KINGDOM OF LESOTHO

MINISTRY OF HEALTH

VOLUME II–ICWMP - SOP

INFECTION CONTROL AND WASTE MANAGEMENT STANDARD OPERATING PROCEDURES

OTHER REPORTS IN THIS SERIES

This final INFECTION CONTROL AND WASTE MANAGEMENT PLAN – STANDARD OPERATING PROCEDURE forms part of a series which is intended to provide complete documentation for the requirements of a holistic management of all forms of infection and types of waste from the different types of health care facilities in the country.

This report contains the findings of a study conducted using the Rapid Assessment Tool developed by the WHO and the plan has been developed on the basis of the local conditions and findings.

The following documents form the series:

1. **Infection Control and Waste Management Plan for Lesotho**
   Volume 1: The Action Plan

2. **Infection Control and Waste Management Plan For Lesotho**
   Volume 2: The Standard Operating Procedures

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The Minister of Health
Attention: The Secretary of Health
Ministry of Health
Maseru
Lesotho

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TEXT TABLES

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
DHMT	District Health Management Team
EHD	Environmental Health Department
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GDP	Gross Domestic Product
GOL	Government of Lesotho
HCF	Health Care Facility.
HCGW	Health Care General Waste
HCRW	healthcare Risk Waste
HCW	Health Care Waste
HCWM	Health Care Waste Management
HCWMP	Health Care Waste Management Plan
HepB	Hepatitis B
HepC	Hepatitis C
HIV	Human Immunodeficiency Virus
HSSP	Health Sector Strategic Plan
ICWM SOP	Infection Control and Waste Management – Standard operating Procedures
IDA	International Development Agency
IMR	Infant Mortality Rate.
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MLGC	Ministry of Local Government and Chieftainship
MMR	Maternal Mortality Rate.
MoH	Ministry of Health
MTEC	Ministry of Environment, Tourism and Culture
NCDs	Non-Communicable Diseases
NEP	National Environmental Policy
NGO	Non-Governmental Organization
PC	Project Coordinator
PCU	Programme Coordination Unit
PDO	Programme Development Objective
POA	Plan of Action
PRS	Poverty Reduction Strategy
SOP	Standard Operating Procedure
STI	Sexually Transmitted Illnesses
TA	Technical Assistance / Assistant (according to context)
TB-HSSP	Tuberculosis and Health Systems Support Project
WB	World Bank
WHO	World Health Organization

EXECUTIVE SUMMARY

Poor health care waste management (HCWM) is an issue of global and national concern, particularly for the Government of the Kingdom of Lesotho. With the increased prevalence of TB-HIV/AIDS and other infectious diseases, there has been a corresponding upsurge in the generation of health care waste (HCW), which already was being poorly managed.

The Government of The Kingdom of Lesotho has developed various instruments to combat these various Health issues. These instruments include the National Health Policy, the Health Sector Strategic Plan, the Health Care Waste Management Plan and the Healthcare Waste Management Policy. The national health policy emphasizes the provision of preventive, promotive, curative and rehabilitative services, and is buttressed by the HCWM Policy which specifically highlights HCWM as a priority. The ICWMP (2016) then defines in a clear and precise way the roles, responsibilities and field competencies of actors involved in HCWM, outlining the processes of HCW collection, transportation, storage and treatment. The plan sets out the **health promotion and prevention actions that can be used to prevent diseases and injuries that can be caused by poorly managed HCW.**

To operationalise the ICWMP (2016), the Ministry of Health (MoH) has developed these Infection Control and Waste Management – Standard operating Procedures **(ICWM SOP).** The SOP has been designed as a means of accomplishing what is embodied in the HCWM policy and ICWMP (2016). It provides instructions on how to carry out the policy expressed in the plan and communicates who will perform the task, what materials are necessary, where the task will take place, when the task shall be performed, and how the responsible person will actually execute the task.

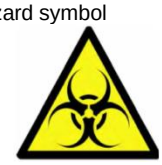
The SOP covers all the relevant activities that are necessary to manage any HCW that can be generated from any Health care facility. It traces the activities from “cradle to grave”, emphasising on the implementation of the waste hierarchy which is an order of preference of treatment methods with the most desirable method at the top to the least desirable at the base. The most desirable situation is whereby no waste is generated and the least desirable method is disposal. In between there is reduce, re-use, recycle and treat. Thus before producing waste, it should be investigated whether the amount of waste to be generated can be reduced. This approach leads to reduced efforts in subsequent handling, treatment and disposal operations.

The first and most important step in Health Care Waste Management is the waste minimisation step. This first step comes prior to the production of waste and aims at reducing as much as possible the amount of HCW that will be produced. This can be achieved by setting up an efficient purchasing policy and having a good stock management in place. The management and control of these stocks is the responsibility of everyone involved in the purchase, use, transportation, storage, and disposal. To satisfy this obligation, Health Care Facilities have to implement comprehensive Stock Management Systems.

Having minimised the waste generated at the facilities the next step is adequate identification, segregation and packaging of the Health Care Waste. ICWM - SOP - 002 covers the appropriate handling of health care waste prior to treatment, in order to control and minimize any potential risks it may pose to patients, health care workers, visitors and even the environment.

Segregation is the process of separating different categories of waste at the point of generation, keeping them isolated from each other for specific reasons and in suitably designed, labelled and colour-coded packaging for visual identification. The SOP defines five different categories into which the waste can be segregated. It also defines the colour coding for each waste category and the type of packaging and the appropriate treatment as

summarised in the table below:

Category	symbol	packaging	Colour code	treatment
Sharps	Biohazard symbol 	Purpose – made puncture proof rigid container	No colour specified	Dedicated Secure Waste Pit/ Incineration/ Approved Alternative Technology
infectious or contaminated non-sharps (HCRW)		Strong,/heavy duty leak proof plastic bag or container	**RED**	
Chemical Waste	Use appropriate hazard label 	Sealable, plastic lined, puncture-proof rigid plastic container		
non-infectious or healthcare general waste	General Waste symbol		**BLACK**	landfill
medical devices and radioactive materials	e- waste symbol	Put into boxes, sealed and labelled accordingly.	No colour specified	Sent to Central Stores for specialized disposal.
	Radioactive 	proof red	No colour specified	

After the waste has been packaged properly the SOP then considers the processes of handling, lifting, carrying, stacking and/or packing of Health Care Waste and then documents how to correctly, safely and optimally store it, temporarily, in a health care facility so as to minimize or avoid any potential negative impacts on the Health Care staff, patients, the environment and the community at large. The steps to establish temporary HCW storage sites at the facilities are also outlined. Deferent types of waste are brought for safe retention at these sites until it is treated or collected for transporting offsite.

At regular time intervals the stored waste is transported to treatment facilities. The correct and safe transportation procedure of Health Care Waste from point of generation to the facility's temporary waste storage site, and ultimately to the treatment facility is outlined. Emphasis is placed on minimizing potential risk to all the people in the chain.

At the treatment facilities the potential hazard posed by the health-care waste is reduced, while endeavouring to protect the environment. The SOP recommends the equipment to be used at particular Health Care Facilities as follows:

Treatment facility	Health Care Facility Types	Reasons
Modern pyrolitic incinerators	• Referral hospitals, • District hospitals, • other Hospitals, • Local Authorities • NGO Health Centres	• fairly low installation cost • fairly low operating skills requirements
Local incinerators (built with local material)	• Health Centres, • Private Health Centres • NGO Health Centres	• very low installation cost • small quantities of HCW produced in these facilities;
Stabilized concrete lined pits	• Health Centres, • NGO Health Centres • home based care	• very low HCW production
Open pit burning	• Health Centres, • NGO Health Centres • home based care	• Where no Municipal landfill is available • very low HCW production

At some facilities the Stabilized concrete lined pit can be located directly below the incinerator and will serve the purpose of handling the ashes from the incineration and also pathological waste.

The SOP also covers Occupational Health and safety. The Occupational Health and safety procedure ensures that all people in the ICWM chain, who at any point handle or come into contact with HCRW, are protected as much as possible by suitable prophylaxis, medical surveillance, and an efficient response to workplace injuries or accidents when they occur, avoiding recurrence as far as reasonably practicable.

The other Standard Operating Procedures that are considered include Waste quantification, Hand Hygiene, Decontamination of general surfaces, spillage management and mercury waste management. The basic tenet of all the SOPs are to serve as a framework for providing direction and structure in the proper management of HCW, thereby supplementing and complementing the National Health Care waste Management Policy and the National Infection Control and waste management Plan (ICWMP). The SOPs provide further procedural detail for subjects covered in the policy documents and in general provide the user with:

- written documentation of best practice,
- the what, how, when, why, and who,
- a foundation for:
  - work instructions,
  - staff training,
  - corrective action and discipline and
  - Performance review.

INTRODUCTION

Poor health care waste management (HCWM) is an issue of global and national concern, particularly for the Government of the Kingdom of Lesotho. With the increased prevalence of TB-HIV/AIDS and other infectious diseases, there has been a corresponding upsurge in the generation of health care waste (HCW). This has added to the great pressure the health sector has been having due to high population growth rate, increasing morbidity and mortality, insufficient financial and logistic support, deterioration of physical infrastructure, inadequacies of supplies and equipment, shortage of adequately and appropriately trained health personnel, high attrition rate as well as inadequate referral systems. These pressures are exacerbating the inadequate management of Health Care Waste being generated at the Health Care Facilities.

