

# **Animal health care service**

**NTQF Level - II**

## **Learning Guide -02**

**Unit of Competence:** - Carry out Sanitation and Waste Management Duties

**Module Title:** Carry out Sanitation and Waste Management Duties

**LG Code:** AGRAHC2M04LO2-LG- 02

**TTLM Code:** AGRAHC2 TTLM 1019v1

**LO2:** Prepare equipment & chemicals for cleaning, disinfection and sterilization

<b>Instruction Sheet</b>	<b>Learning Guide #-</b>
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- PPE and mixing equipment
- Nature and level of the pest or disease
- Workplace application plan
- Equipment and chemicals for disinfection and sterilization
- Legislative and regulatory requirements
- Check and correct equipment

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, **you will be able to –**

- PPE and mixing equipment
- Nature and level of the pest or disease
- Workplace application plan
- Equipment and chemicals for disinfection and sterilization
- Legislative and regulatory requirements
- Check and correct equipment

**Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 2 to 36.
3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1 on page 12”
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).
6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #2.
7. Submit your accomplished Self-check. This will form part of your training portfolio.

8. Read the information written in the “Information Sheets 2”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
9. Accomplish the “Self-check 2 on page 14”
10. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 2).
11. If you earned a satisfactory evaluation proceed to “Information Sheet 3”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #2.
12. Submit your accomplished Self-check. This will form part of your training portfolio.
13. Read the information written in the “Information Sheets 3”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
14. Accomplish the “Self-check 3 on page 21”
15. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 3).
16. If you earned a satisfactory evaluation proceed to “Information Sheet 4”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #2.
17. Submit your accomplished Self-check. This will form part of your training portfolio.
18. Read the information written in the “Information Sheets 4”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
19. Accomplish the “Self-check 4 on page 27”
20. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 4).

21. If you earned a satisfactory evaluation proceed to “Information Sheet 5”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #2.
22. Submit your accomplished Self-check. This will form part of your training portfolio.
23. Read the information written in the “Information Sheets 5”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
24. Accomplish the “Self-check 5 on page 30”
25. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 5).
26. If you earned a satisfactory evaluation proceed to “Information Sheet 6”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #2.
27. Submit your accomplished Self-check. This will form part of your training portfolio.
28. Read the information written in the “Information Sheets 6”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
29. Accomplish the “Self-check 6 on page 35”
30. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 6).
31. Submit your accomplished Self-check. This will form part of your training portfolio.

<b>Information Sheet-1</b>	<b>PPE and mixing equipment</b>
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## **1.2. PPE and mixing equipment**

Employees have duties concerning the provision and use of personal protective equipment (PPE) at work.

**PPE:** is equipment that will protect the user against health or safety risks at work. It can include items safety helmet, gloves, eye protection, high visibility clothing, safety footwear and safety harness. It also includes respiratory protective equipment (RPEP).

### **Why is PPE important?**

Making the work place safe includes providing instructions, procedure, training and supervision to encourage people to work safely and responsibly.

Even where technician controls and safe system of work have been applied, some hazards might remain these include injuries to:

- The lungs, eg from breathing in contaminated air
- The head and feet, eg from flying particles or splashes of corrosive liquids.
- The skin, eg from contact with corrosive materials.
- The body, eg from extremes of heat or cold

PPE is needed is needed in these cases to reduce the risk.

### **What do I have to do?**

Only use PPE as a last resort, if PPE is still needed after implementing other controls (and there will be circumstances when it is, eg head protection on most on most construction sites), you must provide this for employees free of charge.

You must choose the equipment carefully (see selection details below) and ensure employees are trained to use it properly, and know how to detect and report faults.

## **Selection and use**

### **When selection and using PPE:**

- Choose product which are CE marked in accordance with the personal protective equipment
- Choose equipment that suits the user considered the size, fit and weight of the PPE. If the users help choose it, they will be more likely to use it.
- If more one item of PPE is worn at the sometime, make sure they can be used together. Wearing safety glasses may disturb the seal of the respirator causing air leaks.
- Instruct and train people to remove gloves without contaminating their skin. Tell them why it's needed, when to use it and what is limitations are.

### **Other advises on PPE:**

- Never allow exemptions from wearing PPE for those jobs that ‘only take a few minutes’
- Check with your supplier on what PPE is a appropriate- explain the job to them
- If in doubt, seek further advice from a specialist adviser

### **Maintenance of PPE:**

PPE must be properly looked after and stored when not in use, eg in a dry, clean cupboard. If its reusable it must be cleaned and kept in good condition.

Thing about:

- Using the right replacement parts which much the original, eg respiratory filters
- Keeping replacement PPE available
- Who is responsible for maintenance and how is to be done
- Having a supply of a appropriate disposable suits which are useful for dirty jobs where laundry costs are high, eg for visitors who need protective clothing

Employees must make proper use of PPE and report its loss or destruction.

