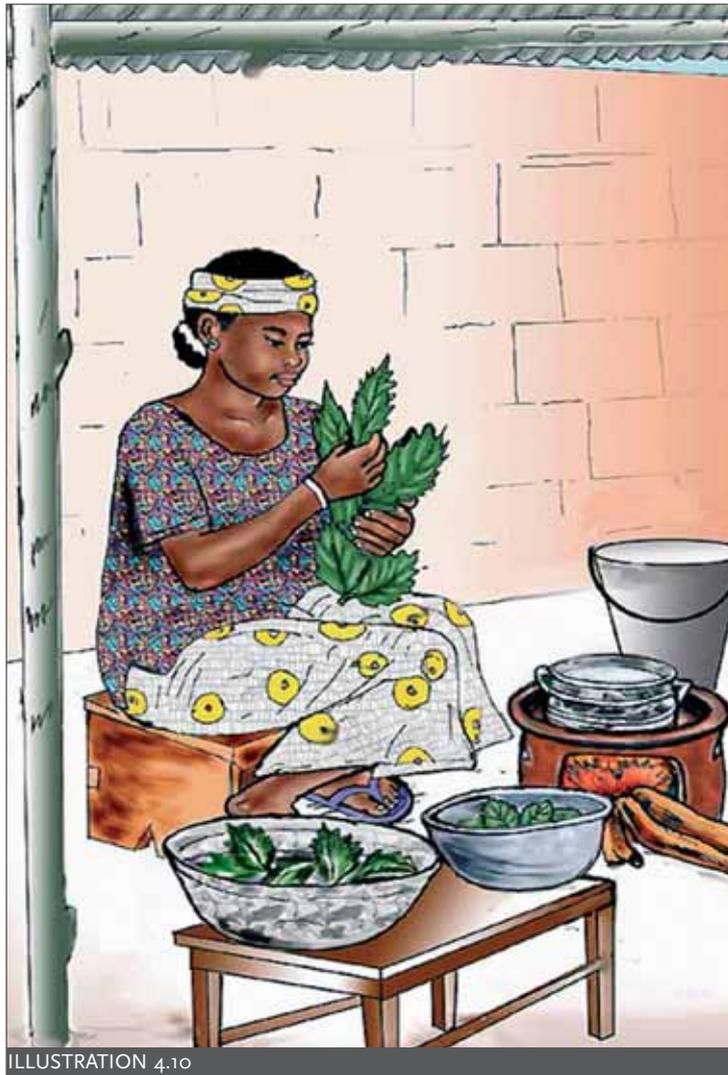


ILLUSTRATION 4.10

MESSAGE

Before using food items, make sure they are properly cleaned and prepared.

DESCRIPTION

A woman uses two bowls of water to clean and rinse condiments to make sure they are clean and hygienic before grating and use (**practice to be encouraged**).

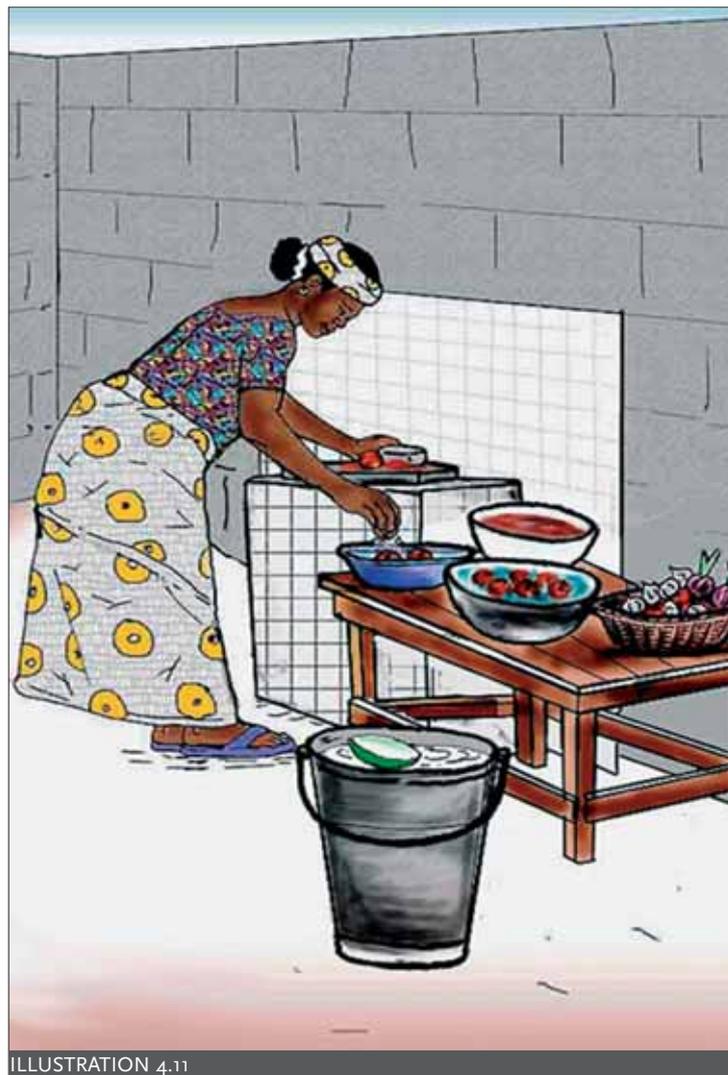


ILLUSTRATION 4.11

MESSAGE

Carefully wash food and condiments before preparation and use.

B. TRANSPORTING AND KEEPING PREPARED FOOD

Without effective control and protection during transport, food can become contaminated and rendered unfit for consumption at destination, even when adequate hygienic measures are taken upstream in the food chain.

Ready food and beverages to be delivered to the point of sale should be placed in clean containers with lids and well protected, especially if the transport time is long (**Illustration 4.12**).

Perishable goods (dairy products, etc.) should be taken to the point of sale in insulated containers, at low temperature (4°C).

