

# COMPETENCY - BASED LEARNING MATERIALS



Sector:	<b>TOURISM SECTOR</b>
Qualification:	<b>BASIC NC II</b>
Unit of Competency:	<b>PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES</b>
Module Title:	<b>PRACTICING OCCUPATIONAL HEALTH AND SAFETY PROCEDURES</b>
Institution:	



**BASIC NCII**  
**LIST OF COMPETENCIES**

<b>No.</b>	<b>Unit of Competency</b>	<b>Module Title</b>	<b>Code</b>
1.	Participate in Workplace Communication	Participating in Workplace Communication	500311105
2.	Work in Team Environment	Working in Team Environment	500311106
3.	Practice career professionalism	Practice career professionalism	500311107
4.	<b><i>Practice occupational health and safety procedures</i></b>	<b><i>Practice occupational health and safety procedures</i></b>	<b>500311108</b>

## LEARNING OUTCOME SUMMARY

**QUALIFICATION/LEVEL: BASIC NCII**

**Unit of Competency: PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**

**Modules Title: PRACTICING OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**

**Module Descriptor:** This unit covers the outcomes required to comply with regulatory and organizational requirements for occupational health and safety

**Nominal Duration: 5 Hours**

### **Summary of Learning Outcomes:**

LO1. Identify hazards and risks

LO2. Evaluate hazards and risks

LO3. Control hazards and risks

LO4. Maintain OHS awareness

## DETAILS OF LEARNING OUTCOME

<b>LEARNING OUTCOME 4.1</b>	<b>Identify hazards and risks</b>
<b>CONTENTS:</b> <ul style="list-style-type: none"><li>• Hazards/risks identification and control</li></ul>	
<b>ASSESSMENT CRITERIA:</b> <ol style="list-style-type: none"><li>1. Safety regulations and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures</li><li>2. Hazards/risks in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures</li><li>3. Contingency measures during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures</li></ol>	
<b>CONDITIONS:(Tools, equipment, s/m, references/materials)</b> <ul style="list-style-type: none"><li>• CBLM</li><li>• LMS</li><li>• Workplace or assessment location</li><li>• OHS personal records</li><li>• PPE</li><li>• Health records</li></ul>	
<b>METHODOLOGIES:</b> <ul style="list-style-type: none"><li>• Reading instructional materials thru online using the LMS</li><li>• Synchronous online instructions (zoom, Google meet and other available online application software)</li></ul>	
<b>ASSESSMENT METHODS:</b> <ul style="list-style-type: none"><li>• Online Exam</li></ul>	

## LEARNING EXPERIENCES

<b>LEARNING OUTCOME 4.1 Identify hazards and risks</b>	
<b>Learning Activity / Guide</b>	<b>Special Instructions</b>
Read Information Sheet 4.1-1 on Hazards/risks identification and control	Identify the Hazards/risks identification and control  Answer the Self-Check 4.1-1 and compare your answer from the Answer Key 4.1-1

## INFORMATION SHEET 4.1 - 1

### Hazards/risks identification and control

#### Learning Objective:

After reading this information sheet, you must be able to:

1. Identify the Hazards/risks identification and control

#### Introduction

Hazard identification is part of the process used to evaluate if any particular situation, item, thing, etc. may have the potential to cause harm.

### Hazards/risks identification and control



Hazard identification can be done:

- During design and implementation
  - Designing a new process or procedure
  - Purchasing and installing new machinery
- Before tasks are done
  - Checking equipment or following processes
  - Reviewing surroundings before each shift
- While tasks are being done
  - Be aware of changes, abnormal conditions, or sudden emissions

- During inspections
  - Formal, informal, supervisor, health and safety committee
- After incidents
  - Near misses or minor events
  - Injuries

To be sure that all hazards are found:

- Look at all aspects of the work and include non-routine activities such as maintenance, repair, or cleaning.
- Look at the physical work environment, equipment, materials, products, etc. that are used.
- Include how the tasks are done.
- Look at injury and incident records.
- Talk to the workers: they know their job and its hazards best.
- Include all shifts, and people who work off site either at home, on other job sites, drivers, teleworkers, with clients, etc.
- Look at the way the work is organized or done (include experience of people doing the work, systems being used, etc.).
- Look at foreseeable unusual conditions (for example: possible impact on hazard control procedures that may be unavailable in an emergency situation, power outage, etc.).
- Determine whether a product, machine or equipment can be intentionally or unintentionally changed (e.g., a safety guard that could be removed).
- Review all of the phases of the lifecycle.
- Examine risks to visitors or the public.
- Consider the groups of people that may have a different level of risk such as young or inexperienced workers, persons with disabilities, or new or expectant mothers.

### **Hazards types**

- biological – bacteria, viruses, insects, plants, birds, animals, and humans, etc.,
- chemical – depends on the physical, chemical and toxic properties of the chemical,
- ergonomic – repetitive movements, improper set up of workstation, etc.,
- physical – radiation, magnetic fields, temperature extremes, pressure extremes (high pressure or vacuum), noise, etc.,
- psychosocial – stress, violence, etc.,
- Safety – slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns.

**How do I know what is a hazard?**

Another way to look at health and safety in your workplace is to ask yourself the following questions. These are examples only. You may find other items or situations that can be a hazard. List any item that should be examined. During the risk assessment process, the level of harm will be assessed.

What materials or situations do I come into contact with? Possibilities could include:

- electricity
- Chemical (liquids, gases, solids, mists, vapors, etc.)
- temperature extremes of heat or cold (e.g., bakeries, foundries, meat processing)
- ionizing/non-ionizing radiation (e.g., x-rays, ultraviolet (sun) rays)
- oxygen deficiency
- water

What materials or equipment could I be struck by?

- moving objects (e.g., forklifts, overhead cranes, vehicles)
- flying objects (e.g., sparks or shards from grinding)
- falling material (e.g., equipment from above)

What objects or equipment could I strike or hit my body upon, or that part of my body might be caught in, on, or between?

- stationary or moving objects
- protruding objects
- sharp or jagged edges
- pinch points on machines (places where parts are very close together)
- objects that stick out (protrude)
- Moving objects (conveyors, chains, belts, ropes, etc.)

What could I fall from? (e.g., falls to lower levels)

- objects, structures, tanks, silos, lofts
- ladders, overhead walkways
- roofs
- trees, cliffs

What could I slip or trip on? (e.g., falls on same level)

- obstructions on floor, stairs
- surface issues (wet, oily, icy)
- footwear that is in poor condition

How could I overexert myself?

- lifting
- pulling
- pushing



- carrying
- repetitive motions

What other situations could I come across?

- unknown/unauthorized people in area
- a potentially violent situation
- working alone
- confined space
- missing/damaged materials
- new equipment/procedure at work site
- fire/explosion
- chemical spill or release

### **Where can I find more information about hazards?**

It may be necessary to research about what might be a hazard as well as how much harm that hazard might cause. Sources of information include:

- Safety Data Sheets (SDSs).
- Manufacturer's operating instructions, manuals, etc.
- Test or monitor for exposure (occupational hygiene testing such as chemical or noise exposure).
- Results of any job safety analysis.
- Experiences of other organizations similar to yours.
- Trade or safety associations.
- Information, publications, alerts, etc. as published by reputable organizations, labor unions, or government agencies.