The Government of The Kingdom of Lesotho has developed various instruments to combat these various Health issues. These instruments include the National Health Policy, the Health Sector Strategic Plan, the Health Care Waste Management Plan and the Healthcare Waste Management Policy. The policy instruments aim at reducing the burden of communicable diseases through the equitable provision of quality health care, with the Primary Health Care (PHC) approach as the guiding strategy. Substantial achievements have been made in this area during the last decade as evidenced by the reduction of HIV/AIDS prevalence, malaria control strategies, improvement of sanitation and nutrition, health education and promotion.

The national health policy emphasizes the provision of preventive, promotive, curative and rehabilitative services, and is buttressed by the HCWM Policy which specifically highlights HCWM as a priority. The ICWMP (2016) then defines in a clear and precise way the roles, responsibilities and field competencies of actors involved in ICWM, outlining the processes of HCW collection, transportation, storage and treatment. The plan sets out the health promotion and prevention actions that can be used to prevent diseases and injuries that can be caused by poorly managed HCW.

To operationalise the ICWMP (2016), the Ministry of Health (MoH) has developed Infection Control and Waste Management – Standard operating Procedures **(ICWM SOP).** This document packages and presents the series of Standard Operating Procedures (SOPs) compiled to supplement and support the implementation of the sustainable management of Health Care Waste (HCW) from the health sector throughout Lesotho and thus enhancing the preventative health care interventions of our system. These SOPs are suitable for use at national, district and local levels and are designed to provide more detail on how to implement the ICWMP (2016). However they are not meant to replace facility-specific SOPs or Work Instructions, but instead, to inform them. The SOPs can then be part of a staff member's scope of work and job description.

The SOP has been designed as a means of accomplishing what is embodied in the HCWM policy and ICWMP. It provides instructions on how to carry out the policy expressed in the ICWMP and communicates who will perform the task, what materials are necessary, where the task will take place, when the task shall be performed, and how the responsible person will actually execute the task.

The details in the SOP standardize the implementation process and provide step-by-step instructions that enable anyone within the system to perform the task/procedure in a consistent and correct manner. The SOP also serves as an instructional and reference resource. The step-by-step written procedure furthermore contributes to the concept of accountability, because staff expectations and health care facility procedures are documented and activities can be measured against the SOP.

1. WASTE MINIMISATION, RECYCLING AND RE-USE

Work Instruction Title:	Procedure Number:	Implementation Date:
Waste Minimisation, Recycling and Re-Use	ICWM – SOP - 001	January 2016

1.1 Version

Version Number	Change History
1.0	No change, new procedure to document.

1.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

1.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

1.4 Purpose

This procedure documents the process of adequately setting up, the most appropriate purchasing and stock management systems at all levels of Health Care delivery systems to foster a significant reduction of the waste generated. The management System will:

- Encourage measures such as purchasing restrictions to ensure the selection of methods or supplies that are less wasteful or generate less hazardous waste.
- Minimize overstocking and thus waste generation and control waste disposal costs.
- Ensure the use of materials that may be recycled, either on-site or off-site.
- Ensure proper stock control to feed to the process of purchasing and use of chemicals and pharmaceuticals.
- Ensure that pertinent health, safety, and other information regarding stock items in the inventory is readily available and accessible.
- Facilitate budget preparation and planning by maintaining information on usage patterns, age, shelf-life, and cost.

The benefits of meeting the stock Management goals are reduced purchasing and disposal costs, regulatory compliance, and a safe and healthy environment for staff and clients.

1.5 Scope

Health care waste generated from health care facilities can pose risks to patients, health care workers, visitors and even the environment if it is not properly managed at the Health Care Facilities. Thus the management of waste must be **consistent** from the point of generation ("cradle") to the point of final disposal ("grave").

The first and most important step in Health Care Waste Management is the waste minimisation step. This first step comes prior to the production of waste and aims at reducing as much as possible the amount of HCW that will be produced by setting up an efficient purchasing policy and having a good stock management in place.

This procedure thus covers the setting up of the most appropriate purchasing and stock management systems at the Health Care Facilities to foster a reduction in Health Care waste produced at the end of the day.

1.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Basal Convention
- Drugs of Abuse Act 2008
- Dangerous Medicines Act, Disposal of harmful medicines in hospitals Ministry of Health No. 21 of 1973
- Dangerous Medicines Regulations LN 32 of 1975
- The Water Act 2008 - Water and Sewage Authority – (WASA)

1.7 Prerequisite

1.7.1 Health and Safety

- The procedure should be performed to ultimately meet the Occupational Health and Safety standards outlined in ICWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

1.7.2 Training

- Training on Infection Control and Waste Management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public to better manage the waste from “cradle” to “grave”.

1.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.

NO.	TERM	DEFINITION
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts.*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box* *sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.

NO.	TERM	DEFINITION
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

1.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment

8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

1.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical and other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Institute safe operating habits and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.

4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with HCWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

1.11 Procedure

Significant reduction of the waste generated in health-care facilities can be realised by the careful management of health care stock. The management and control of these stocks is the responsibility of everyone involved in the purchase, use, transportation, storage, and disposal. To satisfy this obligation, Health Care Facilities have to implement comprehensive Stock Management Systems that takes into account the following:

- **Source reduction:** measures such as purchasing restrictions to ensure the selection of methods or supplies that are less wasteful or generate less hazardous waste.
- **Recyclable products:** use of materials that may be recycled, either on-site or off-site.
- **Good management and control practices:** apply particularly to the purchase and use of chemicals and pharmaceuticals.
- **Waste segregation:** careful segregation (separation) of waste matter into different categories (ICWM – SOP – 002) helps to minimize the quantities of hazardous waste.
- **Reverse Logistics:** stock about to expire should be redistributed by the most appropriate means.
- **Donations:** donated items must be based on need expression

The following outlines the source reduction measures that will be employed at the Health Care Facilities. All Health Care staff must comply, and are urged to provide suggestions to assist in continuously improving these procedures.

1.11.1 Stock Purchasing System

To purchase Stock the following must be adhered to (See attachment 1):
Source reduction

- Seek quotations
- All public purchase must be in conformity with GPPA Act
- Practice purchasing reductions, i.e. selection of supplies that are less wasteful or less hazardous.
- Purchase the physical rather than chemical cleaning agents (e.g. steam disinfection instead of chemical disinfection).
- Complete a purchase requisition form and get it authorised.
- Raise a purchase order to supplier, referring to quoted prices of goods. (Copies of the purchase order are sent to the accounts and stores departments).
- On receiving goods from the supplier, the store man generates the goods received note (GRN) or Combined requisition and issue note (CRIN) (if internal purchases) and matches the goods to the invoice for quality and quantity
- **Updates the stock records**. (The GNR/CRIN is distributed to accounts and requisitioner.)

The purchasing procedure is outlined in attachment 1.

1.11.2 Inventory of Stock

Careful management of stores prevent the accumulation of large quantities of outdated chemicals or pharmaceuticals thus reducing the amount of hazardous waste and only limiting the waste to the packaging (boxes, bottles, etc.) plus residues of the products remaining in the containers.

Prudent management of stock at a Health Facility is greatly facilitated by keeping an inventory of the stock stored. An inventory is a database that tabulates the stock in the facility, along with information essential for their proper management.

A well-managed inventory system can promote economical use of stock by making it possible to determine immediately what stock items are on hand. The inventory system should include information on the storage location for each stock item.

(i) Stock Data Fields

The following data fields for each item are probably essential in any system:

- Name and description should be generic
- The strength, dosage form and Any other means of further identification and to provide a simple means of searching,
- Source and unit of Issues.
- Hazard classification, as a guide to safe storage, handling, and disposal,
- Date of acquisition, to ensure that unstable stock items are not stored beyond their useful life, and
- Storage location, in facilities where multiple locations exist.

A simple inventory system can be established by recording the above information for each stock item in an inventory control card, spread sheet and database.

(ii) Storage in Stockrooms

In general, store materials and equipment in cabinets and on shelving provided for such storage.

- Avoid storing materials and equipment on top of cabinets. If you must place things there, however, maintain a clearance from ceiling fittings.
- Do not store materials on top of high cabinets where they will be hard to see or reach.
- Avoid storing heavy materials up high.
- Keep exits, passageways, areas under tables or benches, and emergency equipment areas free of stored equipment and materials.
- Store all bulk, stock and powders in a store room away from the operational rooms, and only draw what is needed for use.
- Label all containers appropriately.
- Place the date received on all purchased materials in order to facilitate inventory control of the materials.
- Provide a definite storage place for each stock/equipment and return the stock/equipment to that location after each use.
- Avoid storing items on bench tops, except for those being used currently.
- Display expiry dates conspicuously on the carton or containers

(iii) Stock Control

Inventory control is based on the following factors:

- Stock usage - based on Morbidity and past consumption data and experience.
- Stock control - including security of stocks against pilfering, leakage etc.
- Record keeping - computer-based and manually captured, with timely data input.
- Shelf Life - needs to be managed to avoid wastage.
- Stock on hand - rule of thumb for how much stock to have on hand at any time (often one month's supply).
- Hazardous chemicals - keeping these to a minimum consistent with effective running of assays.
- Ordering system - must be simple to use and manage, and relies on the facility staff informing someone of stocks running low or placing the order themselves.