The transport vehicle should be clean. It should not be used for carrying animals, toxic substances or other contaminants, unless fitted with separate compartments. If the vendor/handler has to make a long journey every day, he can regularly use the same carrier (e.g. collective taxi) and gradually sensitize him to the notion of hygiene of transport. In any case, transport problems are simplified if the point of sale is close to the preparation site.

For mobile vendors of food and beverages, prototypes of practical and hygienic vending carts are presented in **Annex 3**. These include:

- a countertop with central stove and cover;
- a glass panelled cabinet for food protection and sale;
- a closed container for beverages.

C. SELLING STREET FOOD

The action of selling street food is important hygienically. Most instructions on location and facilities have been covered in Module 3. Other hygiene measures include:

- the points of sale, whether stationary (kiosk, stall, etc.) or mobile (pushcart, tricycle, etc.) should be in good condition and meticulously cleaned, especially surfaces on which the food will be placed;
- displayed food should be protected from dust, insects and exhaust fumes with lids, glass panes, plastic sheeting or other materials that are easy to clean and that do not release toxic substances;
- displayed street food should be protected from contamination by surroundings and kept at the following temperatures:
 - ▶ food served hot: 60°C or more (high temperature)
 - ▶ food served cold: 7°C or less (low temperature)
- tableware for food and beverages should be easy to clean. Leaves for wrapping food should be carefully washed before use and not be reused;
- plates and utensils used by customers, whether with leftovers or not, should never be licked by domestic animals, such as dogs and cats;
- food to take away should be wrapped in paper, plastic or any other appropriate clean material. Newspaper, cement bag paper and paper already used as unhygienic wrapping should not come into direct contact with the food;
- where the vendor has no refrigerator, cooked food should be kept hot at a high temperature (60 - 65°C) so it is served hot. This prevents microbial growth when the display period exceeds 3 to 4 hours (**Illustration 4.13**);

- customers should be provided with means to wash their hands, including:
 - ▶ a bowl with water and detergent soap;
 - ▶ a bowl with tap water to rinse their hands.
- the water with detergent and the water for rinsing hands should be periodically changed. Dish and floor cloths should be regularly washed and replaced. A tap and soap are recommended for stationary vending points, where affordable (**Illustrations 4.14, 4.15 and 4.16**).
- although rarely used by street food operators, a refrigerator is strongly recommended once the vendor/handler can afford it. It is a good way to prevent microbe growth on and in food. But reheated food should never be returned to the refrigerator; it should all be consumed or what is left should be thrown away.

D. CLEANING AND DISINFECTING

On completion of food preparation and vending operations and before leaving the premises, it is important to systematically:

- clean and disinfect the floor but avoid sweeping it in a dry state (**Annex 4**);
- wash and disinfect sponges, dish cloths and floor cloths. Dish cloths should not be used without being washed beforehand;
- clean, disinfect and thoroughly rinse, with running water, dishes, utensils, cutting boards and work surfaces and store everything away clean and protected from dust;
- empty the kitchen dustbin into the municipal refuse container or appropriate facility, then wash, disinfect and stow it away.

Water with detergent should be used for cleaning. For disinfection, water with chlorine bleach should be used (**Annex 1**), followed by rinsing under running water. Module 3 explains the sense and purpose of cleaning and disinfecting, and the sequence of operations (removing large particles, washing with detergent, rinsing, disinfecting, rinsing), abiding by the rules of TACT (Temperature of application, Action to be applied, Concentration of product and Time of application).

E. MANAGING UNSOLD FOOD

Unsold food and beverages that cannot be kept appropriately should be discarded at the end of the day, as they could eventually pose a risk to consumer health.

To avoid such losses, street food operators should carefully measure their production so that nothing is left over at the end of the day. However, there will sometimes be unsold production. When this occurs, a vendor without a refrigerator (temperature below 10°C) or similar equipment should be encouraged to throw the unsold part away or use it as animal feed.

Where unsold food is refrigerated, large quantities of warm food should not be placed in the refrigerator as bacteria will continue to grow at the centre of the food that will remain warm (above 10°C) for a long time. It is better to store food in small shallow dishes so that all parts of the food can cool rapidly. The principle “**first in, first out**” should apply to the rotation of stocks.

It is generally possible to conserve dry or acidic foods and certain fermented foods for relatively long periods when these are stored in a cool, dry place protected from dust and pests.

GOLDEN RULES

It is very dangerous and strictly forbidden to mix one day's unsold food into the next day's batch.

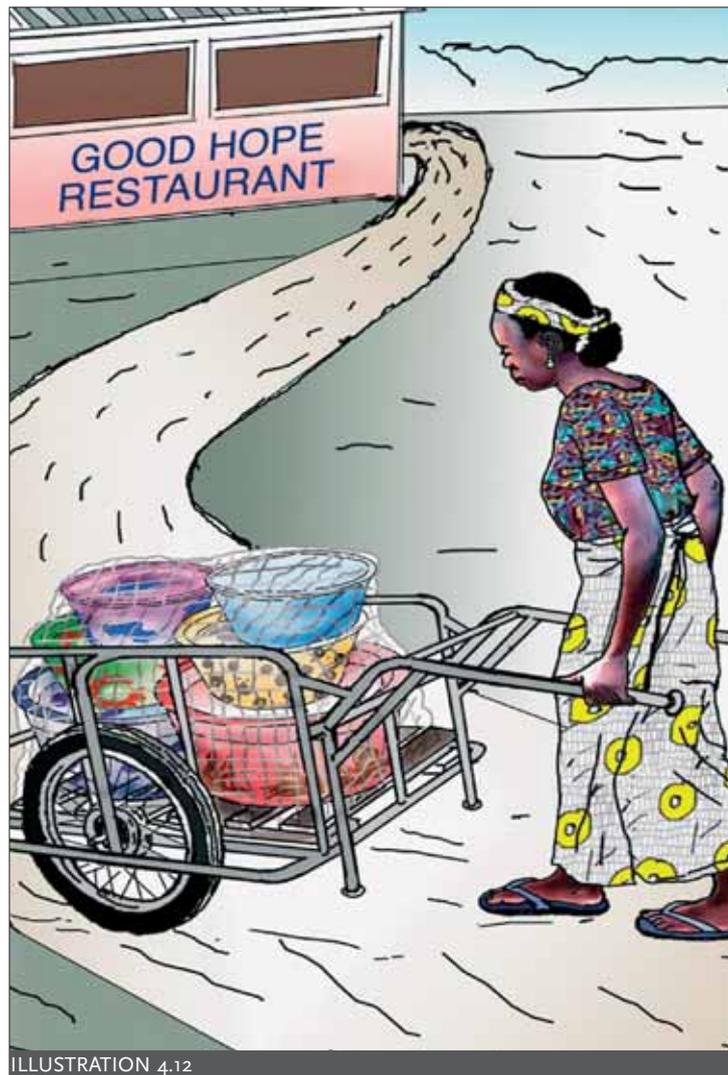
Exercise 4

Ensuring food safety requires regular washing of hands which should become a reflex action.

