

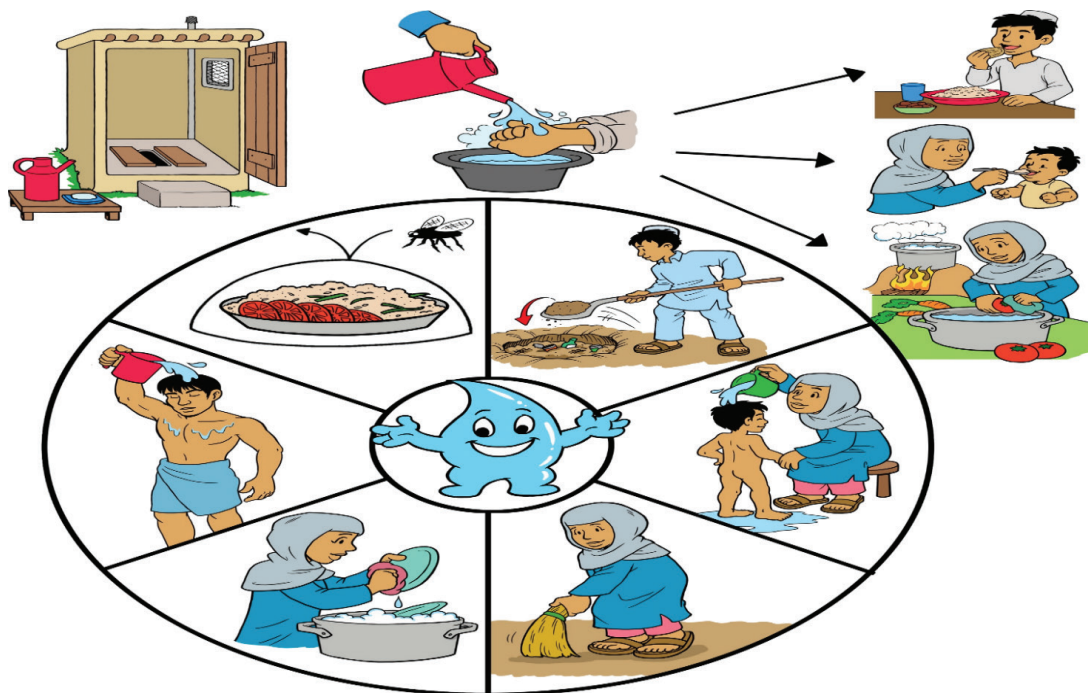


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Ministry of Labor and Skills

Manufacturing Sanitation Product and Latrine Construction

Short Term Training

Based on May 2023, Curriculum Version I



Module Title: Basic Water, Sanitation and Hygiene Practice

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INTRODUCTION TO THE MODULE

Water, sanitation, and hygiene (WASH) is essential for ensuring public health and safety. Good sanitation and hygiene practices are crucial for preventing the spread of waterborne diseases and maintaining a clean and healthy environment. In this module, we will explore the concept and principles of basic water, sanitation, and hygiene practices.

This module covers:

- Sanitation protocol, hygiene procedures and identify hazards.
- Utilization of improved latrine
- Handling of drinking Water at household level
- Hand washing and personal hygiene practices

Learning Objective of the Module

- Follow sanitation protocol, hygiene procedures and identify hazards.
- Proper utilization of improved latrine
- Proper handling of drinking Water at household level
- Proper hand washing and personal hygiene practices.

Module Instruction

For effective use of this module, trainees are expected to follow the following module instruction:

1. Read the information written in each unit.
2. Accomplish the Self-checks at the end of each unit.
3. Perform Operation Sheets at the end of units.
4. Do the "LAP test" given at the end of each unit and
5. Read the identified reference book for Examples and exercise.

Unit One: Sanitation protocol, hygiene procedures and hazards

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- 1.1. Concept of Water, Sanitation and Hygiene
- 1.2. Water, Sanitation and Hygiene hazards
- 1.3. Market based Sanitation
 - 1.3.1. Concept of Market Based Sanitation
 - 1.3.2. Sanitation ladder
 - 1.3.3. Technology options

This unit will also assist you to attain the learning outcomes stated below. Specifically, upon completion of this learning guide, trainees will be able to:

- Apply water, sanitation, and hygiene policies.
- Identify water, sanitation, and hygiene hazards.
- Describe market-based sanitation.
 - Explain concept of market-based sanitation.
 - Describe sanitation ladder.
 - Apply technology options.