## **Types of PPE**

**1. Eye:** include safety spectacles, goggles, face screens, face shields, visors

**Note:** make sure the eye protection chosen has the combination of impact/dust/splash/molten metal eye protection for the task and fits the user properly

**2. Head and neck:** include safety helmets, bump caps, hair nets and helmets

**Note:** some safety helmets incorporate or can be fitted with specially- designed eye or hearing protection, don't forget neck protection, scarves for use during welding, replace head protection if its damaged

**3. Ear protection:** include ear plugs, earmuffs, semi-insert/canal caps

**Note:** provide the right hearing protector for the type of work, and make sure workers know how to fit them, choose protectors that reduce noise to an acceptable level, while allowing for safety and communication

**4. Hands and arms:** include gloves, gloves with a cuff, gauntlets and sleeving that covers part or the arm

**Note:** Avoid gloves when operating machines such as bench drills where the gloves might get caught, some materials are quickly penetrated by chemicals-take care in selection, barrier creams are unreliable and are no substitute for PPE, wearing gloves for long periods can make the skin hot and sweaty, leading to skin problems. Using separate cotton inner gloves can help prevent this

**5. Feet and legs:** include safety boots and shoes with protective toecaps and penetration-resistant, mid-sole wellington boots and specific footwear, eg foundry boots and chainsaw boots

**Note:** footwear can have a variety of sole patterns and materials to help prevent slips in different conditions, including oil-or chemical- resistant soles. It can also be anti-static, electrically conductive or thermally insulating, appropriate footwear should be selected for the risks identified

**6. Respiratory protective equipment (RPE).** Some respiratory equipment rely on filtering contaminants from work place air. These include simple filtering facepieces and respirators and power-assisted respirators, make sure it fits properly eg for tight-fitting respirators, there are also types of breathing apparatus which give an independent supply of breathable air, eg fresh-air hose, compressed airline and self-contained breathing apparatus.

**Note:**

- The right type of respiratory filter must be used as each effective for only a limited range of substances
- Filters have only a limited life. Where there is a shortage of oxygen or any danger of losing consciousness due to exposure to high level of harmful fumes, only use breathing apparatus- never use filtering cartridge.
- You will need to use breathing apparatus in a confined space or if there is a chance of an oxygen deficiency in the work area
- Using respiratory protective equipment in the work place.

**7. Whole body:** include conventional or disposable overalls, boiler suits, aprons and chemical suits.

**Note:**

- The choice of materials include flame-retardant, anti-static, chain mail, chemically impermeable and high-visibility
- Don't forget other protection, like safety harness or life jackets

**General Considerations of PPE**

For each hazard identified, select personal protective equipment that will protect the Employee by creating a barrier against workplace hazards. Consider the likelihood of an Accident and the seriousness of a potential accident. Personal protective equipment must be selected to protect against any hazard that is present or likely to be present. It is important for department personnel to become familiar with the potential hazards, the type of protective equipment that is available,



and the level of protection that is provided by that equipment, i.e., splash protection, impact protection, etc.

**For the proper selection of PPE: please use the following resources:**

### **1. Eye and Face Protection:**

Eye and face protection must be used where a hazard exists due to any of the following:

- Flying objects or particles
- Molten metal
- Liquid chemicals
- Harmful contacts
- Exposures
- Acids or caustic chemicals
- Chemical gases or vapors
- Glare
- Air contaminants
- Radiation
- Electrical flash
- A combination of hazards

### **2. Head Protection**

Head protection must be used when a hazard exists due to any of the following:

- Impact and penetration of falling objects
- Impact when working in low clearance areas
- Impact from hanging objects such as hooks and chains
- High voltage electric shock and burns
- Flying objects
- Electric shock
- Hair entanglement
- Chemicals

- Temperature extremes.

### **3. Protective Helmets (Hard Hats)**

Protective helmets are required where falling object hazards are present. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or process which might cause material or objects to fall; and working on exposed energized conductors. Some examples of occupations for which head protection should be considered are: carpenters, electricians, linemen, mechanics and repairers, plumbers and pipe fitters, assemblers, packers, wrappers, sawyers, welders, laborers, freight handlers, timber cutting and logging, stock handlers, and warehouse laborers.

### **4. Foot Protection:**

Select protective footwear when employees work in areas where there is a danger of foot injuries due to falling and rolling objects, objects piercing the sole, and where employees' feet are exposed to electrical hazards. These are the following:

- Handling heavy objects and/or tools that could be dropped;
- Work activities involving manual material handling carts, heavy pipes, or bulk Rolls, all of which could potentially roll over an employee's feet;
- Work involving sharp objects such as nails, tacks, large staples, scrap metal, etc., which could penetrate the sole of the shoe;
- Work involving explosive materials such as black powder, volatile substances, Cotton dust, grain dust that could be ignited by the discharge of static electricity;
- Work with electrical hazards;
- Work with electronic components.