1. What are the rules of hygiene that ensure the proper management of household waste?
2. When should you wash your hands when selling street food?
3. How should you wash your hands when preparing and selling street food?
4. What are the five rules of cleaning for street food hygiene?

DESCRIPTION

A woman using a cart to transport covered containers of prepared food to the points of sale (**practice to be encouraged**)



MESSAGE

When transporting prepared food, make sure it is protected against dirt by covering the containers.

DESCRIPTION

A woman food vendor simmering her sauce to avoid contamination and deterioration (practice to be encouraged).

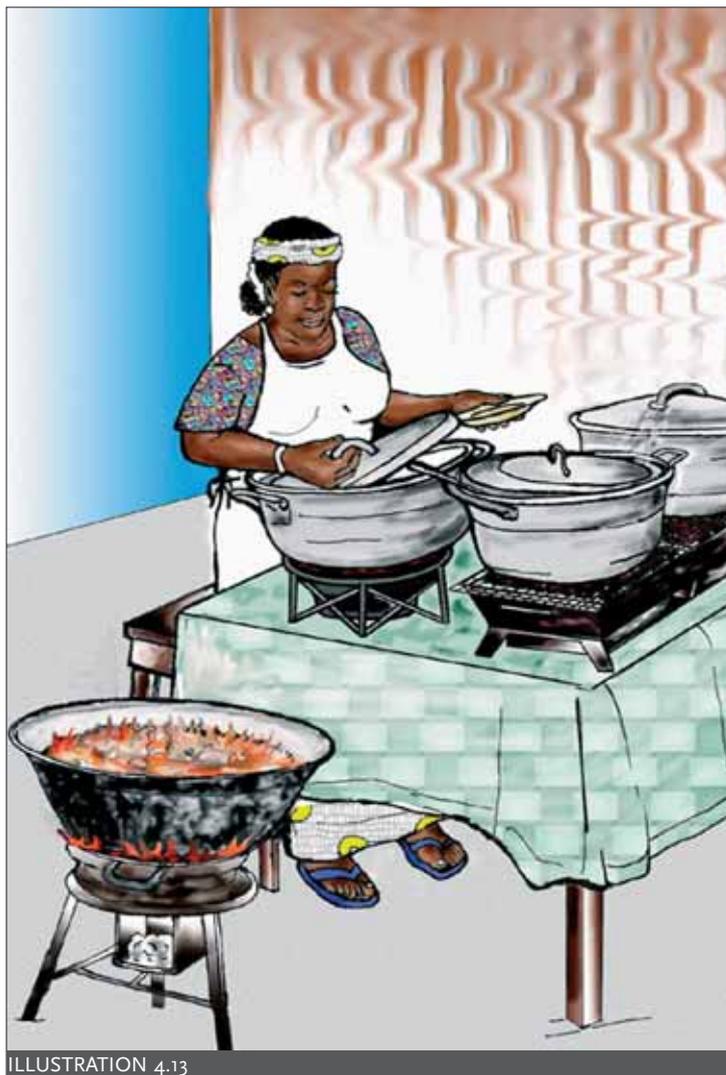


ILLUSTRATION 4.13

MESSAGE

Avoid contamination, deterioration and fermentation of prepared foods by keeping them hot.

DESCRIPTION

Before serving, a woman vendor helps a customer wash his hands with clean water
(practice to be encouraged)

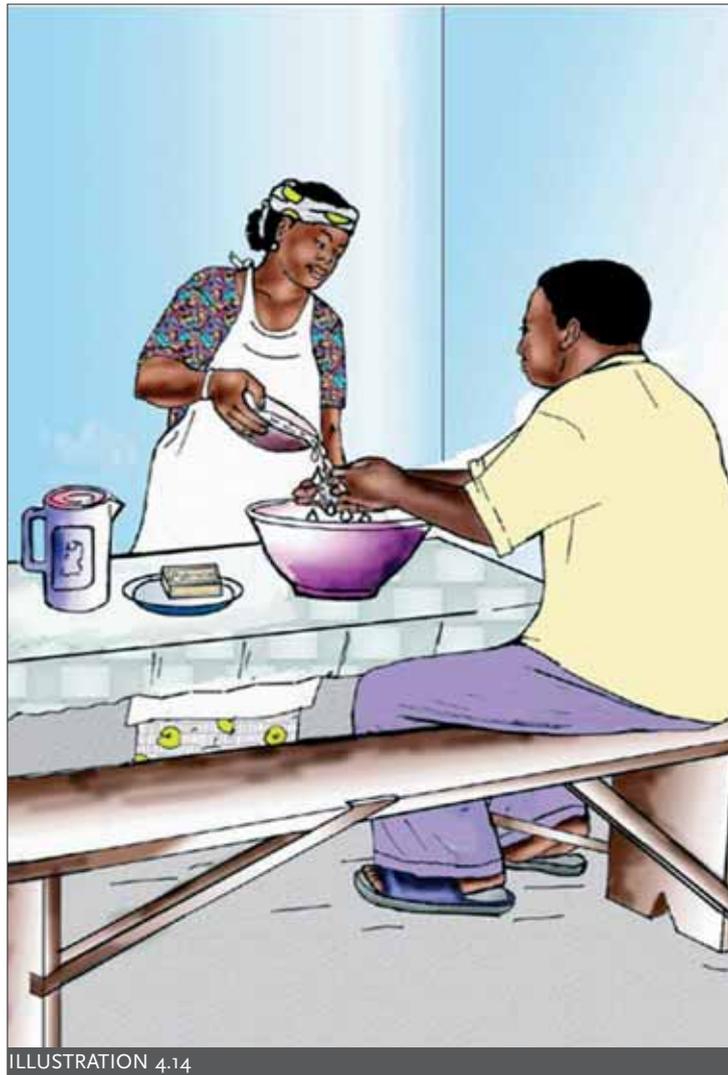


ILLUSTRATION 4.14

MESSAGE

Wash your hands with clean water before and after meals.