1.1. Concept of Water, Sanitation and Hygiene

Water, Sanitation, and Hygiene (WASH) is a crucial area of focus for development efforts worldwide, as access to clean water, proper sanitation, and good hygiene practices are vital for human health and well-being. Without these necessities, communities can suffer from waterborne illnesses, infections, and other health problems that can negatively impact their quality of life and hinder their ability to participate in economic and social activities. Effective WASH interventions require collaboration between governments, NGOs, Business Organizations, and local communities.

Safe WASH is not only a prerequisite to health, but contributes to livelihoods, school attendance and dignity and helps to create resilient communities living in healthy environments. Also, it can reduce medical costs and improve economic productivity by reducing illness. Children can benefit from improved water sources as they are less likely to fall ill and miss school, resulting in better long-term outcomes for their lives.

Poor sanitation in Ethiopia results in great impact.

- 30% of the disease burden in Ethiopia is attributable to poor sanitation.
- 15% of total deaths are due to diarrhea.
- Poor sanitation costs Ethiopia Birr 13.5 billion each year which is equivalent to about Birr 170 per person per year or 2.1% of the national GDP.

1.2. Water, Sanitation and Hygiene hazards

Water, Sanitation, and Hygiene (WASH) hazards refer to situations that can lead to negative health effects due to inadequate access to safe water, sanitation facilities, and hygiene practices. Examples of WASH hazards include:

- Contaminated water sources that can cause waterborne diseases such as cholera, typhoid fever, and dysentery.
- Lack of access to safe sanitation facilities that can lead to the spread of diseases such as diarrhea and hepatitis A.
- Poor hygiene practices such as not washing hands with soap after using the toilet or before handling food, which can lead to the transmission of infectious diseases.
- Inadequate waste management systems that can lead to the accumulation of solid waste and pollutants, which can cause environmental pollution and health hazards.

Methods to remove and minimize WASH hazards:

- Water treatment, improved sanitation facilities, and promoting good hygiene practices.
- Community participation, capacity building, and behavior change communications. These can improve the effectiveness and sustainability of WASH programs.

F diagram is a tool used to identify pathways of fecal-oral transmission of infectious diseases. It categorizes transmission routes into four main categories: fingers, flies, food, and fields. By understanding these pathways, effective interventions can be identified to prevent and control the spread of diseases.