The following procedure should be followed in controlling stock:

- On reception of goods, the corresponding stock cards should be updated. (Attachment 2).
- The stock cards are placed in a safe, accessible and closer to the items they are representing.
- Each stock card is updated each time stock is withdrawn.
- For each stock item a minimum order level is determined, generally to have enough stock to last a month depending also on the shelf life and bulkiness.
- Generate reports on stock usage and what's left, etc.
- Perform regular stock checks to
    - monitor stock losses,
    - check that there is sufficient stock available and
    - Ensure that all stock is stored in a safe and efficient manner.
- Frequently order relatively small quantities rather than large amounts at one time (applicable in particular to unstable products).
- Use the oldest batch of a product first.
- Use all the contents of each container.
- Check the expiry date of all products at the time of delivery.

1.11.3 Recycling and Re-Use

(i) Safe Re-Use

Medical and other equipment may be reused provided that it is designed for the purpose and will withstand the sterilization process (Attachment 3).

Reuse may involve a combination or all of the following steps:

- cleaning,
- decontamination,
- reconditioning,
- disinfection and
- sterilization.

- Reusable items may include certain sharps, such as scalpels and certain glassware etc.
- After use, these should be collected separately from non-reusable items,
- Carefully wash them and may sterilize by one of the processes in attachment 3.

- Certain types of containers may be reused provided that they are carefully washed and disinfected.
- Containers of pressurized gas, however, should generally be sent to specialized centres to be refilled.
- Containers that once held detergent or other liquids may be reused as containers for sharps waste (if purpose-made containers are not affordable) provided that they are puncture-proof and correctly and clearly marked on all sides.

NOTE:-

- Syringes and hypodermic needles should not be reused because of the significant chance of spreading disease.
- Plastic syringes and catheters should not be thermally or chemically sterilized; should not be reused but should be discarded. However, they may be recycled after sterilization.
- There are also certain devices (e.g. patient self-administered intermittent urinary catheters, face masks for oxygen administration) that are intended for limited reuse by the individual and only require washing with mild detergents.

(ii) Recycling

- Recycling of materials such as metals, paper, glass, and plastics can result in savings for the health-care facility—either through reduced disposal costs or through payments made by the recycling company.
- Recover waste items to be converted into new products, like paper and cardboard.
- Compost organic waste matter (un contaminated food etc) to produce compost or soil conditioner for use in agriculture or similar purposes.

Figure 1-1 Paper and cardboard recovery

1.12 References

1. **GoL (2012),** Consolidated Lesotho National Health Care Health Waste Management Waste Management Plan for the Lesotho Maternal and Newborn Health Performance-Based Financing Project August 2012
2. **A. Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.

3. **United States Department of Agriculture, (2002)**; *ARS facilities design standards.* 242.1M-ARS. Facilities Division, Facilities Engineering Branch AFM/ARS, United States Department of Agriculture, 2002.
4. **WHO (2014);** Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland,
5. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
6. **USEPA (2002);** United States Food and Drug Administration list of approved sterilants (March 2009)

1.13 Attachments

1.13.1 Attachment 1. Purchases system information flows

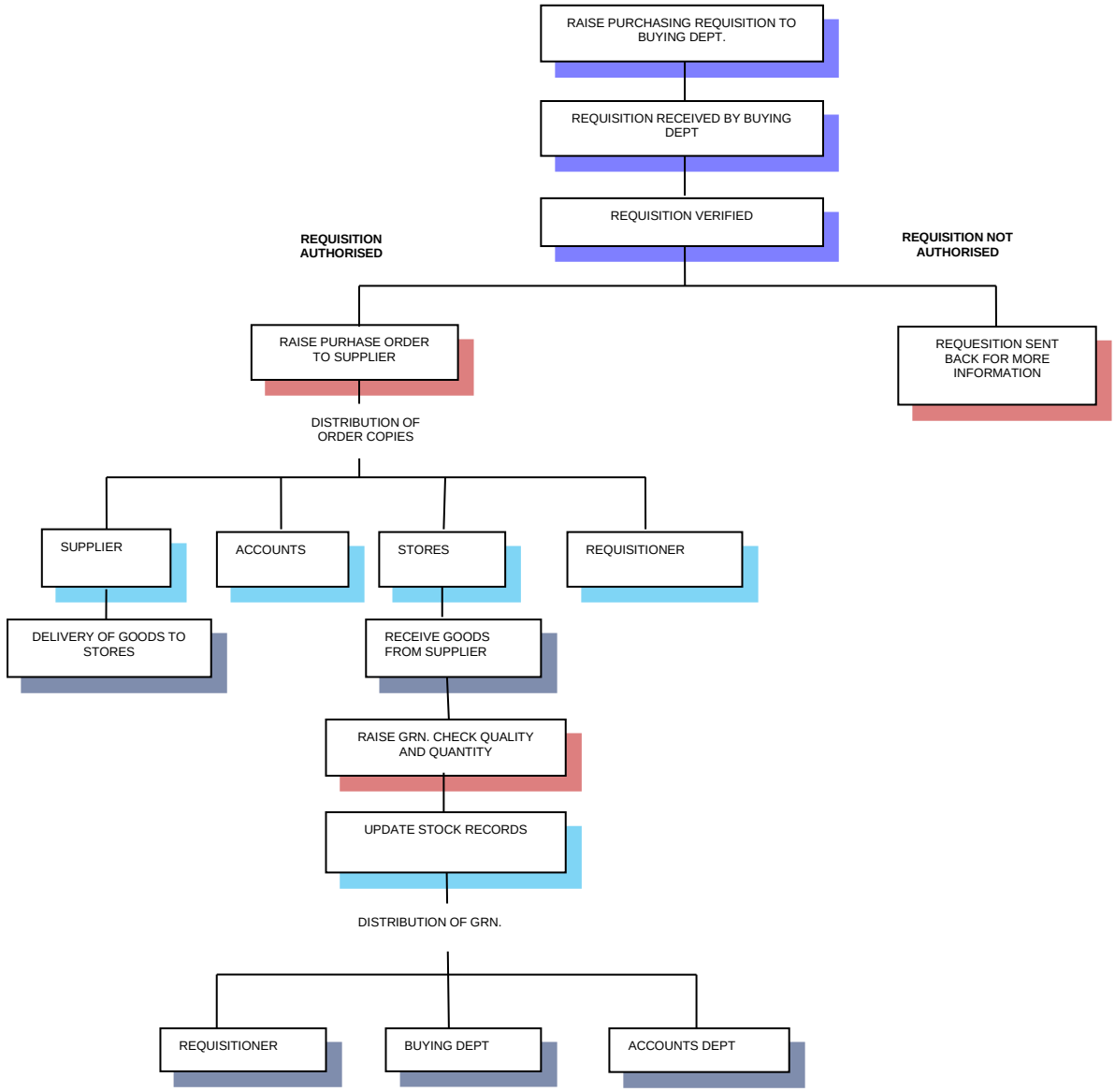


Figure 1-2 Purchasing System Information Flow

1.13.2 Attachment 2: Stock Card

ITEM DETAILS
Item Specification: …….....

Item Description…….....

Item Code…….....

Unit of Issue: …….....

STOCK-CONTROL
Maximum quantity: …….....

Minimum quantity:…….....

Re-order level : …….....

DATE	REF / REQUISITION NUMBER:	QUANTITY ORDERED	QUANTITY RECEIVED	QUANTITY ISSUED	TO / (JOB NO.)	STOCK BALANCE	SIGNATURE	**REMARKS**

MONTHLY CONSUMPTION

YEAR	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	**AUG.**	**SEP.**	**OCT.**	**NOV.**	**DEC.**
2015												

1.13.3 Attachment 3 Sterilisation methods for reusable items.

The following are examples of sterilization methods for reusable items:

(i) Thermal sterilization

- Dry sterilization
  Exposure to 160°C for 120 minutes or 170°C for 60 minutes in a “Poupinel” oven. (Figure 1.3)

- Wet sterilization
  Exposure to saturated steam at 121°C for 30 minutes in an autoclave.

(ii) Chemical sterilization

- Hydrogen peroxide:
  A 7.5% solution can produce high-level disinfection in 30 minutes at 20 °C. Alternatively, equipment exists that can generate a hydrogen peroxide plasma from a 58% hydrogen peroxide solution. The equipment has a 45-minute process time. Hydrogen peroxide can also be used in combination with per-acetic acid.
- Per-acetic acid:
  Can produce sterilization in 12 minutes at 50–55 °C, with instruments ready to use in 30 minutes. Per-acetic acid can also be used in combination with hydrogen peroxide.
- OPA (ortho-phthaldehyde):
  High-level disinfection in 12 minutes at 20 °C.
- Hypochlorous acid/hypochlorite:
  400–450 ppm active free chlorine, contact conditions established by simulated use testing with endoscopes.

NOTE: ethylene oxide and glutaraldehyde are widely used but are being replaced in an increasing number of healthcare facilities because of their health effects. Ethylene oxide is a human carcinogen, and glutaraldehyde can cause asthma and skin irritation.

Digital Poupinel

Figure 1-3 Digital Poupinel

2. IDENTIFICATION, SEGREGATION AND PACKAGING OF WASTE		
Work Instruction Title:	**Procedure Number:**	**Implementation Date:**
Segregation of Waste	ICWM – SOP - 002	January 2016.

2.1 Version

Version Number	Change History
1.0	No change, new procedure to document.....

2.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

2.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

2.4 Purpose

This procedure documents the processes of adequate identification, segregation and packaging of Health Care Waste.

2.5 Scope

Health care waste generated from health care facilities can pose risks to patients, health care workers, visitors and even the environment if it is not properly identified, segregated into various waste streams and accordingly packaged, for appropriate disposal. This procedure thus covers the appropriate handling of health care waste prior to and during treatment, in order to control and minimize any potential risks at this stage.