DESCRIPTION

A customer washing his hands under the tap of a closed water tank. The dirty water is collected in a bowl under the tap (**practice to be encouraged**).

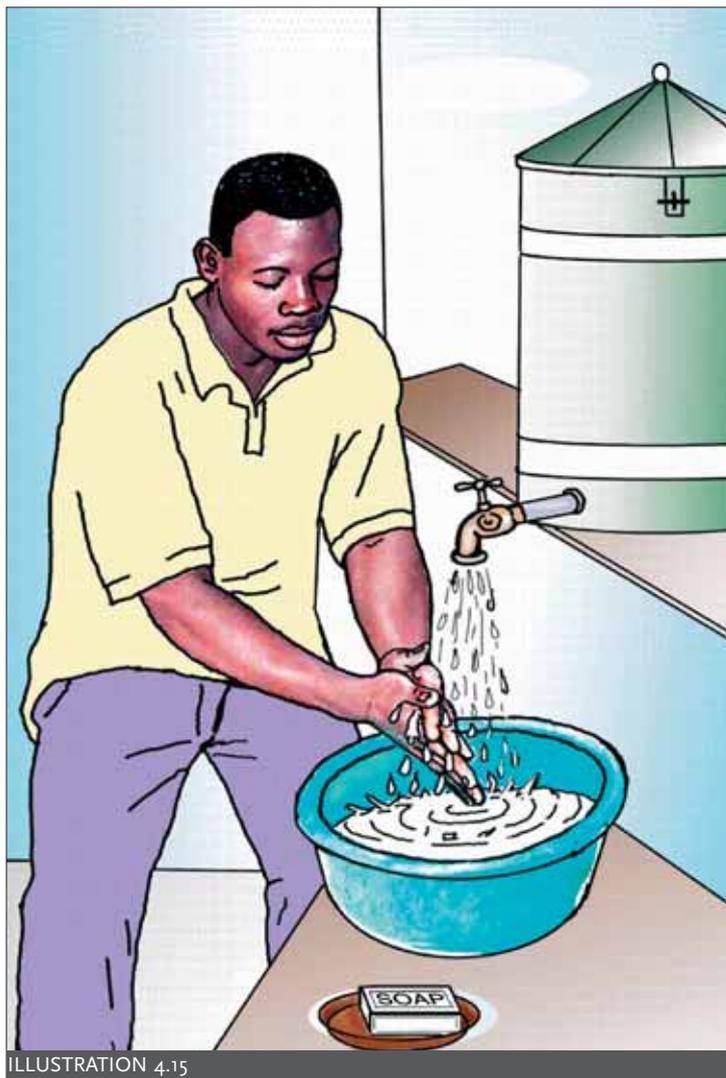


ILLUSTRATION 4.15

MESSAGE

Wash your hands under clean running water before and after meals.

DESCRIPTION

Several people washing their hands in the same bowl
(practice to be discouraged)



MESSAGE

Customers should not wash their hands at the same time, or one after the other, in the same bowl of water.

MODULE 5

HANDLING WATER IN STREET FOOD PREPARATION AND VENDING

PLAN

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TRAINING OBJECTIVE

Of all the potential sources of food contamination, one is prominent in causing health problems. That is water, which is too often of unknown or neglected sanitary quality and not always available in sufficient quantity. Yet, good hygiene requires abundant use of water for the frequent washing of hands, dishes, premises, raw materials and so forth. After constant recycling and reutilization for different purposes, even water that started clean can end up with a high microbial load that poses the risk of serious contamination.

The objective of this module is to familiarize trainees with the basic notions of hygiene in water management for the preparation and sale of street food.

On completion of this module, street food handlers should:

- know the types and quality of water supply sources associated with street food preparation;
- be familiar with methods and practices for keeping water clean;
- be familiar with practical methods of handling wastewater;
- know the different channels of food contamination from water and understand the basic notions of the water hazard.

KEY WORDS

Clean water – Disinfection – Fauna – Flora – Contamination – Water hazard – Bacteria – Wastewater

5.1. SUPPLY, USE AND HANDLING OF CLEAN WATER

Clean water is colourless, odourless and insipid. It is agreeable to taste and smell and can be drunk safely. Only (clean) water meeting WHO standards should be used when handling and processing food. Clean water should be used whenever necessary to avoid food contamination. The source of water supply is crucial to food vendors/handlers as it determines the quality of water at origin (clean or not).

A. TYPES AND QUALITY OF WATER SUPPLY SOURCES

There are two major types of water supply source: surface water and groundwater.

A.1. Main types of water supply source:

▶ Surface water

Surface water is water from a watercourse (lake, pond, basin, stream, river) and is subject to contamination. It is water that animals drink and where children sometimes paddle. Its banks are used for defecation and are covered with heaps of decomposing leaves.

▶ Groundwater

This is aquifer water which exists in two categories:

- in shallow aquifers or wells lying close to the surface of the ground (tens of metres), poorly protected and therefore exposed to biological contamination;
- in deep aquifers hundreds of metres below ground level and resting on deep impermeable layers of clay. Rainwater filters through several layers of earth before reaching the aquifer.

The water of deep aquifers is generally safe. In the case of thermal springs, it can be very hot, as high as 60°C.