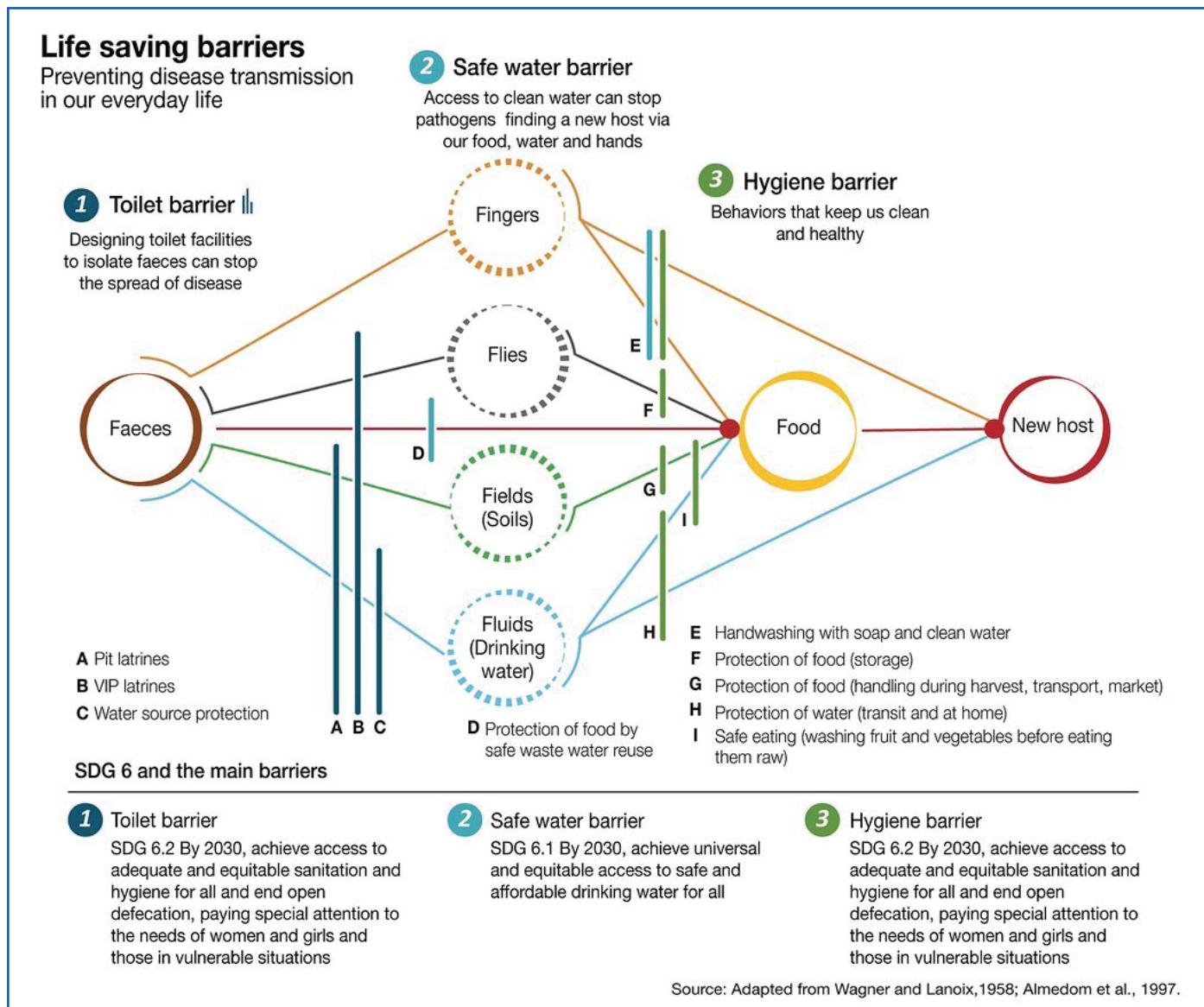


Figure 1: F-Diagram

1.3. Market Based Sanitation

1.3.1. Concept of Market Based Sanitation

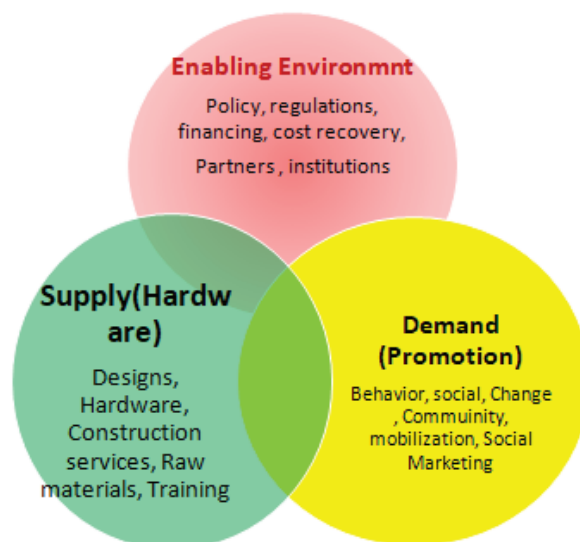
Market-based sanitation is an approach to improve access to safe sanitation facilities. It involves creating a market for low cost, affordable and desirable sanitation products, and services, leveraging private sector involvement and promoting behavior change. This approach aims to make sanitation solutions more accessible and self-sustaining, which result in improve sanitation and hygiene facilities and services quality of the country, and ultimately impact the improvement of public health outcomes.

Several players are involved in marketing-based sanitation, which is divided into three major pillars.

Pillar 1: Enabling environment to support and facilitate an accelerated scaling -up of sanitation and hygiene through policy consensus, regulation, and political commitment, intersectional cooperation, partnership, capacity building, sustainable finance, research, monitoring, and evaluation.

Pillar 2: Create demand: Sanitation and hygiene promotion to create demand and change behavior using participatory approaches, advocacy, communication, and social marketing etc.

Pillar 3: Supply side: Improved access to hardware to strengthen the provision of sanitation and hygiene through appropriate technology and product design for different situations (E.g., rural/urban HH, schools, health posts etc.).