### **5. Hand Protection**

Select and use the appropriate hand protection when employees' hands may be potentially exposed to the following hazard sources:

- skin absorption of harmful substances

- severe cuts or lacerations
- severe abrasions
- punctures
- chemical burns
- irritating materials
- thermal burns
- harmful temperature extremes

**Note:** It is important to select appropriate gloves for a particular application and to determine how long the glove can be worn, and whether it can be reused. Cloth gloves must not be worn when operating rotating equipment such as a drill or powered threading machine.

## **6. Body Protection, Other than Gloves**

Body protection should be worn when there is a possibility of bodily injury from

Hazards while performing their jobs, Workplace hazards include the following:

- Intense heat
- Splashes of hot metals and other hot liquids
- Impacts from tools, machinery and materials
- Cuts
- Hazardous chemicals
- Contact with potentially infectious materials, like blood (refer to the Biosafety Manual for PPE guidelines)
- Radiant energy (ultraviolet, visible, infrared)

**Note:** Protective clothing needs to be provided only for the specific parts of the body that are exposed to the hazard. Depending on the hazards of the workplace one or more of the following may need to be provided:

- Vests
- Jackets
- Aprons
- Coveralls

- Sleeve protectors
- Surgical gowns
- Full body suits

<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:**

**Write short answer for the following questions (5pnt each)**

1. What is PPE?
2. Why PPE is important?

**Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Name:** \_\_\_\_\_ **IDN0:** \_\_\_\_\_

<b>Score =</b> _____ <b>Rating:</b> _____
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**Answer sheet:**

**Part one: Write short answer for the following questions (2.5pnt each)**

1. ....  
 .....  
 .....
2. ....  
 .....  
 .....

<b>Information sheet -2</b>	<b>Nature and level of disease</b>
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## **2.1. Nature and level of disease**

### **Definition of nature of disease**

**Nature of disease:** is the expression(S) of a disease and its meaning(s) to the patient and significant others.

Is a particular abnormal condition that negatively effective the structure or function of part or all of an organism, and that is not due to any external injury, disease are often construed as a medical condition that are associated with specific symptom and sign. A disease may be caused by external factors such as pathogens or by internal dysfunction, distress, social problems or death to the person afflicted or similar problems for those in contact with the person. In this broader sense, it sometimes includes injuries, disabilities, disorders, syndromes, infections, isolated symptoms, deviant behaviors and typical variations of structure and function.

Disease can affect people not only physically but also mentally, as contracting and living with a disease can alter the affected person's perspective on life.

<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:**

**Write short answer for the following questions (5pnt each)**

1. What is nature of disease?
  
2. How disease affects people?

*Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points*

You can ask you teacher for the copy of the correct answers.

Name: \_\_\_\_\_ IDN0: \_\_\_\_\_

Score = _____
Rating: _____

**Answer sheet:**

**Part one: Write short answer for the following questions (2.5pnt each)**

1. ....  
.....  
.....
  
2. ....  
.....  
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<b>Information sheet-3</b>	<b>Work place application plan</b>
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### **3.1. Work place application plan**

#### **Work place application plan defined:**

**Work-planning:** is the process of determining what an office intends to carry out for the term of a work cycle (i.e. annual or biennial budget calendar). Work-plans should be constructed within the guidance and focus of a strategic plan and should contain the operational details that illustrate exactly what services will be delivered and to what level of quality.

#### **Five element of work place application plan are:**

##### **Element 1: Work-plan objectives**

A work-plan should outline the primary objectives of the team. Where there is an overall strategic plan for the office level (or a USG/ASG compact), the overall objectives should be directly derived from the source –but only those that apply to the work-planning time period. Objectives that apply to a future time period should be omitted. The work-plan should clearly articulate what areas of focus are most important for the upcoming work year or budgetary cycle.

#### **How to Determine and Write Organizational Objectives**

When organizational objectives are clearly outlined in an existing strategic plan, you carry those objectives pertinent for the given year directly from the strategic plan to the work-plan. In other cases, organizational objectives need to be derived from a higher-level relevant work-plan, such as that of the division or larger program or region, or project team. In some cases, the management team or a working group will identify a set of objectives that capture the focus for the coming year. Whatever the source, the larger objectives need to be translated to concepts and actions relevant to your target group/unit

In the UN we use the SMART methodology to write objective statements. SMART stands for:

- Specific –target a specific area or change
- Measurable –quantify or at least suggest an indicator of change or progress
- Achievable –specify goals that are reachable
- Realistic –state what results can realistically be achieved, given available resources
- Time-related –specify when the result(s) expect to be achieved

## **Element 2: Core services**

Your work-plan objectives will clarify the upcoming areas of focus and desired achievement within a given work cycle. How those objectives will be achieved occurs through the delivery of an organization’s core services. The work-plan should then clearly outline the core services offered to clients by an office, specifying exactly what will be delivered within the core services for the upcoming year or biennial budget cycle. For each service, articulate the specific focus for the service area. Example: Coordinate aid workers: improve timeliness of deployed staff.