A.2. The characteristics of the water

The characteristics of the water largely depend on its origin, but also on the facilities for its use. Thus, in the case of surface wells, facilities such as protection walls, clean scooping buckets and separation from latrines and wastewater provide a water of acceptable quality.

Such precautions also apply to water from deep wells. On the other hand, unprotected surface water is generally poor in quality because affected by various forms of contamination.

A.3. Contamination of water sources

Water sources can be polluted by industrial or domestic wastewater, pesticides or sewage without the user knowing. They therefore need to be protected against all types of contamination, whether microbial, parasitic, physical or chemical.

It is important that local authorities provide populations with clean water sources, in particular through effective off-take. Local populations should get their water from guaranteed sources. (Illustrations 5.1, 5.2, 5.3 and 5.4).

B. AVAILABILITY AND USE OF CLEAN WATER IN STREET FOOD PREPARATION AND VENDING PREMISES

One of the major problems in Africa is the inadequate supply of clean water in rural, and urban and periurban areas for direct consumption, food preparation, cleaning of utensils and personal hygiene.

ne. Many street food operators have to use water from wells or rivers, or rainwater. Even where water is not contaminated by industrial pollutants, it is often contaminated by faecal microbes.

And in some areas supplied with clean water, many food handlers contaminate that water by using it inappropriately:

- water for direct customer consumption (drinking water) and for food preparation and beverages is kept in containers that are uncovered, unclean or difficult to wash;
- water for washing up is used several times over and ends up with an excessive physical and microbial load that makes the washing useless.

Thus, water is a major source of potential contamination of street food in Africa, either because of poor quality at origin or because subsequently dirtied and misused.

C. MANAGING CLEAN WATER

The most serious problem is the microbial contamination of water, which can cause serious disease. Immediate action is therefore needed to treat the water, which is done in different stages: 1) decantation, 2) filtration, 3) disinfection. Preventive measures to restrict or eliminate the causes of such contamination are also needed.

C.1. Disinfecting water

Disinfecting water serves to destroy or deter harmful microbes. This can be done by physical means (decantation, slow filtration through a fine cloth, slow filtration through sand, boiling, solar disinfection) and/or by chemical means. Chlorine is the disinfectant most commonly used to destroy bacteria in the water. There are several ways of disinfecting water with chlorine in rural or periurban areas not supplied with industrially treated water.

- ▶ Disinfection of clear water:
 - one drop of chlorine bleach per litre of water;
 - one and a half capsules, or about 4 ml of chlorine bleach for 100 litres of water.
- ▶ Disinfection of decanted water:
 - three drops of chlorine bleach per litre of water;
 - one and a half capsules, or about 4 ml of chlorine bleach for 60 litres of water.

LEARN MORE

Disinfection of well water by continuous chlorination of the water:

The process involves the continuous use of chlorine to disinfect well water. This is done by placing a slow-release dispenser in the well to maintain a residual chlorine level for two to three weeks. The slow-release dispenser is placed in the well by specialists.

C.2. Preventive measures

These measures serve to protect the water source and collected water from contamination from carriage, through storage, to use. It is important:

- to use clean covered containers to carry and store water and clean vessels for drinking;
- to wash hands with soap and water before contact with drinking water.

C.3. Equipping the water sources

The water source amenities should prevent water stagnation that could encourage fauna and flora harmful to aquifer and water users. Recommended amenities include:

- a protection wall with rim and cover;
- a drainage channel;
- a sanitary base to prevent the accumulation of mud (**Illustration 5.4**).

GOLDEN RULES

The quality of well water is protected by:

- building a protection wall with rim to keep animals away;
- placing a cover to prevent contamination from dust and insects;
- digging a drainage channel for spillage or water trickling from buckets;
- incorporating a base on which to rest containers and avoid contamination from the ground;

The following hygiene measures should be observed to maintain the quality of the drinking water:

- use clean containers with covers for water carriage and storage;
- prevent foreign matter such as leaves and branches entering the water during carriage to place of use;
- wash hands with soap and water before contact with drinking water;
- use clean drinking vessels.

GOLDEN RULES

The following actions are needed as protection against water-borne diseases:

- collect clean water and observe the rules and practices of personal and collective hygiene;
- build latrines far from water points;
- wash hands after each defecation;
- eliminate anything that attracts flies or other forms of life conducive to microbial growth by:
 - destroying cans and other objects that serve as breeding grounds;
 - covering all water tanks;
 - building protection walls around large wells against contamination from animals.

5.2. WATER HAZARD

A. MANAGING WASTEWATER

Domestic wastewater is from cooking, washing and showering. Such water can seriously contaminate food and needs to be hygienically removed in specially designed sanitary structures: latrines, septic tanks, drainage sumps, pools, drainage pits. It should not be left to accumulate in or near areas where food is handled and stored.

For wastewater disposal, street food facilities should:

- be equipped with one or more systems of disposal of liquid waste. These can be communal or individual but need to be approved by the competent authority;
- keep their disposal system in good order.

B. DIRTY WATER AND DISEASE

Contaminated water poses serious health risks, especially in rural areas where unclean water is often drunk to quench thirst. Water contaminated with faecal or urinary excretion contains pathogens that cause a range of water-borne faecal infections. Water can be contaminated close to the point of collection, during carriage from collection to consumer, or during storage.

There are four groups of disease associated with water:

- disease from the ingestion of water contaminated with faecal matter such as: cholera, typhoid and paratyphoid fever, infectious hepatitis, amoebiasis, bacillary dysentery, gastroenteritis;
- disease from parasites in water, such as dracunculosis or Guinea worm, intestinal or vesicle schistosomiasis;
- disease associated with water shortage, such as yaws and scabies resulting from a lack of personal hygiene;
- disease transmitted by vectors linked to water such as: malaria, yellow fever, river blindness.

The transmission of microbes varies according to their form of life. There are three types: the short direct method, the long direct method and the indirect method. Water can also be the bree-

ding ground for insect vectors of disease, such as mosquitoes which carry parasitic or viral disease, including yellow fever, lymphatic filariasis, better known as elephantiasis, and malaria. Mosquitoes breed in temporary or permanent pools of water exposed or not to the sun.