The major service options that could be provided by market-based sanitation service provider include:

- Construction of whole or parts of latrines
- Manufacturing and installation of concrete slabs
- Installation of plastic slabs
- Retrofitting/upgrading of existing latrines with improved components,
- Delivery or transportation of raw materials and/or ready-to-install basic sanitation products from place of manufacturing to kebeles, village centers, or directly to households.
- Latrine pit emptying services, particularly in areas using composting latrines.
- Upgrading or repairing of the latrine slab or
- Superstructure
- Shower services
- Retailing of sanitation products, such as plastic slabs and pans
- Retailing of point-of-use water treatment products
- Retailing of toilet cleaning materials

1.3.2. Sanitation ladder

The sanitation ladder is a framework that categorizes different types of sanitation facilities based on their level of hygiene and environmental safety. The ladder has five rungs, each representing a different level of sanitation facility:

Table 1: Sanitation ladder according to sustainable development goal

<p>Open defecation: Disposal of human feces or defecation in fields, forests, bushes, open bodies of water, beaches, or other open spaces, or with solid</p>	
<p>Unimproved sanitation facilities: Sanitation facilities that do not hygienically separate human excreta from human contact. This includes dry pit latrines without slabs and hanging latrines</p>	
<p>Limited sanitation facilities: Improved sanitation facilities shared between two or more households</p>	
<p>Basic sanitation facilities: Sanitation facilities that are designed to hygienically separate human excreta from human contact and not shared. These include flush and pour flush toilets or dry pit latrines with slabs and composting toilets.</p>	
<p>Safely managed sanitation service: Use of improved sanitation facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated off-site</p>	

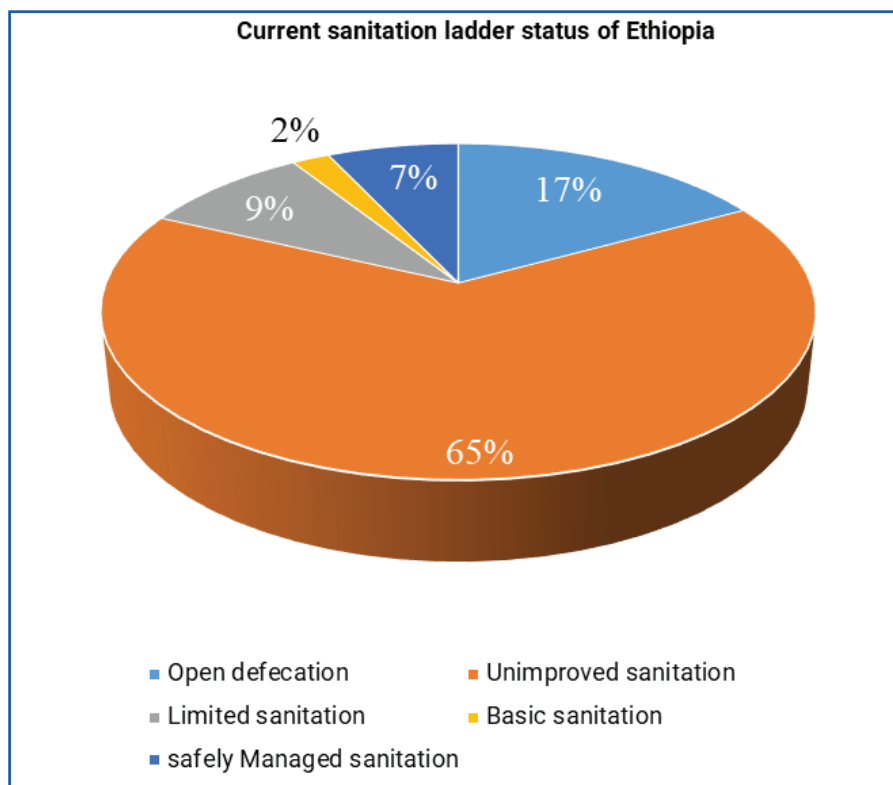






Figure 2: Current sanitation ladder statuses in Ethiopia, JMP 2021

1.3.3. Latrine Technology options

It is a technology options used to improve access to improved sanitation facilities and promote good hygiene practices. Some available floor improvement technologies options are shown in Table 2:

Table 2: Latrine floor improvement technologies options

Factory product for latrine improvement		Local product and service for latrine improvement	
Sato pan and Sato flex: its plastic toilet pan have a flap that seals automatically. It uses to prevent exposure to flies, avoid bad odor, safe for children and easy to clean.		120 cm circular concrete slab with sato	120*120 cm Square concrete
			
Aim: it's durable, attractive, simple to install in new or retrofitted latrines, and easy to keep clean and its opening closed manually.		60*80c m rectangular concrete slab	

<p>Sato Stool: Its other types of Sato product. it's same uses as sato pan and allows comfortable sitting position for all family members, from the young to the elderly.</p>		<p>Three Piece concrete slab</p>	<p>Concrete slab with concrete lid in square, rectangular and circular shape</p>
			
<p>Water closet: There are two type of water closet product. Indian and European type.</p>		<p>Concrete skirting and Refurbishing</p>	

Self-Check 1

Part-I: Choose the correct answer

- WASH** stands for _____, _____ and _____.