### **Two methods: 1. project-based or process-based**

A project includes a timeline, interim milestones, human resources, budget resources, and specific deliverables. Projects are managed through timeliness, adherence to budget, and the quality of outputs. Within the work-plan, list and describe the key projects and deliverables in the coming budget year. It is not necessary to list every sub-project; instead focus on those that are most significant, which could be by strategic alignment, size of resource investment or relevance to the satisfaction of the office’s mandate or clients.

### **How to identify and list core projects**

The critical details to capture for core projects are as follows:

- Project Name
- Project Description
- Core Service Alignment
- Start Date
- End Date



- Main Milestones/Dates
- Human Resources (who/how many)
- Budget Resources (anticipated)
- Deliverables/Outputs
- Project Beneficiaries/Clients

For each key project, identify the performance measures for how success will be determined. Ideally, a project performance measure captures the level of quality of the deliverable or satisfaction of the beneficiary. Other interim performance measures may include whether the project is on-time, on-budget, and/or on-quality, relative to the original project plan.

## **2. Process-based services**

Processes are also often called ongoing activities. As it is a continuous set of activities, a process is best described through identifying the following:

- Suppliers (those who provide inputs of any kind)
- Inputs (what it needs to function or acts on)
- Internal Processes (the steps it goes through)
- Outputs (what it produces)
- Clients (those who receive and use the outputs)

How to identify and list core processes Process performance measures captures success as the level of quality of the ongoing service. This can be measured, for example, through client satisfaction; whether services are timely; whether services are delivered within budget; and whether services meet client needs or change criteria.

The critical details to capture for key processes are as follows:

- Process Name
- Process Description, or description of the element of the process that is the focus of the objective
- Human Resources (who/how many)
- Budget Resources (anticipated)
- Process Outputs or change indicators

- Process Clients or measures of the satisfaction by the beneficiaries

### **Element 3: Strategic and internal initiatives**

You may also need to identify strategic initiatives that represent special efforts focused on internal improvement. Initiatives may come directly from a higher-level strategic plan that contains initiatives owned or under the responsibility of the Department or Office that involve every division, section, unit and team in some aspect within the coming year or biennial budget cycle. You may also consider taking up initiatives confined to your management area that are designed to improve internal operating processes, staff capabilities, knowledge management, and financial management. How to document strategic and internal initiatives The critical details to capture are as follows:

- Initiative Title
- Initiative Description
- Objective Alignment (if strategic plan exists)
- Start Date
- End Date
- Main Milestones/Dates
- Human Resources (who/how many)
- Budget Resources (anticipated)
- Deliverables/Outputs
- Initiative Clients

#### **Element 4: Identifying Work-plan risks**

Risk management is the identification and mitigation of risks that would hamper the execution and/or expected results of a work-plan. Work-plan risks are categorized in two ways:

1. Possible/known risks from the external operating environment

What might happen in the context of the political arena, economics, social issues, technology, the environment/climate, legalities, security/safety, regulations, or other factors present in the location?

2. Possible/known risks in the internal environment

What might happen in the context of funding, human capital, processes, projects, service quality and service timeliness? Risks intersect a work-plan in the following two ways:

1. Risks affecting core services

Which could prevent the successful execution of key projects?

Which could prevent the successful execution of key processes?

2. Risks affecting strategic or internal initiatives, Which could prevent the successful execution of initiatives?

#### **How to develop a risk management approach in work-planning application**

**1. Identification:** Risks can be identified via surveys, management team brainstorming, the media, or other sources (e.g. expert sources). Risk identification should be an ongoing activity.

**2. Prioritization:** Rank the risks according to 1) their likelihood of occurring and 2) the potential negative impact on the work-plan. The highest scoring risks should then be clearly identified as either drivers of work-plan objectives, as considerations for key services (projects or processes), or as threats to initiatives. Not all risks should be included in a risk management plan, as many may not be likely or impactful. Also, not all risks can be clearly identified, as it is impossible to ‘know what one does not know.’

**3. Mitigation:** For the prioritized risks, a mitigation plan outlines either a) what will be done to prevent or minimize the likelihood, and/or b) what would be done in the future to minimize its impact if the risk occurs.

**4. Monitoring:** An annual risk management plan review may be sufficient to both refresh the risks and to update the mitigation plans. However, many risks are event-dependent. So, it is important to review a particular risk at the point when it might occur, to ensure the mitigation

plan is put into action. This could involve developing a special calendar that reminds managers or leaders to check on the status of a particular risk.