LEARN MORE

CHANNELS OF MICROBIAL CONTAMINATION

- The short direct channel: microbes (bacteria, viruses) or parasites (amoeba, pinworms) present in eliminated faecal matter are direct contaminants for humans. Infection is oral, by hand, by vegetable eaten raw or by contaminated water (case of bacteria, viruses and parasites).
- The long direct channel: eggs or larvae of these parasites only acquire their contamination property after a period outside the human organism. Infection is either oral by consuming contaminated water or raw fruit or vegetable (case of roundworm and whipworm) or by walking bare foot or bathing in fresh water (case of hookworm and eelworm).
- The indirect channel: parasites, after evacuation from the human organism that hosted them as eggs or larvae, only acquire their contamination potential after obligatory passage through intermediary hosts. Some of these hosts live in aquatic environments. This occurs with schistosome (bilharzia) whose intermediary host is a mollusc and the Medina worm (Guinea worm) whose intermediary host is a small freshwater crustacean known as Cyclops.

GOLDEN RULES

- ▶ Water is vital for life, but can also be a source of disease and death when not of good quality.
- ▶ Water is contaminated by living beings (or by eggs of living beings). They are so small they cannot be seen with the naked eye. These are microorganisms.
- ▶ Water can vector these many microbes responsible for disease. Microbes can be:
 - bacteria: choleric vibrio (cholera), shigella (dysentery, bacillosis), salmonella (typhoid fever);
 - viruses: hepatitis;
 - protozoa: amoebic dysentery;
 - worms: roundworm, hookworm, eelworm, Guinea worm.

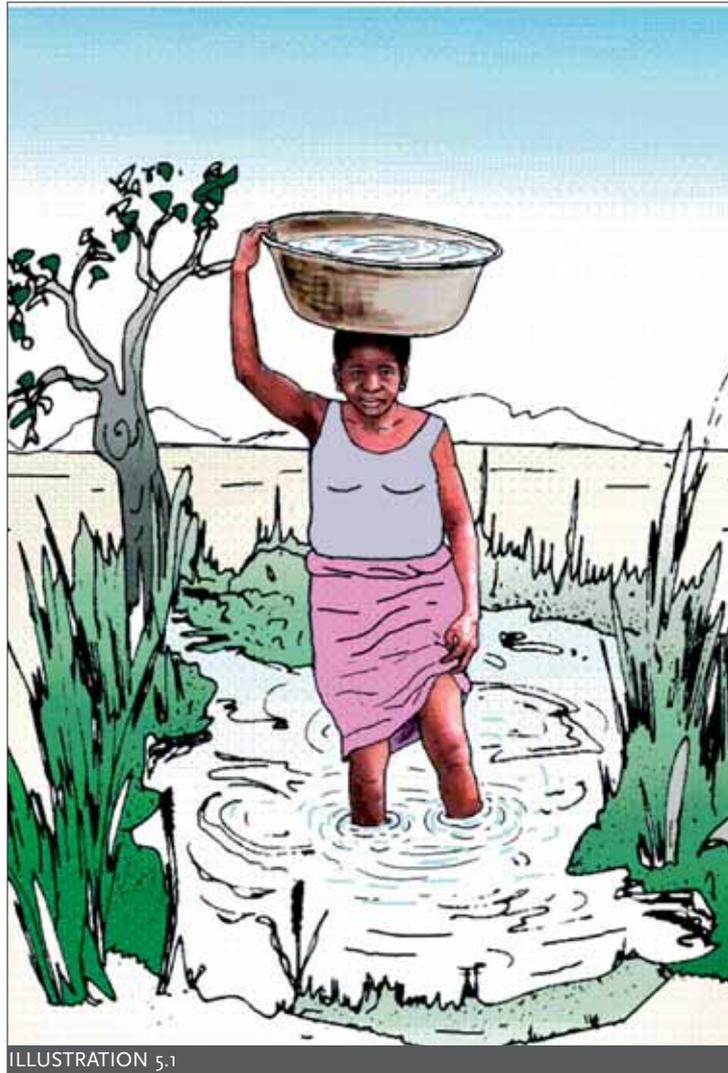
Exercise 5

Microbes are all around us and can spread disease through various channels:

1. Name some of those channels.
2. How can we limit the spread of microbes?

DESCRIPTION

A woman collecting water from a high-risk source of contamination (watercourse) (practice to be discouraged).