 - World sanitation and Hygiene
 - Water, Sanitation and Hygiene
 - Water, Area, Sanitation and Hygiene
 - Water, Supply and Hygiene
- This rung represents the use of pit latrines without a sealed slab, bucket toilets, or hanging toilets.

 - Open defecation
 - Unimproved sanitation
 - Basic sanitation
 - Shared sanitation
- Use of improved sanitation facilities that are not shared with other households and where excreta are safely disposed.



 - Open defecation
 - Unimproved sanitation
 - Basic
 - Shared sanitation

Part-II: Match column A to B

A

- Satopan
- Sato stool
- Aim plastic slab

B

- 
- 
- 

Part-III: Answer the following questions accordingly

- Draw F-diagram?
- List 5 Market based sanitation service options.
- List 2 existing latrine floor improvement technology options.

Note: Satisfactory rating – above 75% Unsatisfactory - below 75%
You can ask your trainer for the copy of the correct answers.

Unit Two: Proper Utilization of Improved Latrine

This unit to provide you the necessary information regarding the following content coverage and topics:

- 2.1 Key Components and Importance of an Improved Latrine
- 2.2 Proper toilet utilization techniques

This guide will also assist you to attain the learning outcomes stated below. Specifically, upon completion of this learning guide, trainees will be able to:

- Explain Key Components and Importance of an Improved Latrine
- Demonstrate Proper toilet utilization techniques

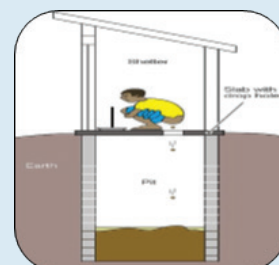
2.1. Key Components and Importance of an Improved Latrine

Improved latrines are a safer and more hygienic option for human waste disposal compared to traditional pit latrines. It's crucial for promoting better sanitation and reducing the spread of disease.

Classification of Improved latrine Technology options

Direct pit System

This system is a toilet where excreta (both urine and faeces) fall directly into a drop hole. This Toilet may be a raised pedestal that the user can sit on, or a squat/SaTo pan that the user squats over.



Offset pit System

This design is a slightly upgraded version of the direct Pit latrine where excreta (both urine and faeces) do not fall directly into a drop hole but to the single or double offset pits through pipe.



Basic component of the latrine

Pit latrines have three basic components: Substructure (the pit and pit lining), the floor (slab and mound), and the superstructure (wall, roof and door).Of these 3 components, the substructure and the floor are the most important part.

Substructure: It is component below the ground which includes pit and its lining.

- Used to store human excreta, supports pit cover (slab) and shelter.
- Shape can be circular, square, or rectangular.
- Volume of pit is determined based on family size, design period and ground water table.
- Pit must be lined if the soil type is loose (sand, clay/silt) and high ground water table.

Floor: Floor is the component above substructure that comprises of slab.

- Slab is used to cover pits. It supports both the user and the wall.
- The slab seals the pit to prevent excreta contact to human.
- The slab will have one or two holes (one squat-hole and second is for fixing vent pipe)
- Slab can be produced from plastic, reinforced concrete, or wooden materials.
- It prevents entrance of run-off and rodents.

Superstructure: It comprises wall and roofing

- Walls provide privacy to the user.

- Walls and roof prevent user from rain, wind draft, sunlight, and heat.
- Wall can be constructed from locally available materials.
- Roof can be constructed either from Corrugated Iron Sheet, grass, or plastic sheet.
- Walls above door can be left open screened with iron mesh (lighting and ventilation)
- Vent is installed height inside or outside of the wall with 500mm height above the roof top and covered with mesh wire/fly screen.

2.2. Proper toilet utilization techniques

Proper use of a latrine is important for maintaining sanitation and preventing the spread of disease. Here are some guidelines for using a latrine properly.