2.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following laws and statutes:

- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999
- Local Government Act 1997
- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Dangerous Medicines Act, Disposal of harmful medicines in hospitals Ministry of Health No. 21 of 1973
- Dangerous Medicines Regulations LN 32 of 1975

2.7 Prerequisite

2.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

2.7.2 Training

- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public.
- Health Care Waste management awareness shall be continously given to all health care facility staff and clients.

2.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating*

NO.	TERM	DEFINITION
		theatre, mobile clinic health centre and village health posts..
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium*

NO.	TERM	DEFINITION
		hypochlorite, which is sold widely.
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

2.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance

12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

2.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility.

		• Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

2.11 Procedure

2.11.1 Identification and Segregation

Identification is the process of identifying waste at point of generation and segregating it into the appropriate waste category / stream, as follows:

1. Segregation is the process of separating different categories of waste at the point of generation, keeping them isolated from each other for specific reasons and in suitably designed, labelled and colour-coded packaging for visual identification.
2. Clearly identify the waste into the five different categories as follows (Table 2.1):
   (i) sharps,
   (ii) infectious or contaminated non-sharps (healthcare risk waste – (HCRW)),
   (iii) non-infectious or healthcare general waste (HCGW)
   (iv) Chemical and Pharmaceutical waste and
   (v) Medical devices and radioactive materials.
3. **Segregation must be done at the point of generation** of the waste.
4. **Place** reusable containers or baskets with liners of the correct size and thickness, as close to the point of generation as possible.
5. The containers must be properly **colour-coded** (Red for infectious waste) and have the appropriate waste symbol (Table.2.1) clearly marked.
6. When the containers are 3/4 full, the liners are closed with plastic cable ties or string and placed into larger containers or liners at the intermediate storage areas.
7. The segregated waste will then be taken to separate disposal processes in accordance with the categorization chosen (ICWM – SOP - 006).
8. Suitable latex gloves must always be used when handling infectious waste.
9. Never remove general, sharps or infectious waste that has been placed in the incorrect colour-coded bag or container.
10. Once general waste is mixed with HCRW, all of it is considered HCRW as the

general waste will now be contaminated.

2.11.2 Adequate Packaging of Waste

Safe packaging and containerization is core to sound health care waste management. Therefore it is very important that containers meet certain minimum criteria and manufacturing standards as outlined below:

- Plastic bags with a capacity of 60 (sixty) litres or more must be at least 80 (eighty) microns in thickness.
- Plastic bags with a capacity of less than 60 (sixty) litres must be at least 60 (sixty) microns in thickness.
- Plastic bags used as barriers in puncture resistant containers that are at no time removed from such puncture resistant containers, other than for the final treatment of the contents, must be at least 40 (forty) microns in thickness.
- Plastic bags which are used as smaller intermediate barriers within a single ward or similar, and that are subsequently placed in puncture resistant and leak resistant containers or further plastic bags, must be at least 40 (forty) microns in thickness.
- All plastic bags and disposable containers must be manufactured from polypropylene or polyethylene polymers; or polymers that cause, at a maximum, equivalent environmental impacts to those caused by polypropylene or polyethylene polymers when disposed by incineration, or treated by means of any available alternative technology.
- Any container used for the storage of anatomical / pathological waste, must be manufactured from suitable materials able to withstand the low temperatures at which such waste is stored.
- Rigid puncture resistant containers shall be leak resistant, have fitted covers, and be kept clean and in good repair.
- Lids used for disposable sharps containers must be secured in such a way that they cannot be reopened once closed, without major structural damage to the container.
- Lids used for anatomical / pathological waste containers must provide an airtight seal to prevent the emissions of odours as well as spillage.
- Plastic bags may not be used as final outer containers.

Once the waste generated has been containerized/packaged for disposal, it must not be in a position to be exposed again as it is moved from site to site en route to final disposal.

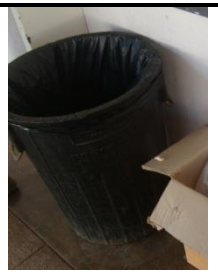
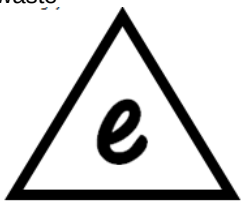
Table 2-1 Categories, Labelling And Containers for Health Care Waste

No.	WASTE CATEGORY		LABELLING	TYPE OF CONTAINER	COLOUR CODE	CONTAINER	TREATMENT
1.	Sharps	• Needles, • Syringes with Needles (no denotching) • Infusion sets • Scalpels • knives, • Blades • Broken Glass • Sutures • Lancet	The words: "Danger Contaminated Clinical Sharps" in RED text with Biohazard symbol 	Purpose – made puncture proof rigid container	No colour specified (yellow / white/red / clear)	 	Dedicated Secure Waste Pit/ Incineration/ Approved Alternative Technology

2.	Infectious or contaminated non-sharps (healthcare risk waste – (HCRW))	• Cotton wool, • Swabs, • Sample vials. • Gauze/Dressings • Gloves • Anatomical Waste • Blood • IV fluid lines • Plastic Forceps • O-drape • Plastic Container Tray • Plastic Apron • Alcohol Swab • Test Strip	Biohazard symbol 	Strong/heavy duty leak proof plastic bag or container	**RED**	   	Dedicated Secure Waste Pit/ Incineration/ Approved Alternative Technology

No.	WASTE CATEGORY	LABELLING	TYPE OF CONTAINER	COLOUR CODE	CONTAINER	TREATMENT
	• Infectious Laundry • Microbial Waste such as Culture Plates, etc. • Food Waste from Isolation Wards. • Pathological waste (Amputated limbs, Placentas etc)	Biohazard symbol 	Double- bagged with Strong/heavy duty leak proof plastic bag or container plastic bag. bagged and			
	Infectious pathological Animal waste	Biohazard symbol 	Heavy duty, leak-proof orange plastic bag			

No.	WASTE CATEGORY		LABELLING	TYPE OF CONTAINER	COLOUR CODE	CONTAINER	TREATMENT
3.	Chemical Waste	• Pharmaceutical waste • Genotoxic waste • Chemical waste • Damaged/Unusable Pharmaceuticals • Expired Pharmaceuticals • Damaged (not broken)/Unusable Injectables • Cytostatic/ Chemotherapeutic Drugs • Mutagenic, Teratogenic and / or Carcinogenic products or items contaminated with mutagenic, teratogenic and / or carcinogenic products to be discarded • Radioactive solutions or products or items contaminated with radioactivity to be discarded. • Solid, liquid or gaseous products that are to be discarded that contain dangerous or polluting chemicals.	Use appropriate hazard label ***General Chemicals Waste:***  ***Cytotoxic Waste:*** 	Sealable, plastic lined, puncture-proof rigid plastic container – preferably in their original bottles or packaging.	**GREEN**		
4.	Non-infectious or healthcare	• Paper, • Cartons,	General Waste		**BLACK**		landfill

No.	WASTE CATEGORY		LABELLING	TYPE OF CONTAINER	COLOUR CODE	CONTAINER	TREATMENT
	general waste (HCGW)	• Unbroken glass, • Packaging materials (uncontaminated) • Office Supplies • Beverage Containers • Hand Towels • Boxes • Glass Bottles • Plastic Bottles • Food remains • Cardboard • Plastic / Cellophane Wrap • Cling Wrap • Food Wrap				 	
5.	Medical devices and radioactive materials	• Medical devices • electronic Waste	e- waste 	Put into boxes, sealed and labelled accordingly.			Sent to Central Medical Stores (NDSO) or suitable alternative collection facility for recovery, recycling and/or specialized disposal.
		• Mercury • Batteries • Lead	Include appropriate Chemical hazard symbol: 				

No.	WASTE CATEGORY	LABELLING	TYPE OF CONTAINER	COLOUR CODE	CONTAINER	TREATMENT
	• Radioactive waste	Radioactive 	proof red			
	• Pressurized Cylinders, • Cartridges • Aerosol cans	Pressurized containers 	plastic bag			Transport to Central Stores for specialized recovery/ Hazardous Waste Landfill

NOTE:

- Liquid pharmaceutical waste shall be put in plastic lined containers in their original bottles.
- Chemical or radioactive solutions containing human or animal anatomical and infectious wastes are considered as chemical or radioactive waste respectively.
- General health-care waste should join the stream of domestic refuse for disposal.
- Sharps should all be collected together, regardless of whether or not they are contaminated. Containers should be puncture-proof (usually made of metal or high-density plastic) and fitted with covers. They should be rigid and impermeable so that they safely retain not only the sharps but also any residual liquids from syringes. To discourage abuse, containers should be tamper-proof (difficult to open or break) and needles and syringes should be rendered unusable. Where plastic or metal containers are unavailable or too costly, containers made of dense cardboard are recommended (WHO, 1997).
- Highly infectious waste should, whenever possible, be sterilized immediately by autoclaving. It therefore needs to be packaged in bags that are compatible with the proposed treatment process: red bags, suitable for autoclaving, are recommended.
- Small amounts of chemical or pharmaceutical waste may be collected together with infectious waste.
- Large quantities of obsolete or expired pharmaceuticals stored in hospital wards or departments should be returned to the pharmacy for disposal. Other pharmaceutical waste generated at this level, such as spilled or contaminated drugs or packaging containing drug residues should not be returned because of the risk of contaminating the pharmacy; it should be deposited in the correct container at the point of production.
- Large quantities of chemical waste should be packed in chemical resistant containers and sent to specialized treatment facilities (if available). The identity of the chemicals should be clearly marked on the containers: hazardous chemical wastes of different types should never be mixed.
- Waste with a high content of heavy metals (e.g. cadmium or mercury) should be collected separately.
- Aerosol containers may be collected with general health-care waste once they are completely empty, provided that the waste is not destined for incineration.
- Low-level radioactive infectious waste (e.g. swabs, syringes for diagnostic or therapeutic use) may be collected in red bags or containers for infectious waste if these are destined for incineration