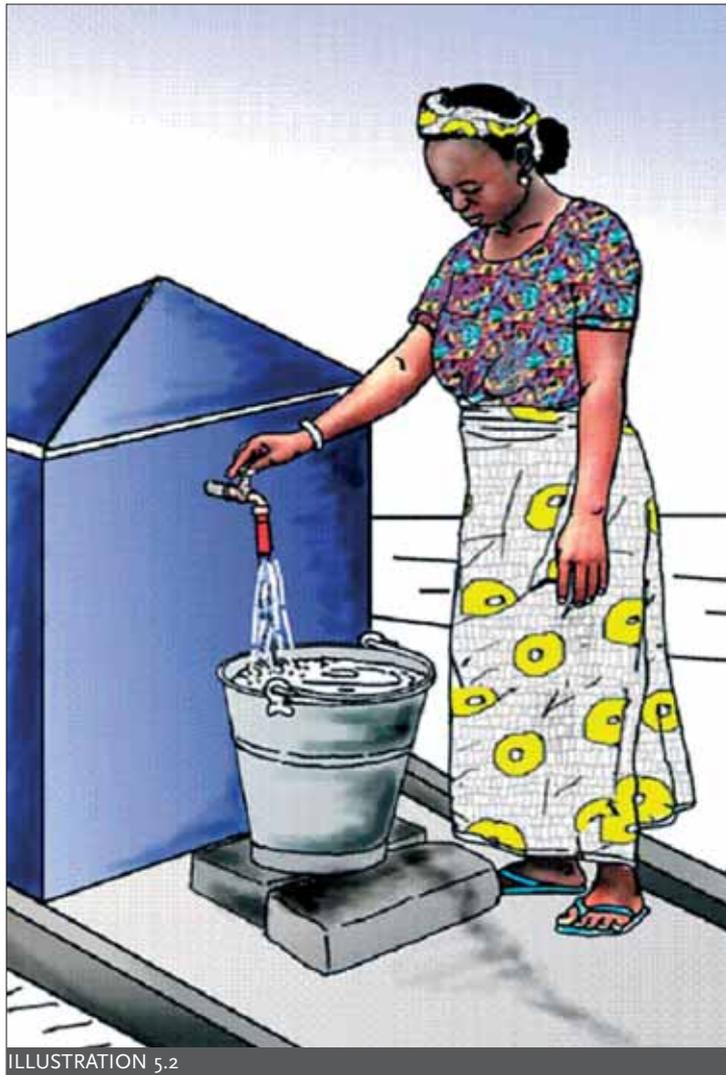


MESSAGE

I avoid collecting water for consumption from high-risk sources of contamination.

DESCRIPTION

A woman collecting drinking water from a clean source: a standpipe connected to the grid (**practice to be encouraged**).



MESSAGE

I fetch my drinking water from safe sources such as the grid.

DESCRIPTION

A woman collecting drinking water from a clean source (well with rim and cover)
(practice to be encouraged).

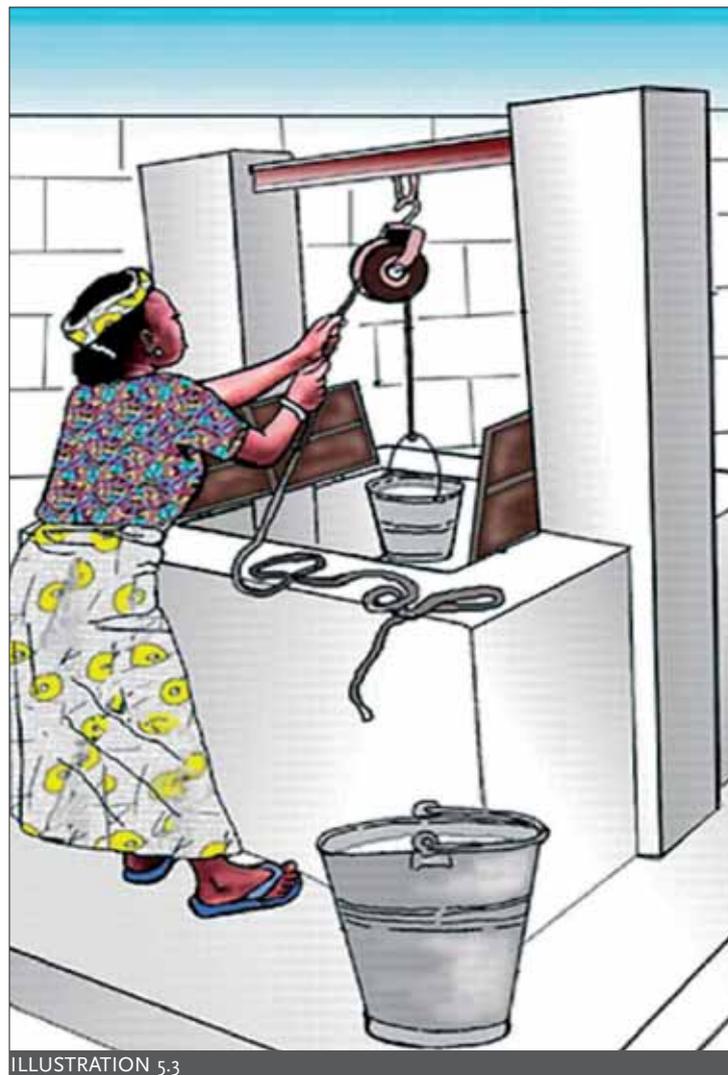


ILLUSTRATION 5.3

MESSAGE

I collect my drinking water from safe sources such as wells with rim and cover.

DESCRIPTION

A well with rim and cover (practice to be encouraged)

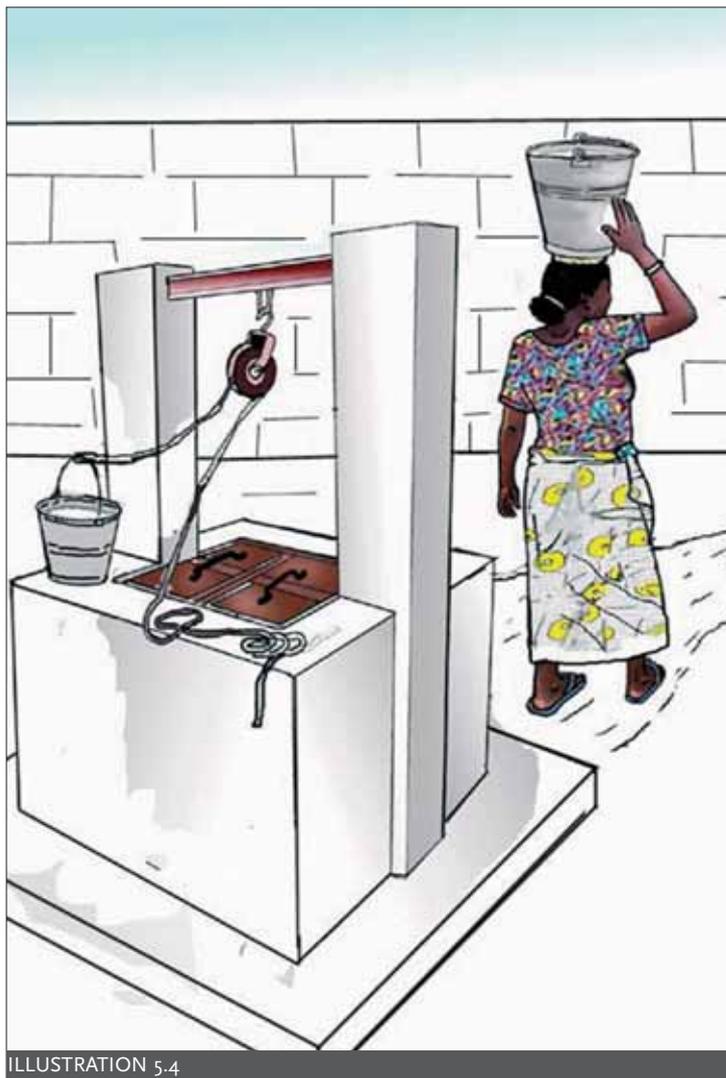


ILLUSTRATION 5-4

MESSAGE

Always place your wells far from latrines and keep them covered against contamination.