### **What if I am new to the workplace?**

If you are new to your workplace, to learn about the hazards of your job, you can:

- ask your supervisor
- ask a member of the health and safety committee or your health and safety representative
- ask about standard operating procedures and precautions for your job
- check product labels and safety data sheets
- pay attention to signs and other warnings in your work
- watch for posters or instructions at the entrance of a chemical storage room to warn of hazardous products
- Ask about operating instructions, safe work procedures, processes, etc.

**Video: <https://www.youtube.com/watch?v=99fXLo4GsmA>**

## SELF-CHECK 4.1-1

### Multiple Choices:

1. This type of hazards refers to repetitive movements, improper set up of workstation, etc.
  - a. Physical
  - b. Chemical
  - c. Biological
  - d. Ergonomics
2. This type of hazards refers to the physical, chemical and toxic properties of the chemical.
  - a. Physical
  - b. Chemical
  - c. Biological
  - d. Ergonomics
3. This type of hazards refers to bacteria, viruses, insects, plants, birds, animals, and humans, etc.,
  - a. Physical
  - b. Chemical
  - c. Biological
  - d. Ergonomics
4. This type of hazards refers to radiation, magnetic fields, temperature extremes, pressure extremes (high pressure or vacuum), noise, etc.
  - a. Physical
  - b. Chemical
  - c. Biological
  - d. Ergonomics
5. This type of hazards refers to slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns.
  - a. Physical
  - b. Chemical
  - c. Biological
  - d. Safety

## DETAILS OF LEARNING OUTCOME

<b>LEARNING OUTCOME 4.2</b>	<b>Evaluate hazards and risks</b>
<b>CONTENTS:</b> <ul style="list-style-type: none"><li>• Threshold Limit Value -TLV</li><li>• OHS procedures and practices and regulations</li></ul>	
<b>ASSESSMENT CRITERIA:</b> <ol style="list-style-type: none"><li>1. Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV)</li><li>2. Effects of the hazards are determined</li><li>3. OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation</li></ol>	
<b>CONDITIONS:(Tools, equipment, s/m, references/materials)</b> <ul style="list-style-type: none"><li>• CBLM</li><li>• LMS</li><li>• Workplace or assessment location</li><li>• OHS personal records</li><li>• PPE</li><li>• Health records</li></ul>	
<b>METHODOLOGIES:</b> <ul style="list-style-type: none"><li>• Reading instructional materials thru online using the LMS</li><li>• Synchronous online instructions (zoom, Google meet and other available online application software)</li></ul>	
<b>ASSESSMENT METHODS:</b> <ul style="list-style-type: none"><li>• Online Exam</li></ul>	

## LEARNING EXPERIENCES

### LEARNING OUTCOME 4.2 Evaluate hazards and risks

<b>Learning Activities</b>	<b>Special Instructions</b>
Read Information Sheet 4.2-1 on Threshold Limit Value -TLV	Identify the Threshold Limit Value -TLV  Answer the Self-Check 4.2-1 and compare your answer from the Answer Key 4.2-1
Read Information Sheet 4.2-2 on OHS procedures and practices and regulations	Define the OHS procedures and practices and regulations  Answer the Self-Check 4.2-2 and compare your answer from the Answer Key 4.2-2

## INFORMATION SHEET 4.2-1

### Threshold Limit Value -TLV

#### Learning Objective:

After reading this information sheet, you must be able to:

1. Identify the Threshold Limit Value -TLV

#### Introduction:

The **threshold limit value (TLV)** of a chemical substance is believed to be a level to which a worker can be exposed day after day for a working lifetime without adverse effects.

### Threshold Limit Value -TLV

The TLV is an estimate based on the known toxicity in humans or animals of a given chemical substance, and the reliability and accuracy of the latest sampling and analytical methods. It is not a static definition since new research can often modify the risk assessment of substances and new laboratory or instrumental analysis methods can improve analytical detection limits. The TLV is a recommendation by ACGIH, with only a guideline status. As such, it should not be confused with exposure limits having a regulatory status, like those published and enforced by the Occupational Safety and Health Administration (OSHA). The OSHA regulatory exposure limits permissible exposure limits (PELs) published in 29CFR 1910.1000 Table Z1 are based on recommendations made by the ACGIH in 1968, although other exposure limits were adopted more recently. Many OSHA exposure limits are not considered by the industrial hygiene community to be sufficiently protective levels since the toxicological basis for most limits have not been updated since the 1960s. The National Institute for Occupational Safety and Health (NIOSH) publishes recommended exposure limits (RELs) which OSHA takes into consideration when promulgating new regulatory exposure limits.

The TLV for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. Its units are in parts per million (ppm) for gases and in milligrams per cubic meter (mg/m<sup>3</sup>) for particulates such as dust, smoke and mist. The basic formula for converting between ppm and mg/m<sup>3</sup> for gases is  $\text{ppm} = (\text{mg}/\text{m}^3) * 24.45 / \text{molecular weight}$ . This formula is not applicable to airborne particles.

Three types of TLVs for chemical substances are defined:

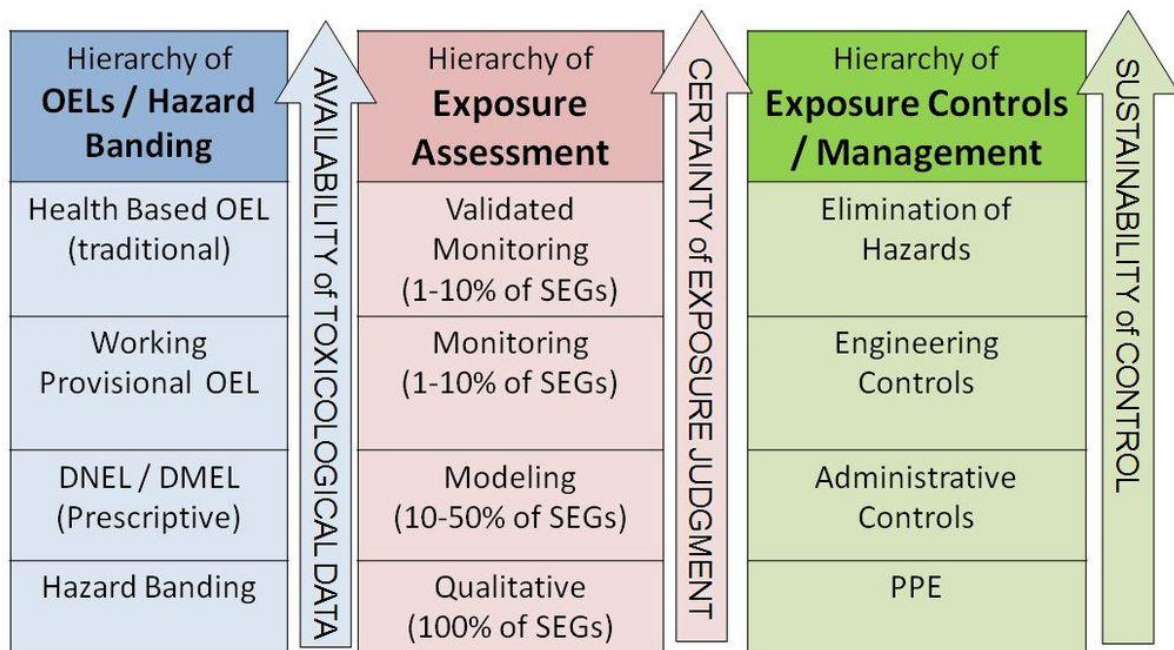
1. Threshold limit value – time-weighted average (TLV-TWA): average exposure on the basis of a 8h/day, 40h/week work schedule

2. Threshold limit value – short-term exposure limit (TLV-STEL): A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the 8-hour TWA is within the TLV-TWA.
3. Threshold limit value – ceiling limit (TLV-C): absolute exposure limit that should not be exceeded at any time

There are TLVs for physical agents as well as chemical substances. TLVs for physical agents include those for noise exposure, vibration, ionizing and non-ionizing radiation exposure and heat and cold stress.