2.12 References

1. **GoL (2012),** Consolidated Lesotho National Health Care Health Waste Management Waste Management Plan for the Lesotho Maternal and Newborn Health Performance-Based Financing Project August 2012
2 **WHO 2014**, Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland, www.who.int/pheEdited by Yves Chartier, Jorge Emmanuel, Ute Pieper, Annette Prüss, Philip Rushbrook, Ruth Stringer, William Townend, Susan Wilburn and Raki Zghondi

2.13 Attachments

2.13.1 Attachment 1 TRAINING EVALUATION CHECKLIST

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. List the colour-coding system for health care waste management?
2. Define Infectious Waste?
3. Define General Waste?
4. Define Chemical Waste?
5. Define Sharps Waste?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

3. ADEQUATE HANDLING OF WASTE

Work Instruction Title:	Procedure Number:	Implementation Date:
Segregation of Waste	ICWM – SOP - 003	January 2016

3.1 Version

Version Number	Change History
1.0	No change, new procedure to document

3.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

3.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

3.4 Purpose

This procedure documents the processes of handling, lifting, carrying, stacking and/or packing of Health Care Waste.

3.5 Scope

The packaged Health care waste generated from health care facilities can pose risks to patients, health care workers and visitors and even the environment if inappropriately handled. Standards to control and minimize these risks are set forth below.

3.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following laws and statutes:

- Public Health Order No.12 of 1970
- Public Health Regulations
- International Health Regulations(2005)
- Dangerous Medicines Act, Disposal of harmful medicines in hospitals Ministry of Health No. 21 of 1973
- Dangerous Medicines Regulations LN 32 of 1975
-
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999

3.7 Prerequisite

3.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in ICWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

3.7.2 Training

- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public.
- Health Care Waste management awareness shall be continously given to all health care facility and clients.

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3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
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7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
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16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*

NO.	TERM	DEFINITION
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

3.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

3.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of HCWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of ICWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE.. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

3.11 Procedure

Personnel handling HCW must be protected by wearing personal protective equipment (PPE). Wearing PPE reduces risks from sharps, germs, exposure to blood and other body fluids and splashes from chemicals. (ICWM - SOP-008 – Occupational Health and Safety)

3.11.1 Assess Environment

Before handling any Health Care Waste the following must be observed:

- Is the Container/package colour-coded and labelled correctly informing the handler of its contents and hazard risk?
- Is the Container/package suitably sealed off?
- Are there any signs of the contents of the container / packaging escaping, (i.e. no needles protruding or penetrating sharps containers, no liquids leaking from containers, etc). Is the Health Care Waste stream in question safely contained in suitably designed packaging?

3.11.2 Lifting and Carrying Procedures

Back injury is one of the leading injuries when lifting heavy items. The main risk factors, or ***conditions,*** associated with these types of injuries associated with manual handling of the waste include:

- Awkward postures (e.g., bending, twisting)
- Repetitive motions (e.g., frequent reaching, lifting, carrying)
- Forceful exertions (e.g., carrying or lifting heavy loads)
- Pressure points (e.g., grasping [or contact from] loads, leaning against parts or surfaces that are hard or have sharp edges)
- Static postures (e.g., maintaining fixed positions for a long time)

The following are simple lifting techniques that can significantly reduce the incidence of these injuries:

3.11.3 Carrying Bags containing HCRW:

Figure 3-1 Lifting a Bag

- Put on the appropriate PPE (Heavy duty elbow gloves, face mask, goggles, plastic apron, clothes that cover the body and Heavy duty safety boots). Figure 3.1
- Ensure that the bag has been closed off / sealed correctly, no more than ¾ full with a stub for carrying.
- Inspect bag visually for leaks, breaks, tears, and / or penetrating sharps and etc. ***(If the bag is leaking, broken, or torn, don't. Immediately report the incident to managerial staff for investigation and mitigation.)***
- If safe grab the bag, bend with knees and lift with legs while holding the bag by the stub and **carry far away from body**.

3.11.4 How to lift Heavy Containers (which are not bags):

1. Put on the appropriate PPE (Heavy duty elbow gloves, face mask, goggles, plastic apron, clothes that cover the body and Heavy duty safety boots). Figure 8-1.
2. **Plan ahead before lifting.**
   Knowing what you are doing and where you are going will prevent you from making awkward movements while holding something heavy. Clear a path, and if lifting something with another person, make sure both of you agree on the plan.
3. Check if the item has handles.
4. **Lift close to your body.**
   You will be a stronger, and more stable lifter if the object is held close to your body rather than at the end of your reach. Make sure you have a firm hold on the object you are lifting, and keep it balanced close to your body.
5. **Feet shoulder width apart.**
   Standing directly in front of the container, position feet evenly (shoulder width apart).
6. Keep back straight and stand up tall.
7. **Bend your knees and keep your back straight.**
   Practice the lifting motion before you lift the object, and think about your motion before you lift. Focus on keeping your spine straight--raise and squat to the floor by bending knees- DO NOT move upper body.
8. **Tighten your stomach muscles.**
   Tightening your abdominal muscles will hold your back in a good lifting position and will help prevent excessive force on the spine.
9. Take hold of the object firmly with both hands.
10. Distribute the weight evenly - make sure the container is balanced.
11. **Lift with your legs.**
    Keeping the object close to body, begin to stand up by straightening legs (this will use leg muscles and shouldn't put strain on other areas). Your legs are many times stronger than your back muscles--let your strength work in your favour. Again, lower to the ground by bending your knees, not your back. Keeping your eyes focused upwards helps to keep your back straight.
12. Stand up slowly. Do not move quickly or jerk.
13. Walk with the container/package (but be careful not to twist your body unnecessarily). Take small steps if possible.
14. When placing the item down, bend legs.
15. Keep back straight while bending down again.
16. Be careful to lower each side of the object to the floor separately- avoid trapping fingers under the weight.
17. **If you're straining, get help.**
    If an object is too heavy, or awkward in shape, make sure you have someone around who can help you lift.

Figure 3-2 Lifting Containers

3.11.5 Stacking and Packing Procedures

- When stacking or packing a space with HCRW containers/packaging, the idea is to secure the items so that they will not topple or fall and break, whether in transit or when stationary.
- Always stack broader-based containers/packaging at the bottom, with narrower-based containers/packaging above.
- Never stack higher than shoulder level or higher than what the stack will allow for natural stability.

3.11.6 When in Doubt…Don't

Do not attempt to lift and carry any HCRW containers that appear unsafe, i.e.:

- HCRW containers not closed off correctly.
- HCRW containers showing leakage or spillage.
- Protrusions or penetrations of sharps through HCRW containers.
- Broken HCRW containers.
- Overfull HCRW containers.
- Torn HCRW bags.
- Unusually heavy HCRW containers.
- Etc.

(***When in doubt, contact the designated managerial staff and inform them immediately so that they can investigate, rectify and prevent further compromises in safety.)***

3.12 References

1. HCWM- SOP-002: Identification, Segregation and Packaging.
2. HCWM- SOP -004: HCW Storage
3 USAID. Treatment alternatives for medical waste disposal. Programme for Appropriate Technology in Health (PATH). October 2005.

3.13 Attachments

3.12.1 Attachment 1 Training Evaluation Checklist

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. What is the cardinal rule when handling HCRW?
2. When you carry a bag containing HCRW, you must hug it with both your arms. True / False?
3. When attempting to carry a relatively heavy box, it is advisable that you bend your knees and hug the load. True / False?
4. You can stack containers as high as possible to save space. True / False? Explain why you chose your answer.
5. If you find that a container / bag containing HCRW is leaking or there are sharps protruding, for example, what action do you take?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

4. SAFE STORAGE OF WASTE

Work Instruction Title:	Procedure Number:	Implementation Date:
Safe Storage of Waste	ICWM – SOP - 004	January 2016

4.1 Version

Version Number	Change History
1.0	No change, new procedure to document.....

4.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

4.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

4.4 Purpose

This procedure documents how to correctly, safely and optimally store Health Care Waste, temporarily, in a health care facility so as to minimize or avoid any potential negative impacts on the Health Care staff, patients, the environment and the community at large. The steps to establish temporary HCW storage sites at the facilities are also outlined.

4.5 Scope

Health care waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment if not stored properly whilst awaiting treatment.

4.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following National laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Dangerous Medicines Act, Disposal of harmful medicines in hospitals Ministry of Health No. 21 of 1973
- Dangerous Medicines Regulations LN 32 of 1975
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999

4.7 Prerequisite

4.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that needs to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

4.7.2 Training

- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public including PHC services.
- Health Care Waste management awareness shall be continously given to all health care facility and clients.

4.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.

NO.	TERM	DEFINITION
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.

NO.	TERM	DEFINITION
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
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22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
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27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.