### **Element 5: Manage by the work-plan**

The most important step in work-planning is to ensure it is used as a management tool. A good work-plan and an effective operational review process will drive organizational focus, ensure individual accountability and drive desired results. Operational meetings represent the most common and effective practice whereby managers and team members routinely review and discuss the performance of core projects and/or processes. Ideally, the performance measures should support the conversations with data and trends.

### **How to use and manage by a work-plan**

Set the frequency of the operational review meetings.

- This will be dependent on the pace of activity related to the core projects or processes. Weekly, bi-weekly or monthly frequency may be appropriate.
- Once the frequency is determined, it is helpful to make the meetings ‘standing’, so that they occur on the same day of the week/month.

Determine how to structure the operational review meetings.

- Effective review meetings last between 1 to 2 hours.
- The agenda is set based on which projects or processes need to be discussed.

Properly prepare and provide the needed information, updated and complete prior to each operational review meeting:

- Overall status of the core project or process a project, status of being on-time, on-budget, and on-quality.
- If a process, status of quality of delivery.
- Available data for performance measures (displayed in a trend chart)

The above preparation points are important as they ensure consistency in the meeting, a focus on the operations as defined in the work-plan and application a view toward driving results.

<b>Self-Check -3</b>	<b>Written Test</b>
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**Directions:**

**Write short answer for the following questions (5pnt each)**

1. What is work plan?
  
2. Write the five elements of work plan applicant plan?

**Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

**Name:** \_\_\_\_\_ **IDN0:** \_\_\_\_\_

<b>Score =</b> _____ <b>Rating:</b> _____
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**Answer sheet:**

**Part one: Write short answer for the following questions (2.5pnt each)**

1. ....  
 .....  
 .....
  
2. ....  
 .....  
 .....

<b>Information sheet-4</b>	<b>Equipment and chemicals for disinfection and sterilization</b>
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#### **4.1. Equipment and chemicals for disinfection and sterilization**

Disinfection and sterilization are essential for ensuring that medical and surgical instruments do not transmit infectious pathogens to patients. Because sterilization of all patient-care items is not necessary, health-care policies must identify, primarily on the basis of the items' intended use, whether cleaning, disinfection, or sterilization is indicated.

**Sterilization:** describes a process that destroys or eliminates all forms of microbial life and is carried out in health-care facilities by physical or chemical methods. Steam under pressure, dry heat, EtO gas, hydrogen peroxide gas plasma, and liquid chemicals are the principal sterilizing agents used in health-care facilities. Sterilization is intended to convey an absolute meaning; unfortunately, however, some health professionals and the technical and commercial literature refer to “disinfection” as “sterilization” and items as “partially sterile.” When chemicals are used to destroy all forms of microbiologic life, they can be called chemical sterilants. These same germicides used for shorter exposure periods also can be part of the disinfection process (i.e., Sterilization is the complete removal or destruction of all forms of microbial life, including bacteria, viruses, fungi and spores. Sterilization is achieved by steam, dry heat, ethylene oxide gas and liquid chemo sterilizers.

**Disinfection:** describes a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects . In health-care settings, objects usually are disinfected by liquid chemicals or wet pasteurization. Each of the various factors that affect the efficacy of disinfection can nullify or limit the efficacy of the process.

Factors that affect the efficacy of both disinfection and sterilization include prior cleaning of the object; organic and inorganic load present; type and level of microbial contamination; concentration of and exposure time to the germicide; physical nature of the object (e.g., crevices, hinges, and lumens); presence of biofilms; temperature and pH of the disinfection process; and in some cases, relative humidity of the sterilization process (e.g., ethylene oxide).

Unlike sterilization, disinfection is not sporicidal. A few disinfectants will kill spores with prolonged exposure times (3–12 hours); these are called chemical sterilants. At similar concentrations but with shorter exposure periods (e.g., 20 minutes for 2% glutaraldehyde), these same disinfectants will kill all microorganisms except large numbers of bacterial spores; they are called high-level disinfectants. Low-level disinfectants can kill most vegetative bacteria, some fungi, and some viruses in a practical period of time ( $\leq 10$  minutes). Intermediate-level disinfectants might be cidal for mycobacteria, vegetative bacteria, most viruses, and most fungi but do not necessarily kill bacterial spores. Germicides differ markedly, primarily in their antimicrobial spectrum and rapidity of action.