The TLV is equivalent in spirit to various occupational exposure limits developed by organizations around the world; however, the materials covered, values recommended, and definitions used can differ amongst organizations.

## Hierarchies for Effective and Efficient Protection of Workers & Communities



## SELF-CHECK 4.2-1

### True or False

1. The TLV for chemical substances is defined as a concentration in water.
2. The TLV is an estimate based on the known toxicity in humans or animals.
3. The TLV is equivalent in spirit to various occupational exposure limits developed by organizations around the world.
4. The TLV is a recommendation by ACGIH for a guideline status.
5. The TLV units are in parts per million (ppm) for gases and in milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) for particulates such as dust, smoke and mist.

## INFORMATION SHEET 4.2-2

### OHS procedures and practices and regulations

#### Learning Objective:

After reading this information sheet, you must be able to:

1. Define the OHS procedures and practices and regulations

#### Introduction:

Health and safety is the joint responsibility of management and workers. An organization's occupational health and safety policy is a statement of principles and general rules that serve as guides for action.

### OHS procedures and practices and regulations

#### 1. Hazard and Risk Control

A **hazard** is any source of **potential** damage, harm or adverse health effects on something or someone.

**Risk** is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. It may also apply to situations with property or equipment loss, or harmful effects on the environment.

#### 2. Environments for Safety Regulations

A common factor in whether regulation is used is the seriousness of the outcome being addressed in terms of human health. For this reason regulation is more common in transportation and the workplace, where the potential for fatal injury is perceived to be relatively great and less common in the home and in sports environments, where the potential for fatal injury is perceived to be less. Regulations are often introduced in situations where the actions of one person can injure other persons who do not have the ability or opportunity to decide whether to accept the risks associated with those actions. The most common examples relate to regulations protecting the safety of children and of workers.

#### Using the Think Safe steps

1. Spot the hazard

A hazard is anything that could hurt you or someone else.

Examples of workplace hazards include:

Frayed electrical cords (could result in electrical shock)  
boxes stacked precariously (they could fall on someone)  
noisy machinery (could result in damage to your hearing)



## 2. Assess the risk

Assessing the risk means working out how likely it is that a hazard will harm someone and how serious the harm could be.

For example:

Ask your supervisor for instructions and training before using equipment  
ask for help moving or lifting heavy objects  
tell your supervisor if you think a work practice could be dangerous

## 3. Make the changes

It is your employer's responsibility to fix hazards. Sometimes you may be able to fix simple hazards yourself, as long as you don't put yourself or others at risk. For example, you can pick up things from the floor and put them away to eliminate a trip hazard.

The best way to fix a hazard is to get rid of it altogether. This is not always possible, but your employer should try to make hazards less dangerous by looking at the following options (in order from most effective to least effective):

**Elimination** - Sometimes hazards - equipment, substances or work practices - can be avoided entirely. (E.g. Clean high windows from the ground with an extendable pole cleaner, rather than by climbing a ladder and risking a fall.)

Substitution - Sometimes a less hazardous thing, substance or work practice can be used. (e.g. Use a non-toxic glue instead of a toxic glue.)

**Isolation** - Separate the hazard from people, by marking the hazardous area, fitting screens or putting up safety barriers. (E.g. Welding screens can be used to isolate welding operations from other workers. Barriers and/or boundary lines can be used to separate areas where forklifts operate near pedestrians in the workplace.)

**Safeguards** - Safeguards can be added by modifying tools or equipment, or fitting guards to machinery. These must never be removed or disabled by workers using the equipment.

Instructing workers in the safest way to do something - This means developing and enforcing safe work procedures. Students on work experience must be given information and instruction and must follow agreed procedures to ensure their safety.

**Using personal protective equipment and clothing (PPE)** - If risks remain after the options have been tried, it may be necessary to use equipment such as safety glasses, gloves, helmets and ear muffs. PPE can protect you from hazards associated with jobs such as handling chemicals or working in a noisy environment.

**Video:** <https://www.youtube.com/watch?v=m5gxAICpKps>

## SELF-CHECK 4.2-2

### Multiple Choices:

1. Separate the hazard from people, by marking the hazardous area, fitting screens or putting up safety barriers.
  - a. Elimination
  - b. Isolation
  - c. Safeguards
  - d. Using PPE
2. This can be added by modifying tools or equipment, or fitting guards to machinery.
  - a. Elimination
  - b. Isolation
  - c. Safeguards
  - d. Using PPE
3. Sometimes hazards - equipment, substances or work practices - can be avoided entirely.
  - a. Elimination
  - b. Isolation
  - c. Safeguards
  - d. Using PPE
4. This can protect you from hazards associated with jobs such as handling chemicals or working in a noisy environment.
  - a. Elimination
  - b. Isolation
  - c. Safeguards
  - d. Using PPE

## DETAILS OF LEARNING OUTCOME

<b>LEARNING OUTCOME 4.3</b>	<b>Control hazards and risks</b>
<b>CONTENTS:</b>	
<ul style="list-style-type: none"> <li>• Organization safety and health protocol</li> <li>• PPE types and uses</li> </ul>	
<b>ASSESSMENT CRITERIA:</b>	
<ol style="list-style-type: none"> <li>1. Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed</li> <li>2. Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies</li> <li>3. Personal protective equipment (PPE) is correctly used in accordance with organization OHS procedures and practices</li> <li>4. Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol</li> </ol>	
<b>CONDITIONS:(Tools, equipment, s/m, references/materials)</b>	
<ul style="list-style-type: none"> <li>• CBLM</li> <li>• LMS</li> <li>• Workplace or assessment location</li> <li>• OHS personal records</li> <li>• PPE</li> <li>• Health records</li> </ul>	
<b>METHODOLOGIES:</b>	
<ul style="list-style-type: none"> <li>• Reading instructional materials thru online using the LMS</li> <li>• Synchronous online instructions (zoom, Google meet and other available online application software)</li> </ul>	
<b>ASSESSMENT METHODS:</b>	
<ul style="list-style-type: none"> <li>• Online Exam</li> </ul>	

## LEARNING EXPERIENCES

### LEARNING OUTCOME 4.3 Control hazards and risks

<b>Learning Activities</b>	<b>Special Instructions</b>
Read Information Sheet 4.3-1 on Organization safety and health protocol	Understand the Organization safety and health protocol  Answer the Self-Check 4.3-1 and compare your answer from the Answer Key 4.3-1
Read Information Sheet 4.3-2 on PPE types and uses	Define the PPE types and uses  Answer the Self-Check 4.3-2 and compare your answer from the Answer Key 4.3-2