NO.	TERM	DEFINITION
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

4.9 Acronyms

No.	TERM	DEFINITION
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2.0	HCF	Health Care Facility
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7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
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14.0	MSDS	Materials Safety Data Sheet

4.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of HCWM products and activities. • Ensure adequate supply of HCWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures

2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with HCWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

4.11 Procedure

Central storage areas are places within a health-care facility where different types of waste should be brought for safe retention until it is treated or collected for transport offsite. The general requirements below are relevant to most types of health-care facilities where sufficient waste is produced and needs to be stored centrally. Some types of waste storage for particular items (e.g. blood, radioactive substances, and chemicals) are only likely to be required at large and specialized medical centres. In general the following obtains:

i. There should be a clear demarcation / separation between the storage areas for Hazardous Health Care Waste and Health Care General Waste (HCGW) in order to avoid cross-contamination.
ii. The storage areas must be totally enclosed and separated from supply rooms or food preparation areas.
iii. Enough room should be provided for loading and compaction if recovery of

paper/cardboard is done, staging areas for sharps boxes, recycling containers and secure storage (e.g. for batteries) should all be provided.

iv. These storage areas should be sized according to the quantities of waste generated and the frequency of collection.
v. Cytotoxic waste should be stored separately from other health care waste in a designated secure location.
vi. Radioactive waste should be stored in containers that prevent dispersion, behind lead shielding. Waste that is to be stored during radioactive decay should be labelled with the type of radionuclide, the date, and details of required storage conditions.

4.11.1 Intermediate storage (in the HCF)

Figure 4-1 Intermediate storage for waste

Waste must be collected from the wards on a regular basis in order to avoid both the accumulation and decomposition of the waste.

For large Health care Facilities it can be stored at intermediate storage areas.
These areas are where the larger containers are kept before removal to the central storage area,

The intermediate storage areas should both be close to the wards and not accessible to unauthorized people (patients and visitors) and animals (Figure 4-1).

4.11.2 Centralized Waste Storage Site (WSS)

i. The Health Care Waste storage site (WSS) shall be **clearly demarcated**.
ii. It must have **sufficient capacity** to store all waste according to the facility's unique waste generation profile (in line with agreed collection schedules), and for temporary stockpiling during a strike or other unforeseen emergency situation.
iii. **Collection frequency** should be negotiated and in keeping with a turnaround time that does not leave Health Care Waste stored for prolonged periods.
iv. The WSS facility should not be situated near to food stores or food preparation areas and its access should always be limited to authorized personnel.
v. It should be a **sheltered enclosure** to protect it from the sun, rain and other elements and be designed to prevent rodents, insects or birds from entering.
vi. It should be **well ventilated** in order to maintain the lowest possible ambient temperature possible and combat the potential of odour nuisance and accelerated decomposition.
vii. The **floor of the WSS should be impermeable, slip-resistant and hard standing** to facilitate easy cleaning.
viii. The WSS should be **suitably equipped with a proximal water source** to facilitate cleaning, as well as **good drainage**, which connects to the sewer if reasonably practicable.
ix. The WSS should be **well lit**.
x. This WSS enclosure should have a **lockable door to prevent access** by children and unauthorized persons as well as scavenging animals or birds. Storage areas may be secured by use of locks on entry doors, gates, and/or receptacle lids.
xi. It should be **convenient and easy to use and accessible** at all times to waste collection vehicles.
xii. The WSS should be in a location where there is **low public presence or traffic**.
xiii. It should **be equipped with a fire extinguisher or buckets of sand to put out any possible fire outbreaks.**
xiv. A staff member to whom the duty of managing and maintaining the WSS is allocated should be suitably equipped with the necessary PPE (Personal Protective Equipment), which should include: gumboots, work uniform, elbow length PVC gloves (or similar alternative), mask, protective eye goggles, and an apron (Refer to ICWM – SOP – 008).

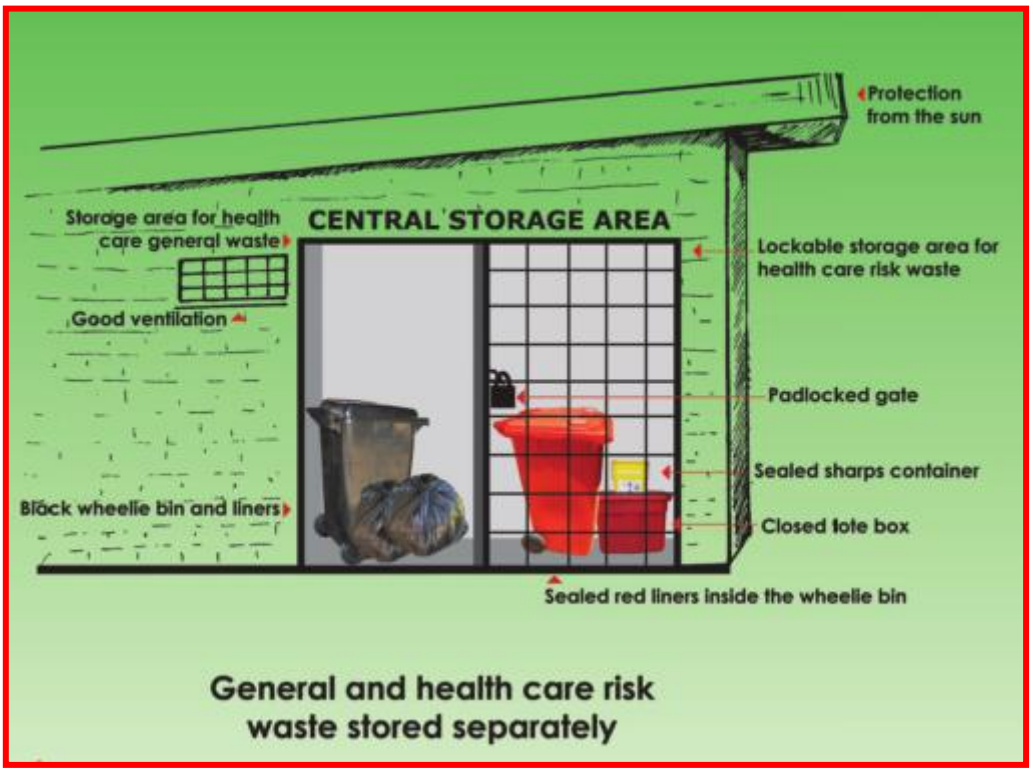


Figure 4-2 Intermediate storage for waste

Figure 4-3 Temporary storage Area.

4.11.3 Recommended Signage:

Storage facilities should be labelled in accordance with the hazard level of the stored waste as depicted below:

(i) No entry sign, for all storage facilities

All Waste Storage Areas should have a "**NO ENTRY TO UNAUTHORISED PERSONNEL**" sign.

	**DANGER** **HEALTH CARE WASTE STORAGE SITE** **NO ENTRY**

Figure 4-4 No entry sign, for all storage facilities

(ii) Biohazard sign for infectious and sharps waste

 BIOHAZARD	**DANGER** **HEALTH CARE WASTE STORAGE SITE** **NO UNAUTHORISED PERSONS**

Figure 4-5 Biohazard sign for infectious and sharps waste

(iii) Toxic Waste sign for chemical and hazardous pharmaceutical waste

 **TOXIC WASTE**	**DANGER** **HEALTH CARE WASTE STORAGE SITE** **NO ENTRY**

Figure 4-6 Toxic sign for chemical and pharmaceuticals

(iv) *Cytotoxic Waste* sign for Cytotoxic chemical waste

 **CYTOTOXIC WASTE**	**DANGER** **HEALTH CARE WASTE STORAGE SITE** **NO ENTRY**

(v) Radiation sign for radioactive waste

 RADIATION	**DANGER** **HEALTH CARE WASTE STORAGE SITE** **NO ENTRY**

Figure 4-7 Radioactive waste sign

There should be no eating, drinking or smoking inside the storage facilities. The following signs should be displayed inside the storage site.

No eating or drinking

No smoking

Figure 4-8 Signs to be displayed inside a storage site

4.11.5 Cleaning and Maintaining your Waste Storage Site (WSS):

- Cleaning of your WSS should be scheduled after a waste collection, when the WSS is empty.
- The person responsible for cleaning the WSS should wear his/her PPE during all cleaning.
- Use a suitable detergent (soapy, cleaning product) and brushes to scrub the area down. (Cleaning and disinfection can be achieved using any product from an extensive range available on the market – remember to use the chosen product as directed by the manufacturer for optimum results. (ICWM – SOP – 010)).
- After thorough cleaning, rinsing is an equally important second step – to rinse off the dirt you have lifted together with the soapy cleaning product residues.
- Ventilate the area maximally to speed up drying so that the storage site/enclosure is as dry as possible before you stack new waste containers in it.
- Get it right from the beginning! If waste segregation at source is sound, and containers are used and closed off correctly (and not overfilled!) your risk of spillage will be largely reduced and your WSS should, therefore, not accumulate too much filth in the first place.

4.11.6 Stacking / Packing HCW into a WSS

When packing and stacking waste containers in the temporary storage rooms the following should be observed:

- Wear the correct PPE for handling Health Care Waste (ICWM – SOP – 008).
- Make sure that rigid plastic containers or bags are not more than ¾ full (not overfull), closed off securely, and that sound waste segregation has been implemented (i.e. no needles sticking out of red bags, etc.).
- Stack / pack things carefully and orderly, to prevent toppling, breakage and eventual spillage of the waste.
- Stack / pack things in such a way that they are easily and safely retrievable by the team who collects them to take them away for treatment / disposal.
- Arrange the broader-based containers to be at the bottom, whilst the narrower-based containers being above.
- Do not stack higher than shoulder height.
- Always test the stability of a stacked tower before leaving it or adding to it.