Disinfection is a process that eliminates a defined scope of pathogenic microorganisms but not necessarily all microbial forms. Disinfection does not attempt to remove all viable microorganisms. Disinfection's main difference with sterilization is the lack of sporicidal activity, although this is an oversimplification. Disinfection has been categorized into three levels: high, intermediate and low:

1. **High level disinfection** eliminates all pathogenic organisms but some viable spores may persist on an item disinfected to the high level. The critical distinction between high and intermediate is the elimination of ALL VIRUSES in high disinfection
2. **Intermediate disinfection** eliminates all pathogenic vegetative bacteria, fungi and most viruses but some viruses (particularly small viruses without envelopes), and bacterial spores are not eliminated. The critical distinction between intermediate and low level disinfection is the elimination of the most resistant bacteria in intermediate level (*Mycobacterium tuberculosis* is used as an indicator because it is relatively resistant to disinfection).
3. **Low level disinfection** eliminates most pathogenic bacteria but some of the less sensitive vegetative forms (*M.tb* for example), the non-lipid viruses and bacterial spores are not eliminate

**The goals of safe reprocessing of medical equipment and chemicals include:**

- Preventing transmission of microorganisms to personnel and clients/patients/residents
- Minimizing damage to medical equipment/chemicals from foreign material (e.g., blood, body fluids, saline and medications) or inappropriate handling

Health care settings are required to establish, document and maintain their own policies and procedures for the reprocessing of medical devices. Best practices in reprocessing medical equipment/devices must include the following:

- Adequate review by all parties whenever new equipment/devices are being considered for purchase(e.g., reprocessing committee)
- A centralized area for reprocessing or an area that complies with the requirements for reprocessing
- written policies and procedures for reprocessing each type of medical equipment/device
- Training of all staff who perform reprocessingγvalidation of cleanliness, sterility and function of the reprocessed equipment/device
- Continual monitoring of reprocessing procedures to ensure their quality
- a corporate strategy for dealing with single-use medical equipment/devices
- Management and reporting of medical incidentsγmanagement and reporting of safety-related accidents
- Recall of improperly reprocessed devices
- Procedures to be followed in emergency situations (e.g., utilities shutdowns, compromised packaging, biological indicator (BI) testing failures)
- Attention to environmental conditions that might impact on reprocessing.

Decisions related to reprocessing medical equipment/devices should be made by a multi-disciplinary reprocessing committee that includes the individuals responsible for purchasing the equipment/device, reprocessing the equipment/device, maintaining the equipment/device, infection prevention and control, occupational health and safety, and the end-user of the equipment/device.



## **EQUIPMENT/CHEMICAL**

The administration of the health care setting is responsible for verifying that any product used in the provision of care to clients/patients/residents is capable of being cleaned, disinfected and/or sterilized according to the most current standards and guidelines from the Canadian Standards Association (CSA), the Public Health Agency of Canada (PHAC)/Health Canada as well as these PIDAC best practices. The issuing of a purchase order is a useful point of control for ensuring that appropriate review of the equipment/device has taken place prior to purchase.

Equipment that is used to clean, disinfect or sterilize (e.g., ultrasonic washers, pasteurizers, washer-disinfectors, automated endoscope reprocessors/AERs, sterilizers) must also meet standards established by Health Canada/PHAC.

Decision-making prior to purchasing medical equipment/devices and reprocessing equipment shall involve representatives from the departments in the health care setting that will use, reprocess and maintain the items and should include:

- Sterile Processing
- Purchasing
- Operating Room or other unit/department that will use the device
- Risk Management
- Infection Prevention and Control
- Occupational Health and Safety
- Client/patient/resident care services/Support services
- Physical plant/Maintenance/ Biomedical Engineering.

Decontamination work areas shall be physically separated from clean and other work areas by walls or partitions to control traffic flow and to contain contaminants generated during the stages of cleaning. Walls or partitions should be cleaned regularly and be constructed of materials that can withstand cleaning and disinfection.

Decontamination sinks

- shall be designed and arranged to facilitate soaking, washing and rinsing of equipment/devices with minimal movement or delay between steps; should be adjacent to waterproof counter tops and a backsplash
- shall not have an overflow; should be at a height that allows workers to use them without bending or straining; should be large enough to accommodate trays or baskets of instruments
- should be deep enough to allow complete immersion of larger devices and instruments so that aerosols are not generated during cleaning
- should be equipped with water ports for the flushing of instruments with lumens, if appropriate

<b>Self-Check -4</b>	<b>Written Test</b>
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**Directions:**

**Write short answer for the following questions (5pnt each)**

1. What is sterilization of equipment?
2. What is disinfection of equipment?

**Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Name: \_\_\_\_\_ IDN0: \_\_\_\_\_

Score = _____
Rating: _____

**Answer sheet:**

**Part one: Write short answer for the following questions (2.5pnt each)**

1. ....  
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2. ....  
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<b>Information sheet-5</b>	<b>Legislative and regulatory requirements</b>
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### **5.1. Legislative and regulatory requirements**

Legislation is a directive placed by a government or governing body on either an industry, a section of community or placed on people of a country which must be complied with in order to remain within the legal boundaries of that particular country, community or industry. In industry, legislation acts as an external driver which must be met by all players in order to be compliant. Legislation is passed as laws by a parliament of a country or some other legislative arm of a government. After legislation is passed, there will be regulators, usually government bodies, who will examine the laws passed and work out the details that need to be enforced so that they are followed. For instance a parliament may pass a legislation that enforces a uniform interconnection fee for telecommunication service providers in a country, and then a government department (regulator) of communications will detail the nitty-gritty of the legislation and enforce it. At times before a part of legislation becomes a law, it may be referred to as a bill. Some countries require legislation to be validated by the executive.