## INFORMATION SHEET 4.3-1

### Organization safety and health protocol

#### Learning Objective:

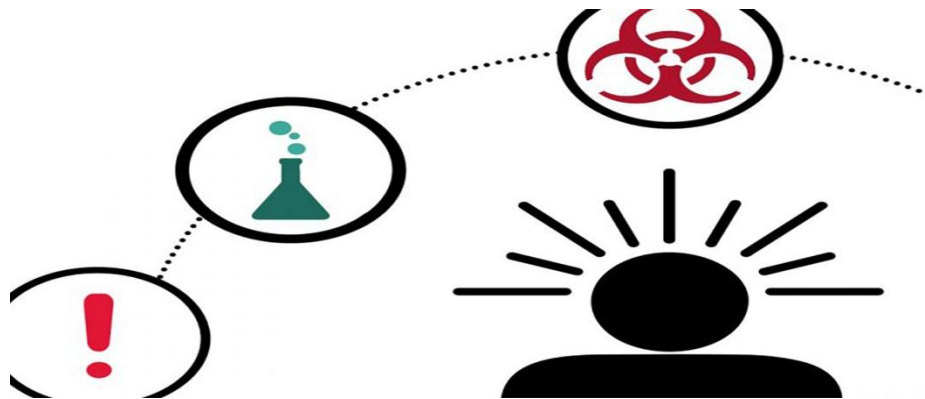
After reading this information sheet, you must be able to:

1. Understand the Organization safety and health protocol

#### Introduction:

As an employer, it is your responsibility to maintain a safe and healthy workplace. A safety and health management system, or safety program, can help you focus your efforts at improving your work environment.

### Organization safety and health protocol



The main goal of safety and health programs is to prevent workplace injuries, illnesses, and deaths, as well as the suffering and financial hardship these events can cause for workers, their families, and employers. The recommended practices use a proactive approach to managing workplace safety and health. Traditional approaches are often reactive –that is, problems are addressed only after a worker is injured or becomes sick, a new standard or regulation is published, or an outside inspection finds a problem that must be fixed. These recommended practices recognize that finding and fixing hazards before they cause injury or illness is a far more effective approach.

The idea is to begin with a basic program and simple goals and grow from there. If you focus on achieving goals, monitoring performance, and evaluating outcomes, your workplace can progress along the path to higher levels of safety and health achievement.

Employers will find that implementing these recommended practices also brings other benefits. Safety and health programs help businesses:

- **Prevent** workplace injuries and illnesses
- **Improve** compliance with laws and regulations

- **Reduce** costs, including significant reductions in workers' compensation premiums
- **Engage** workers
- **Enhance** their social responsibility goals
- **Increase** productivity and enhance overall business operations

Information that needs to be included in the Safety Protocol includes:

- List all Personal Protective Equipment (PPE) needed for the procedure. Be specific on type of gloves or eyewear needed.
- List all chemicals (including concentration), biological materials and equipment needed for the procedure. Be specific on biological strain: E. coli could be BSL 2 (O157:H7) or BSL 1 (K12). Include chemical concentrations, catalog numbers, equipment names, model numbers, etc. Remember that liquid nitrogen, dry ice and compressed gases are hazardous materials.
- List hazards of chemicals and biological material used in the procedure.
- List any special emergency equipment needed (i.e., eyewash, spill kit, dry sand/Class D fire extinguisher, HF antidote, effective disinfectant).
- List waste disposal requirements (chemical, biological waste, sharps containers).
- Describe any anticipated problems that may occur while performing this procedure, the course of action to be taken, including the job title to consult/report to if problem occurs.

**Video: <https://www.youtube.com/watch?v=C8zY5I7CcfE>**

## SELF-CHECK 4.3-1

### Identification:

Identify the correct word for each sentence for Safety and health programs help businesses

1. \_\_\_\_\_ workplace injuries and illnesses
2. \_\_\_\_\_ compliance with laws and regulations
3. \_\_\_\_\_ costs, including significant reductions in workers' compensation premiums
4. \_\_\_\_\_ workers
5. \_\_\_\_\_ their social responsibility goals
6. \_\_\_\_\_ productivity and enhance overall business operations

Engage    Enhance    Reduce    Improve    Prevent    Increase

## INFORMATION SHEET 4.3-2

### PPE types and uses

#### **Learning Objective:**

After reading this information sheet, you must be able to:

1. Define the PPE types and uses

#### **Introduction:**

Selecting the right PPE to sufficiently reduce exposure to hazards is essential to laboratory safety. The purpose of this section is to provide resources allowing researchers to identify and classify various types of PPE so the appropriate safety precautions are taken when conducting research.

### PPE types and uses

#### **Eye and Face Protection**

Eye protection is achieved by wearing eyewear specifically designed to reduce the risk of exposure to chemical splashes, laser radiation and/or flying debris. There are four primary types of eye protection — of which each has its own limitations — including general safety glasses, laser safety glasses, chemical splash goggles and impact goggles. Full face protection is achieved by wearing face shields.

General safety glasses

- Must have side shields or a one-piece lens that wraps around the temple.



#### **Hand Protection**

Appropriate selection of gloves is essential to protecting hands. Chemically protective gloves are one of the most important tools to minimize dermal exposures to chemicals in research laboratories. Gloves should only be used



under the specific conditions for which they are designed, as no glove is impervious to all chemicals.

It is also important to note that gloves degrade over time, so they should be replaced as necessary to ensure adequate protection. Laboratory personnel should use the information below, and manufacturer compatibility charts (found under useful resources in the above right menu), to choose the type and style of glove.

#### Light latex, vinyl or nitrile gloves

- Disposable latex (powdered or unpowdered)
- Working with biological hazards (human blood, body fluids, tissues, blood borne pathogens, specimens), BSL1, BSL2, BSL2+, BSL3



#### **Body Protection**

Lab coats are required for all wet labs. Cotton or cotton/poly blends are sufficient for labs without risk of fire. Nomex coats are required for work with pyrophoric, flammable liquids in quantities of more than 4 liters or when work involves flammable liquids and an ignition source such as a burner. Barrier coats must be worn when working with infectious materials. Barrier coats can be autoclaved by placing the coats in a pan and placing an additional pan of water in the autoclave.

#### Traditional (cotton/cotton-polyester blend - protects skin and clothing from dirt, inks, non-hazardous chemicals)

- General use; chemical, biological, radiation and physical hazards



Flame resistant (e.g. Nomex or other flame-resistant cotton — resists ignition)

- Working with water or air reactive chemicals, large volumes of organic solvents, and potentially explosive chemicals



Barrier (predominantly polyester — offers splash protection, not flame resistant)

- Working with infectious materials



## **Respiratory Protection**

### **Program Procedures**

Respiratory protective equipment is only used as a "last line of defense," and as a result, requires individual assessment and training by EH&S personnel. Proper fitting and use is key to respirator efficacy, so EH&S requires all individuals who believe one or more of their job tasks require respiratory protective equipment to contact EH&S. The following steps will be taken:

1. A workplace hazard assessment will be performed to determine if the task requires respiratory protective equipment.
- If the task does not require respiratory equipment but the employee wishes to use such equipment, he or she must complete Appendix D of the Respiratory Protective Equipment Manual and return the bottom portion of the form to EH&S. This form provides information in accordance with OSHA Sec. 1910.134 regarding voluntary use of respirators when not required under the standard.
2. If respiratory protective equipment is necessary, the employee will be given a medical evaluation questionnaire to fill out as well as a supplement to the medical questionnaire that outlines the findings of the hazard assessment conducted by EH&S. Both forms should be taken to a contract physician or licensed health care professional (PLHCP) who will perform a confidential medical evaluation to determine the employee's fitness to wear a respirator.
3. When the employee is approved to wear a respirator for the job task(s) outlined in the hazard assessment, the appropriate respirator will be

selected and the employee will be fit-tested following CAL/OSHA's accepted fit-testing protocol. Fit-testing assures the selected respirator is worn correctly to allow proper performance.