4.11.7 Further Storage Specifications

In addition to the above general considerations for storage of health care waste, further specifications for different types of waste are considered below:

(i) General Waste

- The storage place for general waste must be identified as such and be clearly marked by using the "**NO ENTRY TO UNAUTHORISED PERSONNEL"** sign (Figures 4-2).
- This waste stream must be handled together with domestic waste.
- Where possible it should be collected by the local authority and disposed of at the municipal landfills.
- Paper, cardboards and left over food can be recovered and composted respectively in line with ICWM – SOP – 001.

(ii) Infectious Waste Storage

- The storage place must be identified as an infectious waste area by using the "**NO ENTRY TO UNAUTHORISED PERSONNEL"** and the **BIOHAZARD** signs (Figures 4-2 & 4-3).
- Floors and walls should be sealed or tiled to allow easy disinfection.
- The compacting of untreated infectious waste or waste with a
- high content of blood or other body fluids destined for offsite disposal (for which there is a risk of spilling) should not be compacted.
- Unless a refrigerated storage room is available, storage times for health care waste (i.e. the delay between production and treatment) should not exceed 48 hours during the cool season and 24 hours during the hot season.

Table 4-1 Recommended storage times

WASTE[a]	TIME LIMITS
Anatomical / Pathological[b]	24 hours
Infectious[b]	72 hours
Sharps Container	30 days
Pharmaceutical	90 days

[a]*Containers shall be sealed.*
[b]*The waste may be stored at -2°C for 90 days.*

(iii) Pathological Waste Storage

- The storage place must be identified by using the "**NO ENTRY TO UNAUTHORISED PERSONNEL"** and the **BIOHAZARD** signs (Figures 4-2 & 4-3)
- Pathological waste is considered as biologically active waste, and may form gas during storage
- The storage places should have the same conditions as those for infectious and sharps wastes.
- Where the body parts have to be passed to the family for ritual procedures or are buried in designated places, they should be placed in sealed bags to reduce infection risks before being released to the public.

(iv) Chemicals And Pharmaceutical Waste Storage

- The storage place must be identified as a toxic waste area by using the "**NO ENTRY TO UNAUTHORISED PERSONNEL"** and the **TOXIC WASTE** sign (Figures 4-2 & 4-4).
- If in large quantities the Pharmaceutical waste should be taken back to the pharmacy or Central Stores for appropriate disposal.
- Small quantities should be treated as hazardous waste and collected together with the other infectious waste.

Pharmaceutical waste:

- Pharmaceutical waste with non-hazardous characteristics that can be stored in a non-hazardous storage area include the following:
  - ampoules with non-hazardous content (e.g. . vitamins);
  - fluids with non-hazardous contents, such as vitamins, salts (sodium chloride), amino salts;
  - solids or semi-solids, such as tablets, capsules, granules, powders for injection, mixtures, creams, lotions, gels and suppositories;
  - Aerosol cans, including propellant-driven sprays and inhalers.

- Hazardous Pharmaceutical waste that should be stored in accordance with their chemical characteristics (e.g. genotoxic drugs) or specific requirements for disposal (e.g. controlled drugs or antibiotics)
  - controlled drugs (should be stored under government supervision);
  - disinfectants and antiseptics;
  - anti-infective drugs (e.g. antibiotics);
  - genotoxic drugs (genotoxic waste);
  - ampoules with, for example, antibiotics.

NOTE: Genotoxic waste is highly toxic and should be stored in the same manner as toxic chemicals with extra care from possible risk of infection.

chemical waste:

- For hazardous chemical waste, the characteristics of the different chemicals to be stored and disposed of must be considered (inflammable, corrosive, explosive).
- Label the packaging that will be used to store and transport chemical wastes offsite with following information:
  - hazard symbol(s),
  - waste classification,
  - date, and

- point of generation (if applicable).

- Liquid and solid waste should be stored separately.
- The original packaging should be taken for storage too.
- The storage place should be an enclosed area and separated from other waste storage areas
- Spillage kits, protective equipment and first-aid equipment (e.g. eye showers) should be available in the central storage area.
- The storage area itself should have adequate lighting and good ventilation to prevent the accumulation of toxic fumes.
- The following separate storage zones should be available to prevent dangerous chemical reactions:
  - explosive waste
  - corrosive acid waste
  - corrosive alkali waste (bases)
  - toxic waste
  - flammable waste
  - oxidative waste
  - halogenated solvents (containing chlorine, bromine, iodine or fluorine)
  - non-halogenated solvents.
- The storage zones should be labelled according to their hazard class. If more than one hazard class is defined for a specific waste, use the most hazardous classification:

(v) Radioactive Waste

- The storage area must be clearly marked with the "**NO ENTRY TO UNAUTHORISED PERSONNEL",** the international hazard or "**RADIOACTIVE WASTE**" sign (Figures 4-2 and 4-5).
- Radioactive waste should be stored in containers that prevent dispersion of radiation, and stored behind lead shielding.
- Waste that is to be stored during radioactive decay should be labelled with the type of radionuclide, date, period of time before full decay and details of required storage conditions.
- A minimum storage time of 10 half-life times for radioisotopes in wastes with a half-life of less than 90 days is a common practice.
- Infectious radioactive waste should be decontaminated before disposal.
- Sharp objects such as needles, Pasteur pipettes and broken glass should be placed into a sharps container.
- Liquids associated with solid materials, such as assay tube contents, should be decanted or removed by decay time.
- All radioactive labelling should be removed on any items to be disposed of.
- Storage places must be equipped with sufficient shielding material, either in the walls or as movable shielding screens.

4.12 References

1. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
2. **A. Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.

3. **Kingdom of Swaziland, (2013)**; *National Health Care Waste Management Guidelines,* Ministry of Health and Social welfare, Mbabane, **Kingdom of Swaziland,** February 2013.
4. ICWM – SOP - 002: Identification, Segregation and Packaging.
5. SANS10248 (The South African National Standard on the Management of Healthcare Waste from Healthcare Facilities)

4.13 Attachments

4.12.1 Attachment 1.....TRAINING EVALUATION CHECKLIST

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Should the HCRW Storage area be lockable and inaccessible by unauthorized persons? Yes / No
2. Should there be a sign on the waste storage area? Yes/No
3. There needs to be a fire extinguisher near or just outside the HCRW storage area. Yes / No.
4. A HCRW waste storage area should be kept clean and well maintained. The person cleaning the room should always wear the correct PPE. Please list the PPE that should be worn.
5. Fill in the gaps: HCRW containers or bags should never be more than _____ full, and should be closed off and sealed_____.

I confirm that I have read and understand this procedure: _____

NAME **SIGNATURE** **DATE**

CARRIED OUT BY: _____ _____ _____

EVALUATED BY: _____ _____ _____

SUCCESSFUL: YES/NO

5. SAFE AND APPROPRIATE TRANSPORTATION OF WASTE

Work Instruction Title:	Procedure Number:	Implementation Date:
Safe and appropriate transportation of waste	ICWM – SOP - 005	January 2016

5.1 Version

Version Number	Change History
1.0	No change, new procedure to document.

5.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

5.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

5.4 Purpose

The procedure is to ensure the correct and safe transportation of Health Care Waste from point of generation to the facility's temporary waste storage site, and ultimately to the treatment facility, minimizing potential risk to all the people in the chain.

5.5 Scope

Health care risk waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment if not transported appropriately onsite and offsite the Health Care Facility.

5.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999
- Basal Convention

5.7 Prerequisite

5.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

5.7.2 Training

- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public.
- Health Care Waste management awareness shall be continously given to all health care facility and clients.

5.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.

NO.	TERM	DEFINITION
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.

NO.	TERM	DEFINITION
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.

NO.	TERM	DEFINITION
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

5.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

5.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to

		ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

5.11 Procedure

5.11.1 Collection

Collections of HCW within a health care facility should be well planned and managed. The facility's waste management plan should include a detailed schedule for the collection of the waste generated at source. The schedule should include, but not necessarily be limited to, the following information:

- A list that identifies the waste source (e.g. unit, ward, department, etc.)
- A plan that shows the location of the waste source in relation to the facility's temporary waste storage site (refer to ICWM- SOP - 004), where applicable.
- The name of the responsible person for each shift at the temporary waste storage site, where applicable.
- A list that outlines the categories of waste that is likely to be generated at each source.
- A clearly delineated route plan to be followed by the responsible person(s) collecting the waste from source and transporting it to the facility's temporary waste storage site.
- A timed collection schedule in line with minimum prescribed storage times for the relevant streams of waste, so that waste streams are not mixed and adhere to a

turnaround time that avoids negative repercussions.
- Prior to the collection of expired products it should be inventorized and appropriate authorities be informed.

The person responsible for managing the facility's temporary HCW storage site (the waste management officer) shall ensure the execution of the system in accordance with the waste management plan. This person must also ensure that all necessary consignment forms are correctly and thoroughly filled in and appropriately filed for safekeeping.

5.11.2 Transportation

HCW may be transported from point of generation (e.g. ward, unit, etc.) to the facility's temporary waste storage site (on-site transport) by way of wheelbarrows, trolleys, wheelie-bins, or other wheeled containers or carts that are not used for any other purpose within the health care facility. (Never use a wheel chair).

Figure ?????Transport General waste and HCRW separately.

The transportation of general waste must be carried out separately from the collection of healthcare risk waste (HCRW) to avoid potential cross contamination or mixing of these two main categories of waste.

The collection should follow specific routes through the HCF to reduce the passage of loaded carts through wards and other clean areas.