DESCRIPTION

A woman serving drinking water from a jug (practice to be encouraged).

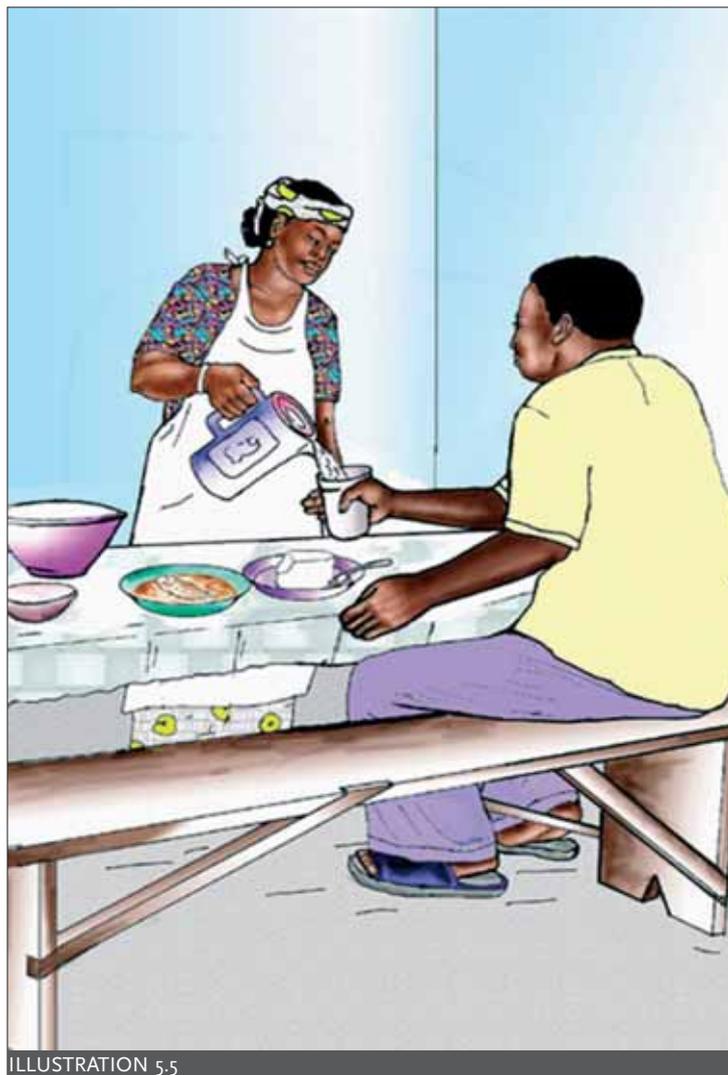


ILLUSTRATION 5.5

MESSAGE

I provide my customers with drinking water in an appropriate container.

DESCRIPTION

Good management of drinking water at a food outlet means keeping it in a large covered recipient and serving it with a clean beaker (**practice to be encouraged**).

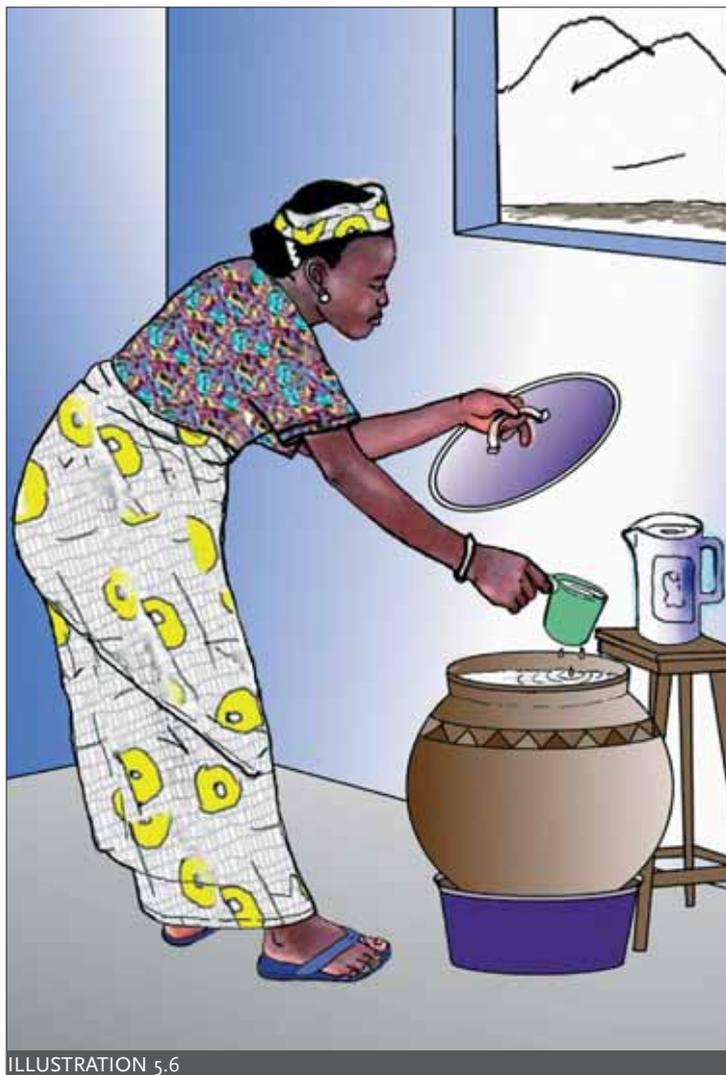


ILLUSTRATION 5.6

MESSAGE

I always cover my drinking water and serve it with a clean beaker.