4. During fit-testing, the employee receives training on the appropriate method(s) to store, handle and sanitize the respirator.
5. Once initial fitting and training is completed, the employee must enroll in and attend yearly training conducted by EH&S through the UC Learning Center. Employees will be authorized to register for the "Basic Respiratory Protection" course to fulfill the annual training requirement.

### Surgical masks

- Protect against large droplets and splashes (*does not require fit-testing*)
- Working with live animals; working with infectious material in BSL-2+ level labs but only protects your sample from you, not the other way around.



### N-95 respirators

- Protects against dusts, fumes, mists, microorganisms (*requires fit-testing*)
- Working with live animals or infectious materials in BSL-2 level labs with known airborne transmissible disease (e.g. tuberculosis, also required for influenza (flu)); dusty environments



### Half-mask respirators

- Purifies air: protects against variety of particulates, vapors, dust, mists, and fumes; depends on filter cartridge used (*requires fit-testing*)
- Working with live animals or infectious materials with known airborne transmissible disease; dusty environments; chemical vapors; particulates



### Full-face respirators

- Same as half-mask, with greater protection factor; eye, mucus membranes and face protection; depends on filter cartridge used (*requires fit-testing*)
- Working with live animals or infectious materials with known airborne transmissible disease; dusty environments; chemical vapors; particulates



### **Hearing Protection**

All laboratory personnel shall contact EH&S to request noise monitoring in their laboratory settings to perform noise monitoring and advice on the specific use of hearing protectors.

Laboratory workers whose eight-hour time-weighted average noise exposure exceeds the 85 dBA Action Level will be enrolled in the UC Merced Hearing Conservation Program. These individuals will receive annual audiometric testing, will have hearing protectors made available to them by their supervisors, and will be provided training on the fitting, use and care of these devices.

Monitoring results for individuals whose noise exposure exceed the Action Level will also be notified in writing using **Attachment B — Noise Monitoring — Dosimetry Results**.

### **Disposable earplugs**

Polyvinyl chloride (PVC) or polyurethane foam, one-time use design (no cleaning), one size fits all, light weight, low cost, blocks all sound. Useful when working in areas where sound levels average over 85 dBa; EH&S can assist in assessments.



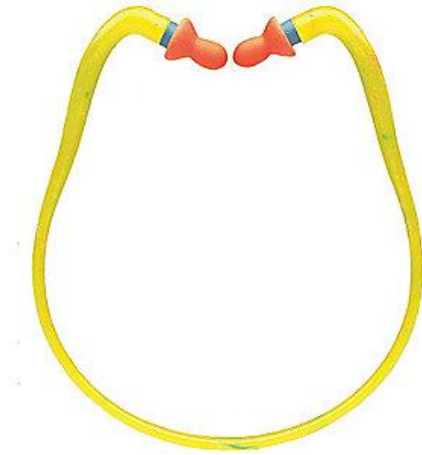
### Reusable earplugs

1. Silicone, tapered fit, reusable (needs cleaning), corded or uncorded, light weight, more durable than disposable earplugs. Useful when working in areas where sound levels average over 85 dBa; EH&S can assist in assessments.



### Hearing band

2. Earplugs connected to a flexible band that can be worn around the neck when not needed. Useful when working in areas where sound levels average over 85 dBa; EH&S can assist in assessments.



**Video: <https://www.youtube.com/watch?v=r9vp1q1L2ro>**



## SELF-CHECK 4.3-2

### Multiple Choices:

1. Protects against dusts, fumes, mists, microorganisms
  - a. N-95 respirators
  - b. Surgical masks
  - c. Full-face respirators
  - d. Half-mask respirators
2. Protect against large droplets and splashes
  - a. N-95 respirators
  - b. Surgical masks
  - c. Full-face respirators
  - d. Half-mask respirators
3. Working with water or air reactive chemicals, large volumes of organic solvents, and potentially explosive chemical.
  - a. Traditional Lab Coat
  - b. Barrier Coat
  - c. Flame resistant Coat
  - d. Artificial Coat
4. Working with infectious materials
  - a. Traditional Lab Coat
  - b. Barrier Coat
  - c. Flame resistant Coat
  - d. Artificial Coat

## DETAILS OF LEARNING OUTCOME

<b>LEARNING OUTCOME 4.4</b>	<b>Maintain OHS awareness</b>
<b>CONTENTS:</b>	
<ul style="list-style-type: none"> <li>• Personal hygiene practices</li> <li>• Practice of personal hygiene</li> </ul>	
<b>ASSESSMENT CRITERIA:</b>	
<ol style="list-style-type: none"> <li>1. Emergency-related drills and trainings are participated in as per established organization guidelines and procedures</li> <li>2. OHS personal records are completed and updated in accordance with workplace requirements</li> </ol>	
<b>CONDITIONS:(Tools, equipment, s/m, references/materials)</b>	
<ul style="list-style-type: none"> <li>• CBLM</li> <li>• LMS</li> <li>• Workplace or assessment location</li> <li>• OHS personal records</li> <li>• PPE</li> <li>• Health records</li> </ul>	
<b>METHODOLOGIES:</b>	
<ul style="list-style-type: none"> <li>• Reading instructional materials thru online using the LMS</li> <li>• Synchronous online instructions (zoom, Google meet and other available online application software)</li> </ul>	
<b>ASSESSMENT METHODS:</b>	
<ul style="list-style-type: none"> <li>• Online Exam</li> </ul>	

## LEARNING EXPERIENCES

### LEARNING OUTCOME 4.4 Maintain OHS awareness

<b>Learning Activities</b>	<b>Special Instructions</b>
Read Information Sheet 4.4-1 on Personal hygiene practices	Know the Personal hygiene practices  Answer the Self-Check 4.4-1 and compare your answer from the Answer Key 4.4-1
Read Information Sheet 4.4-2 on Practice of personal hygiene	Determine the Practice of personal hygiene  Answer the Self-Check 4.4-2 and compare your answer from the Answer Key 4.4-2

## INFORMATION SHEET 4.4-1

### Personal hygiene practices

#### Learning Objective:

After reading this information sheet, you must be able to:

1. Know the Personal hygiene practices

#### Introduction:

Hygiene is a concept related to cleanliness, health and medicine. It is as well related to personal and professional care practices. In medicine and everyday life settings, hygiene practices are employed as preventive measures to reduce the incidence and spreading of disease.

### Personal hygiene practices

Hygiene pertains to the hygiene practices that prevent or minimize the spread of disease at home and other everyday settings such as social settings, public transport, the workplace, public places, etc.

Hygiene in a variety of settings plays an important role in preventing the spread of infectious diseases. It includes procedures used in a variety of domestic situations such as hand hygiene, respiratory hygiene, food and water hygiene, general home hygiene (hygiene of environmental sites and surfaces), care of domestic animals, and home health care (the care of those who are at greater risk of infection).