**Legislation:** is synonymous with statutory law; the laws that have been enacted by the legislature as well as those still in the process of being enacted. Legislation is both the description of the legal requirements, and of the punishment for violating the law. The legislative are the standard set of instructions made for people, which explains that how things are to be done. The legislative should be followed by the public as they are made for the welfare of them. Under the Constitution there exists Law, which includes many Acts, after that comes regulations and finally rules. Non-compliance of any rule can cause a little effect. Rules tell us what to do and what not to do. It can be set up for home, hospital, institution, college, office, school, etc.

**Regulations:** by comparison, are the ongoing processes of monitoring and enforcing the law: so not just HOW the legislation is being enforced, but also the very act of enforcement. Where the confusion comes in is that a regulation is also the name of the document itself that details the act and description of regulation. It's best to think of it like this: If Legislation is a destination, then

Regulation is how we get there. Regulation comes from a number of sources, but the most common forms are government regulation and self-regulation. Government regulation is a natural extension of legislation, in that it defines and controls some of the ways that a business or individual can operate in order to follow the law. A very straightforward example is food packaging in Canada: it must, at the very least, be packaged with both English and French wording. Regulations can be defined as the rules which are authorized by the Government and approved by the public. They are made after taking into consideration the whole public at large, and so they must be followed by them. Violation of any regulation may cause severe penalty or punishment or both. In the parliament, when both the houses pass a bill it becomes an Act, and on the basis of the Act, regulations come into force. Self-regulation is when an individual or a business has control over the particulars of how it meets the minimum legislative requirements. If you owned a kitchen, the law states that it must be sanitary, but you have the regulatory power to decide how it gets cleaned. Food must be stored under certain conditions, but you have control over how those conditions are achieved. This is, of course, a very basic explanation, but one that gets to the heart of the matter. We hope that this helps clarify things a little. Regulation is the process whereby standards are used to monitor, inspect and regulate services. In short, both are rules and regulations are like siblings in which one is elder, and the other is younger. Rules are mainly used to restrict any individual from doing anything while the regulations are used to control people from doing anything not permissible by law. People can set rules in general as per their need while the regulations can be set only by the government. The major difference in them is that regulations have a wider scope than rules, and that is why the consequence of breaking any regulation is much severe as compared to the breaking of rules

<b>Self-Check -5</b>	<b>Written Test</b>
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**Directions:**

**Write short answer for the following questions (5pnt each)**

1. What are legislation requirements?
  
2. What is regularity requirement?

*Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points*

You can ask you teacher for the copy of the correct answers.

**Name:** \_\_\_\_\_ **IDN0:** \_\_\_\_\_

<b>Score =</b> _____ <b>Rating:</b> _____
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**Answer sheet:**

**Part one: Write short answer for the following questions (2.5pnt each)**

1. ....  
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2. ....  
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<b>Information sheet-6</b>	<b>Check and correct equipment</b>
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### **6.1. Check and correct equipment**

A maintenance schedule should be in place to ensure that you maintain your equipment regularly. You should check equipment as often suggested by the manufacture or more often as suggest by the manufacturer. This will help prevent problems such as blockages, leaks or breakdowns, which can increase risks. You will also need to maintain safety devises around the equipment such as guards, alarms, safety cages and warning signs. If you use heat-producing equipment you should regularly check the environment around it. You must keep floors clear. There must be adequate ventilation at all times. you also need to remove al combustible materials from the area and regularly maintain and check five detectors.

#### **Equipment required by low**

Some types of equipment-require examination by low. In addition to normal repair and servicing. This is known as through examinations by competent person, examples include gas appliances, lifting equipment, pressure systems and power presses you need to keep the certificates and records of such cheks, detailing the findings and repair work.