- Maintain correct squatting position so as excreta fall in the center of opening.
- Cleaning the squatting pan (brush with a long handle).
- Repairs should be carried out immediately when a problem is identified.
- Only little water should use for cleaning and washing to reduce pit filling.
- Do not use hard materials for anal cleansing.
- Fill hand washing container and avail soap to encourage hand washing after latrine use.
- In Compost latrine (double vault dry compost), after each use, cover the faces with ash or saw dust or leaves to soak up excessive moisture. When the first vault is about 75% full, fill completely with dry powdered earth material and seal.
- The pit must not be used for garbage disposal.
- Avoid the use of chemicals in the pit.
- Once a week, sweep, wash and clean the toilet floor and toilet surrounding area.
- Once a month, clean the walls, door, and ceiling.
- Once every six months, check the fly screen on top of the vent-pipe and be sure the pipe is not obstructed.



Figure 3: Examples of Items not to be thrown in latrine pits.

Self-Check 2

Part-I: Choose the correct answer.

- In onset pit system toilet, excreta (both urine and feces) fall directly into a drop hole.
A, True B, False
- The concrete slab for toilet should be rough.
A, True B, False
- Which of the following items can be used as cleansing material?
A leaves B. Cloth
C. Stone D. Water

Part-II: Match column A to B

A

- Substructure
- Floor
- Superstructure

B

- A. provides privacy to the user
- B. Used to store human excreta
- C. Supports the user and wall

Part-III: Answer the following questions accordingly.

- List at least 5 proper utilization practices while using latrine.
- List the parts of basic improved latrine components and explain their use.

Note: Satisfactory rating – above 75% Unsatisfactory - below 75%
You can ask your trainer for the copy of the correct answer.

Unit Three: Proper Handling of Drinking Water at Household Level

This unit to provide you the necessary information regarding the following content coverage and topics:

- 3.1 Drinking Water Quality Standards
- 3.2 Drinking Water Quality Hazards
- 3.3 Water treatment and proper storage at household level

This guide will also assist you to attain the learning outcomes stated below. Specifically, upon completion of this learning guide, trainees will be able to:

- Know Drinking Water Quality Standards.
- Know Drinking Water Quality Hazards.
- Demonstrate Water treatment and proper storage at household level.

3.1. Basic Quality Standard of Drinking Water

Drinking water quality refers to the physical, chemical, and biological characteristics of water that make it safe for human consumption. The quality of drinking water can be affected by various factors, the source of the water, the treatment process, and the distribution system.

Drinking water standards are established based on the physical, chemical, and biological characteristics of water. These standards set acceptable levels of contaminants and other substances in drinking water to ensure that it is safe for human consumption.

- **Physical characteristics:** it should be colorless, odorless, and exceptionally low turbidity.
- **Chemical characteristics:** should be in accordance with MOH/WHO permissible levels (instructor can show a list of chemicals in accordance with MOH/WHO guidelines).
- **Biological characteristics:** free from pathogenic bacteria, viruses, and parasites.

Water Operational Definitions

Unimproved water service: Drinking water from unprotected sources including unprotected dug well or springs.

Limited water service: Drinking water from an improved source for which collection time exceeds 30 minutes for the roundtrip, including queuing.

Basic water service: Drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip, including queuing.

Safely managed water service: Drinking water from an improved water source that is located on-premises, available when needed, and free from fecal and chemical contamination.



3.2. Drinking Water Quality Hazards

Water and health: Contaminated water and poor sanitation can lead to transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid, and polio. In Ethiopia diarrhea is the top cause of morbidity and mortality among children under five years. This is mostly attributed to limited safe water.

3.3. Water treatment and proper storage at household level

House hold water treatment is important and because many people in our country do not have access to safe and clean drinking water. It's simple and affordable methods to improve the quality of drinking water at the point of consumption. These methods include:

1. Sedimentation
2. Filtration
3. Boiling
4. Chlorination
5. Solar disinfection

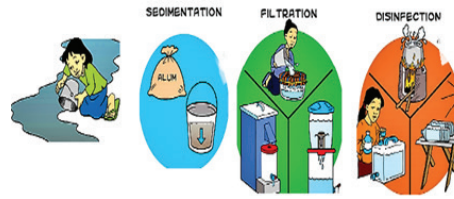


Figure 4: Household water treatment process

Household water collection, storage and handling : In households, water collection, storage, and handling are important for ensuring safe and reliable access to clean drinking water. Here are some important points to consider:

Collection: collect water in a clean ,covered and narrow opening prevent contamination.