At present, these components of hygiene tend to be regarded as separate issues, although based on the same underlying microbiological principles. Preventing the spread of diseases means breaking the chain of infection transmission. Simply put, if the chain of infection is broken, infection cannot spread. In response to the need for effective codes of hygiene in home and everyday life settings the International Scientific Forum on Home Hygiene has developed a risk-based approach based on Hazard Analysis Critical Control Point (HACCP), also referred to as "targeted hygiene." Targeted hygiene is based on identifying the routes of pathogen spread in the home and introducing hygiene practices at critical times to break the chain of infection.

The main sources of infection in the home are people (who are carriers or are infected), foods (particularly raw foods) and water, and domestic animals. Sites that accumulate stagnant water—such as sinks, toilets, waste pipes, cleaning tools, face cloths, etc. readily support microbial growth and can become secondary reservoirs of infection, though species are mostly those that threaten "at risk" groups. Pathogens (potentially infectious bacteria, viruses etc.—colloquially called "germs") are constantly shed from these sources via mucous membranes, feces, vomit, skin scales, etc. Thus, when circumstances combine, people are exposed, either directly or via food or water, and can develop an infection.

The main "highways" for the spread of pathogens in the home are the hands, hand and food contact surfaces, and cleaning cloths and utensils.

Pathogens can also be spread via clothing and household linens, such as towels. Utilities such as toilets and wash basins, for example, were invented for dealing safely with human waste but still have risks associated with them. Safe disposal of human waste is a fundamental need; poor sanitation is a primary cause of diarrhea disease in low income communities. Respiratory viruses and fungal spores are spread via the air.

Good home hygiene means engaging in hygiene practices at critical points to break the chain of infection. Because the "infectious dose" for some pathogens can be very small (10-100 viable units or even less for some viruses), and infection can result from direct transfer of pathogens from surfaces via hands or food to the mouth, nasal mucous or the eye, 'hygienic cleaning' procedures should be sufficient to eliminate pathogens from critical surfaces.

Hygienic cleaning can be done through:

- Mechanical removal (i.e., cleaning) using a soap or detergent. To be effective as a hygiene measure, this process must be followed by thorough rinsing under running water to remove pathogens from the surface.
- Using a process or product that inactivates the pathogens in situ. Pathogen kill is achieved using a "micro-biocidal" product, i.e., a disinfectant or antibacterial product; waterless hand sanitizer; or by application of heat.
- In some cases combined pathogen removal with kill is used, e.g., laundering of clothing and household linens such as towels and bed linen.

## **Hand washing**

Hand hygiene is defined as hand washing or washing hands and nails with soap and water or using water less hand sanitizer. Hand hygiene is central to preventing the spread of infectious diseases in home and everyday life settings.

In situations where hand washing with soap is not an option (e.g., when in a public place with no access to wash facilities), a water less hand sanitizer such as an alcohol hand gel can be used. They can be used in addition to hand washing to minimize risks when caring for "at-risk" groups. To be effective, alcohol hand gels should contain not less than 60%v/v alcohol.

The **WHO** (World Health Organization) recommends hand washing with ash if soap is not available in critical situations, schools without access to soap and other difficult situations like post-emergencies where use of (clean) sand is recommended, too. Use of ash is common in rural areas of developing countries and has in experiments been shown at least as effective as soap for removing pathogens.

## **Respiratory hygiene**

Correct respiratory and hand hygiene when coughing and sneezing reduces the spread of pathogens particularly during the cold and flu season.

- Carry tissues and use them to catch coughs and sneezes, or sneeze into your elbow
- Dispose of tissues as soon as possible

### **Food hygiene at home**

Food hygiene is concerned with the hygiene practices that prevent food poisoning. The five key principles of food hygiene, according to WHO, are:

1. Prevent contaminating food with mixing chemicals, spreading from people, and animals.
2. Separate raw and cooked foods to prevent contaminating the cooked foods.
3. Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
4. Store food at the proper temperature.
5. Use safe water and raw materials.

### **Hygiene in the kitchen**

Routine cleaning of (hand, food, drinking water) sites and surfaces (such as toilet seats and flush, handles, door and tap handles, work surfaces, bath and basin surfaces) in the kitchen, bathroom and toilet reduces the risk of spread of pathogens. The infection risk from flush toilets is not high, provided they are properly maintained, although some splashing and aerosol formation can occur during flushing, particularly when someone has diarrhea. In case of using public toilets you can always use a Toilet Seat Sanitizer to spray on the seat before sitting on it. A toilet seat sanitizer helps to kill bacteria just as any other sanitizer which helps to protect from UTI. Pathogens can survive in the scum or scale left behind on baths, showers and wash basins after washing and bathing.

Water left stagnant in the pipes of showers can be contaminated with pathogens that become airborne when the shower is turned on. If a shower has not been used for some time, it should be left to run at a hot temperature for a few minutes before use.

Thorough cleaning is important in preventing the spread of fungal infections. Molds can live on wall and floor tiles and on shower curtains. Mold can be responsible for infections, because allergic responses deteriorate/damage surfaces and cause unpleasant odors. Primary sites of fungal growth are inanimate surfaces, including carpets and soft furnishings. Air-borne fungi are usually associated with damp conditions, poor ventilation or closed air systems.

### **Laundry hygiene**

Laundry hygiene involves practices that prevent disease and its spread via soiled clothing and household linens such as towels. Items most likely to be

contaminated with pathogens are those that come into direct contact with the body, e.g., underwear, personal towels, facecloths, nappies. Cloths or other fabric items used during food preparation or for cleaning the toilet or cleaning up material such as feces or vomit are a particular risk.

Microbiological and epidemiological data indicates that clothing and household linens etc. are a risk factor for infection transmission in home and everyday life settings as well as institutional settings. The lack of quantitative data linking contaminated clothing to infection in the domestic setting makes it difficult to assess the extent of this risk. It also indicates that risks from clothing and household linens are somewhat less than those associated with hands, hand contact and food contact surfaces, and cleaning cloths, but even so these risks need to be managed through effective laundering practices. In the home, this routine should be carried out as part of a multicarrier approach to hygiene which includes hand, food, respiratory and other hygiene practices.

Infectious diseases risks from contaminated clothing etc. can increase significantly under certain conditions, e.g., in healthcare situations in hospitals, care homes and the domestic setting where someone has diarrhea, vomiting, or a skin or wound infection. It increases in circumstances where someone has reduced immunity to infection.

Hygiene measures, including laundry hygiene, are an important part of reducing spread of antibiotic resistant strains. In the community, otherwise healthy people can become persistent skin carriers of MRSA, or fecal carriers of enterobacteria strains which can carry multi-antibiotic resistance factors (e.g. NDM-1 or ESBL-producing strains). The risks are not apparent until, for example, they are admitted to hospital, when they can become "self-infected" with their own resistant organisms following a surgical procedure. As persistent nasal, skin or bowel carriage in the healthy population spreads "silently" across the world, the risks from resistant strains in both hospitals and the community increase. In particular the data indicates that clothing and household linens are a risk factor for spread of *S. aureus* (including MRSA and PVL-producing MRSA strains), and that effectiveness of laundry processes may be an important factor in defining the rate of community spread of these strains. Skin-to-skin contact (including unbraided skin) and indirect contact with contaminated objects such as towels, sheets and sports equipment seem to represent the mode of transmission.