#### **How to check equipment safely**

If any equipment is to be checked or repaired, it should always be turned off and and isolated so no one can start it error. Most equipment now comes with guidelines for maintenance. This includes advice on how to carry out equipment checks safely. Many laboratory clinics use documented procedures for maintenance and repair work, such as permit to work scheme. You can also use warning signs to remind workers that equipment is temporarily out of use. You could user as a lock out system. This means the person doing the maintenance work as a key that prevents the equipment starting up while there are working on it. All tools, equipment must be properly maintained so that workers are not in dangered. Preventive maintenance is the systemic

care and protection of tools, equipment, machines and vehicles in order to keep them in safe, usable condition, limited downtime and extend productivity. we must always be aware that maintenance and checking tasks themselves are potentially hazardous and can result in injury. The successful maintenance program is:

- well organized and schedule
- controls hazards
- define operational procedures, and
- trains key personal

The degree of detail to include in your sector's program regarding equipment maintenance and checking will depend on the kinds of tools/ equipment used. Some medical equipment have very specific inspection and maintenance requirements damaged o defective equipment/tools should be tagged and removed from service.

General requirement for equipment maintenance and checking include:

- Obtain a copy of the maintenance and checking up schedule recommended by the manufacturer.
- Ensuring that maintenance and checking up equipment/tools is performed as required
- Ensuring that the person(s) performing the maintenance and checking up of equipment/tools are competent eg licensed mechanic.
- Retain recordings of checking and maintenance service conducted.
- Specifying who is responsible for overseeing equipment maintenance and checking where the records are kept;
- Set up a system for removal and tagging of damaged or defective tools and equipment.

### **Inspecting or checking of equipment**

The purpose of inspection is to identify whether equipment can be operated, adjusted and maintained safely-with any deterioration detected and remedied before it results in a health and safety risk. Not all work equipment needs formal inspection to ensure safety risk, not all work equipment needs formal inspection to ensure safety, and, in many cases, a quick visual check



before use will be sufficient. However, inspection/checking is necessary for any equipment where significant risks to health and safety may arise from incorrect installation, reinstallation, deterioration or any other circumstances. The need for inspection and inspection frequencies should be determined through risk assessment. You should inspect work equipment if your risk assessment identifies any significant risk example major injury to operators, and others from the equipment's installation or use. The result of the inspection should be recorded and this record should be kept at least until the inspection of that equipment. Records don't have to be made in writing but, if kept in other form example computer. These should be held securely and made available upon request. Work equipment that requires inspection should not be used, unless you know the inspection/checking has taken place. Where it leaves your undertaking or is obtained from other. It should be accompanied by physical evidence of the last inspection report, such as inspection/checking report or, for smaller items of equipment, some form of tagging, colour coding or labeling system

### **What should the inspection/checking equipment cover?**

This will depend on type of work equipment, its use and the condition to which it is exposed. This should be determined through risk assessment and take full account any manufacturer's recommendation. The advice of others, as well as other sources like published advice on health and safety, may also be helpful. An inspection should concentrate on those safety related parts which are necessary for the safe operation of work equipment and, in some cases this may require testing or dismantling. However, not all safety critical features on a particular item of work equipment may require inspection at the same interval.

An inspection/checking equipment can vary in its extent, as the following demonstrate:

- Quick checks before use (Eg. electric capable condition on hand – held power tools, light on mobile machinery)
- Weekly checks (Eg. presence of guarding, function of safety devices, and condition of windows, mirrors)
- More extensive examinations, undertaken every few months or longer (Eg. general condition of ladder, close examination of a safety harness)

Records are normally required to be made for simplest pre- use checks. The use of checklists can assist but these, and these records made, should be tailored to the particular type of work equipment to minimise the burden to what is strictly necessary for safety. Work equipment and tools which is exposed to conditions causing deterioration that could result in a dangerous situation should be checked or inspected at suitable intervals, and after every event liable to jeopardize its safety. The frequency of inspection may vary depend on the environmental conditions.

Equipment can be inspected by anyone who has sufficient knowledge and experience of it enable them to know:

- What to look at
- What to look for
- What to do if they find a problem

The necessary level of competence will vary for checking or inspection, according to the type of equipment and how/where its used. The nature of these inspections does not have to be determined by the same person who undertakes them, this can often be done in house by experienced staff, taking account of:

- The manufacture's recommendations
- Industry advice
- Their own experience of the equipment, its use, the particular factors of the work place by using work equipment.

<b>Self-Check -6</b>	<b>Written Test</b>
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**Directions:**

**Write short answer for the following questions (5pnt each)**

1. What should the inspection/checking equipment cover?
  
2. When should work equipment that needs inspection/checking be re-inspected?

*Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points*

You can ask you teacher for the copy of the correct answers.

**Name:** \_\_\_\_\_ **IDN0:** \_\_\_\_\_

<b>Score =</b> _____ <b>Rating:</b> _____
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**Answer sheet:**

**Part one: Write short answer for the following questions (2.5pnt each)**

1. ....

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2. ....

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## Reference Materials

- 1- [www.hse.gov.uk/work-equipment-machiner/inspection.html](http://www.hse.gov.uk/work-equipment-machiner/inspection.html)
2. <https://safetylineloneworker.com/blog/legislation-vs-regulation-whats-difference/>