Storage: Store household water in a clean and covered container to prevent contamination from insects, dirt, and other sources.

Handling: Use clean hands ,utensils and avoid cross-contamination when handling household water to prevent contamination.

Maintenance: Regularly maintain household water storage systems to ensure proper function and prevent contamination. Clean and repair storage systems as needed.

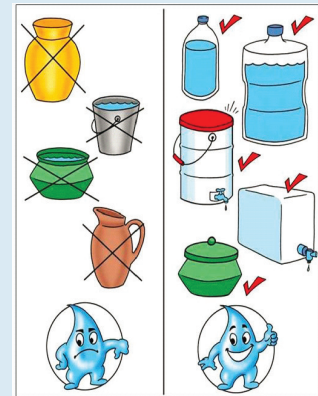






Fig- 5: Water Storage container

Table 3: Household water treatment product

<p>Wuha Agar: is a chlorine-based water treatment solution that can be used to disinfect not turbid water.</p>		<p>Aqua tabs: Aqua-tabs are a chlorine-based water purification tablet that can be used to disinfect not turbid water.</p>	
<p>Bishan Gari: Bishan Gari Water Purifier is a combined coagulant–flocculent–disinfectant powder mixture used for treat turbid water.</p>		<p>P&G (PUR): P&G is the brand name of a combined coagulant, flocculent and disinfectant product used for treat turbid water.</p>	

<p>Tulip Table Top: Is a two bucket water filter and water storage facility in one. The top bucket is filled with raw water, which is filtered through the Tulip candle filter into the lower bucket.</p>		<p>Nazava: Its popular product in Ethiopia for household water filtration purpose, it removes 99.9% bacteria's and the water safe for drink and economical</p>	
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Self-Check 3

Part-I: Write true for the right statement and false for wrong one.

1. Collect and store water in a clean, covered and narrow opening prevent contamination.
2. Contaminated water and poor sanitation can lead to transmission of diseases
3. Water borne diseases are cause by improper water storage.

Part-II: Match column A to B

A

1. Potable water physical characteristics
2. Potable water Chemical characteristics
3. Potable water Biological characteristics

B

- A. free from lead
- B. free from pathogenic bacteria
- C. odorless

Part-III: Answer the following questions accordingly

1. Explain Household water treatment methods
2. Write proper methods to collect and store water
3. List at least 3 water treatment products

Note: Satisfactory rating – above 75% Unsatisfactory - below 75%
You can ask your trainer for the copy of the correct answers

Operation sheet 3.1: House hold water treatment

Operation title: Disinfect raw by using wuha agar water

Purpose: To remove pathogenic microbial

Equipment Tools and Materials:

- 20 liter water container
- Wuha agar
- Watch

Steps in doing the task:

1. Fetch water from well, spring or tap
2. Add one capful of Wuha Agar
3. Cover and shake
4. Wait for 30 minute and use water

Quality Criteria: Assured performing of all the activities according to the procedures

Precautions:

- Avoid direct contact of wuha agar with eye and skin
- Read and interpret manual which guide you how to use wuha agar

Operation sheet 3.2: House hold water treatment

Operation title: Disinfect raw by using P&G water

Purpose: To remove turbidity and pathogenic microbial

Equipment Tools and Materials:

- 20 liter water container
- P&G
- Watch
- Stirring stick

Steps in doing the task:

1. The contents of a P&G Purifier of Water packet are added to 10 liters of water
2. Stir vigorously for five minutes.
3. Left to settle for five minutes.
4. Once the water becomes clear and the flocks have all settled to the bottom, filter the water by using clean cloth
5. left for 30 additional minutes before it is consumed

Quality Criteria: Assured performing of all the activities according to the procedures

Precautions:

- Avoid direct contact of P&G with eye and skin
- Read and interpret manual which guide you how to use P&G

Lab test1

Instructions: Perform the following activity as required standard

Task 1: Collect necessary material and equipment for your work

Task 2: Perform water treatment by using wuha agar

Task 2: Perform water treatment by using P&G

Unit Four: Proper Hand Washing and Basic Personal Hygiene Practices

This unit is to provide you the necessary information regarding the following content coverage and topics:

- 4.1 Importance of Basic Personal Hygiene
- 4.2 Steps for Proper Hand Washing Technique
- 4.3 Products for Proper Basic Hygiene and Sanitation Practice

This guide will also assist you to attain the learning outcomes stated below. Specifically, upon completion of this learning guide, trainees will be able to:

- Know Importance of Basic Personal Hygiene
- Demonstrate Steps for Proper Hand Washing Technique
- Identify Products for Proper Basic Hygiene and Sanitation Practice

4.1. Importance of Basic Personal Hygiene

Basic hygienic practices are essential for maintaining good health and preventing the spread of infectious diseases. Here are some reasons why basic hygiene practices are important:

- Prevent the spread of infectious diseases
- Promote good health
- Boost self-confidence
- Maintain a safe and healthy environment

Some of the most important basic hygiene practices include:

- **Hand hygiene:** Washing hands in critical occasion with soap and water or using an alcohol-based hand sanitizer to remove germs and bacteria.
- **Respiratory hygiene:** Covering the mouth and nose when coughing or sneezing to prevent the spread of respiratory infections.
- **Personal hygiene:** Maintaining cleanliness by taking regular showers or baths, washing clothes and bedding regularly, and brushing teeth twice a day.
- **Avoiding close contact with sick people:** Staying away from people who are sick to avoid the spread of infectious diseases.
- **Environmental hygiene:** Keeping the environment clean by cleaning and disinfecting surfaces regularly, especially those that are frequently touched.

4.2. Steps for Proper Hand Washing Technique

Hand washing is one of the best ways to protect yourself and your family from getting sick. Germs can be spread person to person or surface to person to minimize these spread properly hand wash at least for 20 seconds.

Occasions to wash hands

- Before, during, and after preparing food
- Before and after eating food
- Before and after caring for someone at home who is sick with vomiting or diarrhea
- Before and after treating a cut or wound
- After using the toilet
- After changing diapers or cleaning up a child
- After blowing your nose, coughing, or sneezing
- After touching an animal, animal feed, or animal waste
- After handling pet food or pet treats
- After touching garbage





Proper hand washing steps





Fig- 5 hand washing steps

4.3. Products for Proper Basic Hygiene and Sanitation Practice

Table 4: Basic hygiene products

<p>Soap: Soap is used for washing the hands, body, and face it can be available in liquid and solid form</p>		<p>SATO Tap:</p> <p>Its portable and easy to use hygiene for household level hand washing.</p>	
<p>Locally made hand wash tap : it can be produced with tap and locally available water container</p>		<p>Feminine hygiene products: These products, such as tampons, pads, and menstrual cups.</p>	

<p>Happy tap:</p> <p>Happy tap hand washing device that is affordable Low-flow tap & 15L tank allows for 50-70 uses per fill</p>		<p>Hand sanitizer:</p> <p>Hand sanitizer with at least 60% alcohol to sanitize hands in case of un-available water and soap.</p>	
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Self-Check 4

Part-I: Write true for the right statement and false for wrong one.

1. Washing hands regularly with only water is a proper hand wash practice.
2. Covering the mouth and nose when coughing or sneezing prevent the spread of respiratory infections.
3. Basic hygienic practice Boost self-confidence.

Part-II: Match column A to B

A

1. Environmental hygienic practice
2. After using the toilet
3. Respiratory hygiene

B

- A. mask
- B. disinfect toilet surface
- C. washes hands

Part-III: Answer the following questions accordingly

1. Write critical occasions for hand washing
2. Write products for basic hygiene practice
3. Write importance of basic hygienic practice

Note: Satisfactory rating – above 75% Unsatisfactory - below 75%

You can ask your trainer for the copy of the correct answers

Operation sheet 4.1: proper hand washing

Operation title: Wash hands properly

Purpose: To sanitize hands

Equipment Tools and Materials:

- Clean water
- soap
- hand wash facility

Steps in doing the task:

1. Wet your hands with clean, running water.
2. Apply soap to your hands.
3. Rub your hands together. Rub your palms together to create a good lather. Then rub the back of each hand, the area between your fingers, and under your nails.
4. Scrub your hands for at least 20 seconds.
5. Rinse your hands thoroughly under clean, running water.
6. Dry your hands using a clean towel or air dry.
7. Turn off the tap using a towel or your elbow.

Quality Criteria: Assured performing of all the activities according to the procedures

Precautions:

- Avoid direct contact of soap to your eye

Lab test 2

Instructions: Perform the following activity as required standard

Task 1: Collect necessary material and equipment for your work

Task 2: Perform proper hand washing

REFERENCE

Water, Sanitation and Hygiene (WASH) Training Document (Draft)

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