During laundering, temperature and detergent work to reduce microbial contamination levels on fabrics. Soil and microbes from fabrics are severed and suspended in the wash water. These are then "washed away" during the rinse and spin cycles. In addition to physical removal, micro-organisms can be killed by thermal inactivation which increases as the temperature is increased. Chemical inactivation of microbes by the surfactants and activated oxygen-based bleach used in detergents contributes to the hygiene effectiveness of laundering. Adding hypochlorite bleach in the washing process achieves inactivation of microbes. A number of other factors can contribute including drying and ironing.

Drying laundry on a line in direct sunlight is known to reduce pathogens.

Laundry detergents contain a mix of ingredients including surfactants, builders, optical brighteners, etc. Cleaning action arises primarily from the action of the surfactants and other ingredients, which are designed to maximize release and suspension of dirt and microbes into the wash liquid, together with enzymes and/or activated oxygen-based bleach which digest and remove stains. Although activated oxygen bleach is included in many powder detergents to digest and remove stains, it produces some chemical inactivation of bacteria, fungi and viruses. As a rule of thumb, powders and tablets normally contain activated oxygen bleach, but liquids and all products (liquid or powder) used for "coloureds" do not. Surfactants also exert some chemical inactivation action against certain species although the extent of their action is not known.

### **Medical hygiene at home**

Medical hygiene pertains to the hygiene practices that prevents or minimizes disease and the spreading of disease in relation to administering medical care to those who are infected or who are more "at risk" of infection in the home. Across the world, governments are increasingly under pressure to fund the level of healthcare that people expect. Care of increasing numbers of patients in the community, including at home is one answer, but can be fatally undermined by inadequate infection control in the home.

Increasingly, all of these "at-risk" groups are cared for at home by a carter who may be a household member who thus requires a good knowledge of hygiene. People with reduced immunity to infection, who are looked after at home, make up an increasing proportion of the population (currently up to 20%). The largest proportions are the elderly who have co-morbidities, which reduce their immunity to infection. It also includes the very young, patients discharged from hospital, taking immune-suppressive drugs or using invasive systems, etc. For patients discharged from hospital, or being treated at home special "medical hygiene" procedures may need to be performed for them e.g. catheter or dressing replacement, which puts them at higher risk of infection.

Antiseptics may be applied to cuts, wounds abrasions of the skin to prevent the entry of harmful bacteria that can cause sepsis. Day-to-day hygiene practices, other than special medical hygiene procedures, are no different for those at increased risk of infection than for other family members. The difference is that, if hygiene practices are not correctly carried out, the risk of infection is much greater.

### **Disinfectants and antibacterial in home hygiene**

Chemical disinfectants are products that kill pathogens. If the product is a disinfectant, the label on the product should say "disinfectant" or "kills" pathogens. Some commercial products, e.g. bleaches, even though they are technically disinfectants, say that they "kill pathogens" but are not actually labeled as "disinfectants". Not all disinfectants kill all types of pathogens. All disinfectants kill bacteria (called bactericidal). Some also kill fungi (fungicidal), bacterial spores (sporicidal) or viruses (virucidal).



An antibacterial product is a product that acts against bacteria in some unspecified way. Some products labeled "antibacterial" kill bacteria while others may contain a concentration of active ingredient that only prevent them multiplying. It is, therefore, important to check whether the product label states that it "kills" bacteria." An antibacterial is not necessarily anti-fungal or anti-viral unless this is stated on the label.

The term sanitizer has been used to define substances that both clean and disinfect. More recently this term has been applied to alcohol-based products that disinfect the hands (alcohol hand sanitizers). Alcohol hand sanitizers however are not considered to be effective on soiled hands.

The term biocide is a broad term for a substance that kills, inactivates or otherwise controls living organisms. It includes antiseptics and disinfectants, which combat micro-organisms, and pesticides.

### **Hygiene in developing countries**

In developing countries, universal access to water and sanitation has been seen as the essential step in reducing the preventable infectious diseases burden, but it is now clear that this is best achieved by programs that integrate hygiene promotion with improvements in water quality and availability, and sanitation. This approach has been integrated into the Sustainable Development Goal Number 6 whose second target states: "By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations". Due to their close linkages, water, sanitation, hygiene are together abbreviated and funded under the term WASH in development cooperation.

About 2 million people die every year due to diarrheal diseases; most of them are children less than 5 years of age. The most affected are the populations in developing countries, living in extreme conditions of poverty, normally peri-urban dwellers or rural inhabitants. Providing access to sufficient quantities of safe water, the provision of facilities for a sanitary disposal of excreta, and introducing sound hygiene behaviors are of capital importance to reduce the burden of disease caused by these risk factors.

Research shows that, if widely practiced, hand washing with soap could reduce diarrhea by almost fifty percent and respiratory infections by nearly twenty-five percent. Hand washing with soap also reduces the incidence of skin diseases, eye infections like trachoma and intestinal worms, especially ascariasis and trichuriasis.

Other hygiene practices, such as safe disposal of waste, surface hygiene, and care of domestic animals, are important in low income communities to break the chain of infection transmission.

Cleaning of toilets and hand wash facilities is important to prevent odors and make them socially acceptable. Social acceptance is an important part of encouraging people to use toilets and wash their hands, in situations where open defecation is still seen as a possible alternative, e.g. in rural areas of some developing countries.

## ***Household water treatment and safe storage***

Household water treatment and safe storage ensure drinking water is safe for consumption. These interventions are part of the approach of self-supply of water for households. Drinking water quality remains a significant problem in developing and in developed countries; even in the European region it is estimated that 120 million people do not have access to safe drinking water. Point-of-use water quality interventions can reduce diarrheal disease in communities where water quality is poor or in emergency situations where there is a breakdown in water supply. Since water can become contaminated during storage at home (e.g. by contact with contaminated hands or using dirty storage vessels), safe storage of water in the home is important.

Methods for treatment of drinking water include:

1. Chemical disinfection using chlorine or iodine
2. Boiling
3. Filtration using ceramic filters
4. Solar disinfection – Solar disinfection is an effective method, especially when no chemical disinfectants are available.
5. UV irradiation – community or household UV systems may be batch or flow-through. The lamps can be suspended above the water channel or submerged in the water flow.
6. Combined flocculation/disinfection systems – available as sachets of powder that act by coagulating and flocculating sediments in water followed by release of chlorine.
7. Multibarrier methods – Some systems use two or more of the above treatments in combination or in succession to optimize efficacy.

**Video: <https://www.youtube.com/watch?v=YrNWkB4Ah5I>**

## SELF-CHECK 4.4-1

### True or False

1. Hand hygiene is central to preventing the spread of infectious diseases in home and everyday life settings.
2. Correct respiratory hygiene when coughing and sneezing reduces the spread of pathogens particularly cold and flu.
3. Combine raw and cooked foods in the same area of storage.
4. Laundry hygiene involves practices that prevent disease and its spread via soiled clothing and household linens such as towels.
5. Chemical disinfection using chlorine or iodine helps treat the water to drink.

## INFORMATION SHEET 4.4-2

### Practice of personal hygiene

#### Learning Objective:

After reading this information sheet, you must be able to:

1. Determine the Practice of personal hygiene

#### Introduction:

Personal hygiene involves those practices performed by an individual to care for one's bodily health and wellbeing through cleanliness. Motivations for personal hygiene practice include reduction of personal illness, healing from personal illness, optimal health and sense of wellbeing, social acceptance and prevention of spread of illness to others. What is considered proper personal hygiene can be cultural-specific and may change over time.

### Practice of personal hygiene

Practices that are generally considered proper hygiene include showering or bathing regularly, washing hands regularly and especially before handling food, washing scalp hair, keeping hair short or removing hair, wearing clean clothing, brushing teeth, cutting finger nails, besides other practices. Some practices are gender-specific, such as by a woman during her menstruation. Toiletry bags hold body hygiene and toiletry supplies.

Anal hygiene is the practice that a person performs on the anal area of themselves after defecation. The anus and buttocks may be either washed with liquids or wiped with toilet paper or adding gel wipe to toilet tissue as an alternative to wet wipes or other solid materials in order to remove remnants of feces.

People tend to develop a routine for attending to their personal hygiene needs. Other personal hygienic practices would include covering one's mouth when coughing, disposal of soiled tissues appropriately, making sure toilets are clean, and making sure food handling areas are clean, besides other practices. Some cultures do not kiss or shake hands to reduce transmission of bacteria by contact.

Personal grooming extends personal hygiene as it pertains to the maintenance of a good personal and public appearance, which need not necessarily be hygienic. It may involve, for example, using deodorants or perfume, shaving, or combing, besides other practices.

### Excessive body hygiene

The hygiene hypothesis was first formulated in 1989 by Strachan who observed that there was an inverse relationship between family size and development of atopic allergic disorders—the more children in a family, the less likely they were to develop these allergies. From this, he hypothesized

that a lack of exposure to "infections" in early childhood transmitted by contact with older siblings could be a cause of the rapid rise in atopic disorders over the last 30 to 40 years. Strachan further proposed that the reason why this exposure no longer occurs is not only because of the trend towards smaller families, but also "improved household amenities and higher standards of personal cleanliness".

Although there is substantial evidence that some microbial exposures in early childhood can in some way protect against allergies, there is no evidence that humans need exposure to harmful microbes (infection) or that it is necessary to suffer a clinical infection. Nor is there evidence that hygiene measures such as hand washing, food hygiene etc. are linked to increased susceptibility to atopic disease. If this is the case, there is no conflict between the goals of preventing infection and minimizing allergies. A consensus is now developing among experts that the answer lies in more fundamental changes in lifestyle etc. that have led to decreased exposure to certain microbial or other species, such as helminthes, that are important for development of immune-regulatory mechanisms. There is still much uncertainty as to which lifestyle factors are involved.

Although media coverage of the hygiene hypothesis has declined, a strong 'collective mindset' has become established that dirt is 'healthy' and hygiene somehow 'unnatural'. This has caused concern among health professionals that everyday life hygiene behaviors, which the foundation of public health is, are being undermined. In response to the need for effective hygiene in home and everyday life settings, the International Scientific Forum on Home Hygiene has developed a "risk-based" or targeted approach to home hygiene that seeks to ensure that hygiene measures are focused on the places, and at the times most critical for infection transmission. While targeted hygiene was originally developed as an effective approach to hygiene practice, it also seeks, as far as possible, to sustain "normal" levels of exposure to the microbial flora of our environment to the extent that is important to build a balanced immune system.

### ***Excessive body hygiene of internal ear canals***

Excessive cleaning of the ear canals can result in infection or irritation. The ear canals require less care than other parts of the body because they are sensitive and mostly self-cleaning; that is, there is a slow and orderly migration of the skin lining the ear canal from the eardrum to the outer opening of the ear. Old earwax is constantly being transported from the deeper areas of the ear canal out to the opening where it usually dries, flakes, and falls out. Attempts to clean the ear canals through the removal of earwax can push debris and foreign material into the ear that the natural movement of ear wax out of the ear would have removed.

### **Oral hygiene**

It is recommended that all healthy adults brush twice a day, softly, with the correct technique, replacing their toothbrush every few months (~3) or after a bout of illness.

There are a number of common oral hygiene misconceptions. It is not correct to rinse the mouth with water after brushing. It is also not recommended to brush immediately after drinking acidic substances, including sparkling water. It is also recommended to floss once a day, with a different piece of floss at each flossing session. The effectiveness of amorphous calcium phosphate products, such as Tooth Mousse, is in debate. Visits to a dentist for a checkup every year at least are recommended.

### **Culinary Hygiene**

Culinary hygiene pertains to the practices related to food management and cooking to prevent food contamination, prevent food poisoning and minimize the transmission of disease to other foods, humans or animals. Culinary hygiene practices specify safe ways to handle, store, prepare, serve and eat food.

Culinary practices include:

- Cleaning and disinfection of food-preparation areas and equipment (for example using designated cutting boards for preparing raw meats and vegetables). Cleaning may involve use of chlorine bleach, ethanol, ultraviolet light, etc. for disinfection.
- Careful avoidance of meats contaminated by trichina worms, salmonella, and other pathogens; or thorough cooking of questionable meats.
- Extreme care in preparing raw foods, such as sushi and sashimi.
- Institutional dish sanitizing by washing with soap and clean water.
- Washing of hands thoroughly **before** touching any food.
- Washing of hands after touching uncooked food when preparing meals.
- Not using the same utensils to prepare different foods.
- Not sharing cutlery when eating.
- Not licking fingers or hands while or after eating.
- Not reusing serving utensils that have been licked.
- Proper storage of food so as to prevent contamination by vermin.
- Refrigeration of foods (and avoidance of specific foods in environments where refrigeration is or was not feasible).
- Labeling food to indicate when it was produced (or, as food manufacturers prefer, to indicate its "best before" date
- Proper disposal of uneaten food and packaging.

### **Personal Hygiene**

Personal service hygiene pertains to the practices related to the care and use of instruments used in the administration of personal care services to people:

Personal hygiene practices include:

- Sterilization of instruments used by service providers including hairdressers, aestheticians, and other service providers.
- Sterilization by autoclave of instruments used in body piercing and tattoo marking.
- Cleaning hands.

### **Sleep Hygiene**

Sleep hygiene is the recommended behavioral and environmental practice that is intended to promote better quality sleep. This recommendation was developed in the late 1970s as a method to help people with mild to moderate insomnia, but, as of 2014, the evidence for effectiveness of individual recommendations is "limited and inconclusive". Clinicians assess the sleep hygiene of people who present with insomnia and other conditions, such as depression, and offer recommendations based on the assessment. Sleep hygiene recommendations include establishing a regular sleep schedule, using naps with care, not exercising physically or mentally too close to bedtime, limiting worry, limiting exposure to light in the hours before sleep, getting out of bed if sleep does not come, not using bed for anything but sleep and avoiding alcohol as well as nicotine, caffeine, and other stimulants in the hours before bedtime, and having a peaceful, comfortable and dark sleep environment.

**Video: <https://www.youtube.com/watch?v=iDf7syFdqw0>**

## SELF-CHECK 4.4-2

### True or False

1. Personal service hygiene pertains to the practices related to the care and use of instruments
2. Sleep hygiene is the recommended behavioral and environmental practice that is intended to promote better quality sleep.
3. Culinary hygiene pertains to the practices related to food management and cooking.
4. It is recommended that all healthy adults brush once a day.
5. Extreme care in preparing raw foods is unnecessary.