The equipment used for the on-site transportation of HCW should meet the following minimum requirements:
- Easy to load and unload;
- Free of sharp edges that could damage or perforate or tear waste bags during loading and unloading;
- Easy to clean and disinfect as needed (records should be kept of this activity);
- Have confines or side-walls or barriers to hold and safely enclose the waste containers during transport to prevent toppling or falling and hence breakage and possible spillage;

- Be properly maintained and replaced when necessary.
- Ideally, they should be marked with the corresponding coding colour.

5.11.3 Off-site Transport

External transportation should be done using dedicated vehicles.

They shall be free of sharp edges, easy to load and unload by hand, easy to clean/disinfect, and fully enclosed to prevent any spillage in the hospital premises or on the road during transportation.

The transportation should always be properly documented and all vehicles should carry a consignment note from the point of collection to the treatment facility.

Figure 5-1 Offsite waste transportation.

5.12 References

1. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
2. **A. Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
3. **Kingdom of Swaziland, (2013)**; *National Health Care Waste Management Guidelines,* Ministry of Health and Social welfare, Mbabane, **Kingdom of Swaziland,** February 2013.
4. ICWM – SOP - 002: Identification, Segregation and Packaging.
5. ICWM – SOP -004: HCW Storage
6. SANS10248 (The South African National Standard on the Management of Healthcare Waste from Healthcare Facilities)

5.13 Attachments

5.13.1 Attachment 1: Training Evaluation Checklist

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Who is responsible for transporting the waste generated at source to the temporary waste storage site?
2. A facility can use a wheelie bin for transporting waste on-site, Yes / No?
3. Wheeled equipment used to transport waste on-site must have barriers to keep the collected packaged waste safely contained and still during transport. Yes / No?
4. Wheeled equipment used to transport waste on-site doesn't need to be regularly cleaned because the waste is already contained – they only need to be cleaned if there is a spill. Yes / No?
5. The person responsible for collecting the waste from the wards / departments must collect waste even if it is not properly closed; overfull, in the wrong packaging, and showing signs of leakage. Yes / No?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

6. PROPER TREATMENT AND APPROPRIATE FINAL DISPOSAL OF WASTE		
Work Instruction Title:	**Procedure Number:**	**Implementation Date:**
Segregation of Waste	ICWM – SOP - 006	January 2016

6.1 Version

Version Number	Change History
1.0	No change, new procedure to document.....

6.2 Review

Review Period	Annually
Review Date	31st, January
Comments on Review	To Evaluate the implementation of the SOP countrywide.

6.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

6.4 Purpose

The purpose of treatment is to reduce the potential hazard posed by health-care waste, while endeavouring to protect the environment.

6.5 Scope

Health care risk waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment if not treated appropriately before final disposal. Treatment should be viewed in the context of the waste-management hierarchy. Measures should first be followed to minimize and reuse waste items where it is safe to do so. Where this is not possible, the unusable waste materials should preferably be treated to reduce their potential health or environmental hazard and volume, with remaining residues sent for land disposal to a suitably constructed site.

6.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999

6.7 Prerequisite

6.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

6.7.2 Training

- Appropriate Incinerator operator safety training should be made
- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public.
- Health Care Waste management awareness shall be continously given to all health care facility and clients.

6.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.

NO.	TERM	DEFINITION
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*

NO.	TERM	DEFINITION
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

6.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

6.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of HCWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures.
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

6.11 Procedure

6.11.1 Treatment Options

There are a number of different treatment options to deal with infectious waste. These are listed in table 6-1 below and then detailed under the "Determination of Treatment Systems and Technologies" chapter.

Table 6-1 Various Treatment And Disposal Methods

Waste Category	Treatment	Final Disposal Method for treated waste
a) Sharps	- Incineration	- Safe burial - Land filling
b) Infectious waste	- Incineration - Chemical disinfection - Autoclaving - Biological	- Land filling - Safe burial - Sewage - Ottoway pit
c) Pathological waste	- Incineration - Biological	- Safe burial - Land filling - Ottoway pit *
d) Pharmaceutical waste	- Incineration - Encapsulation - Dilution - Inertization - Dissolution	- Land filling (small quantities) - Safe burial (small quantities) - Discharge to a sewer
e) Genotoxic waste	- Rotary kiln incineration - Inertization - Encapsulation (small quantities) - Neutralization	- Return to supplier
f) Chemical waste	- Rotary kiln incineration - Treatment lagoons - Pyrolytic incineration - Neutralization - Encapsulation - Dilution	- Safe burial (small quantities) - Return to supplier
g) Radioactive waste	- Decay by storage	- Storage
h) Pressurized containers	- Crushing (damaged containers)	- Recycling - Reuse - Return to supplier - Land filling - Controlled explosion (usually done by military specialized units)

- Sewage disposal needs approval from the local authority.

6.11.2 Recommended Treatment Facilities

The following equipment should be used at the listed Health Care Facilities:

At some facilities the Stabilized concrete lined pit is located directly below the incinerator and serves the purpose of handling the ashes from the incineration and also pathological waste. See attachment 2 below.

Table 6-2 Recommended treatment facilities.

Treatment facility	Health Care Facility Types	Reasons
Modern pyrolitic incinerators	• Referral hospitals, • District hospitals,	• fairly low installation cost

	• other Hospitals, • Local Authorities • NGO Health Centres	• fairly low operating skills requirements
Local incinerators (built with local material)	• Health Centres, • Private Health Centres • NGO Health Centres	• very low installation cost • small quantities of HCW produced in these facilities;
Stabilized concrete lined pits	• Health Centres, • NGO Health Centres • Public Health Post • home based care	• very low HCW production
Open pit burning	• Health Centres, • NGO Health Centres • Public Health Post • home based care	• Where no Municipal landfill is available • very low HCW production

6.11.3 Treatment Methods

(i) Incineration

Figure 6-1 Various types of incinerators

Incineration can adequately treat all types of special healthcare waste. The key parameters of controlled incineration are summarized as "TTT": combustion at a sufficiently high **TEMPERATURE** (between 1,000°C and 1,200°C in the combustion chamber) for a long enough **TIME**, in a combustion chamber with sufficient **TURBULENCE** and oxygen for complete combustion to be achieved and problematic gases to be minimized. This system of treatment allows a complete melting of needles, which are the main vectors of accidental transmission of HIV/AIDS.

Ensure the incinerator is operating correctly. Proper operation includes separating the waste, weighing it, mixing it for a specified calorific value,

- Only the contaminated wastes (needles, sharp objects, blood stained cottons, etc, i.e. the sharps and the infectious waste) are reserved for incineration.
- Feed / connect the fuel as appropriate
- Load the incinerator with the segregated waste (Sharp boxes and yellow infectious waste bags) to be incinerated (Take care not to overload it).
- Close the incinerator door once the waste is loaded, and do not re-open it until the incineration is complete.
- Ignite the fuel.
- Incinerate for a time long enough for complete combustion.

Important considerations such as appropriate operator safety training should be made. To further demonstrate appropriate operation and maintenance of the incinerator, the facility must maintain records and prepare an annual report.

(ii) Stabilized concrete lined pits

Figure 6-2 Concrete lined pit for sharps disposal at a Clinic

Dedicated stabilised concrete lined pits can be used for the disposal of sharps and all types of infectious wastes where incineration is not readily available. Pathological wastes and small quantities of Chemical and Pharmaceutical waste can also be deposited in these pits.

(a) The construction of a closed pit:

The following procedure is recommended for the safe burial of sharps and placentas through a closed pit (refer to attachment 2 and 3 for Closed Pit Design):

- Dig a pit (minimum size of 1m x 1m x 1.8m), enough to accommodate sharps and placentas for an estimated period of time without reaching the ground water level. The site must be isolated and at least 30m away from the ground water supply sources and dwelling units.
- Construct 0.1m thick concrete walls, bottom and slabs of the pit. Provide slab with an opening or manhole for easy deposition. The manhole should be extended a few centimetres above the soil surface to overcome infiltration of surface water,
- Keep human traffic away from pit area.
- Keep pit mouth securely clossed at all times.
- Install a security fence around the pit site.

(b) Disposal procedures

The following procedure is recommended for the safe disposal of waste in stabilised concrete pit after the segregation of the waste at point of generation as outlined above (ICWM – SOP – 002).

- Put on the appropriate PPE including leather gloves, leather aprons, goggles, safety shoes and mask, (ICWM – SOP – 002).
- Carefully remove the pit's cover,
- Carefully deliver the sharps in their boxes and deposit into the pit in the same containers. Do not remove from boxes.
- Carefully deliver the infectious wasye (HCRW) in the heavy duty, leak proof yellow plastic bags and deposit them into the pit in the same bags. Do not open or remove the contents from the bags.

- Carefully place the cover back onto the pit and ensure it is secure and safe from unauthorised persons.

When the pit is about 50 cm full, below the ground surface, cover the sharps and placenta waste with soil and permanently seal the pit with cement.

(iii) Open Pit

(a) The construction of an open pit:

This method of treatment and disposal is especially suitable for the disposal of untreated general waste and dry infectious waste. The following procedure is recommended for the safe construction of an open pit.

1. Digging a pit 1 to 2m wide and 2 to 5m deep,
2. Lining the bottom and walls of the pit with 0.1m thick concrete,
3. Construct an earth mound around the mouth of the hole to prevent surface water from entering the pit
4. Fit a lid on the mouth which is easy to remove and replace and,
5. Construct a fence or barrier around the area to keep out animals, scavengers and children.

(b) Disposal procedures

The following procedure is recommended for the safe burning of waste within an open pit.

1. Put on the appropriate PPE including leather gloves, leather aprons, goggles, safety shoes and mask.
2. Carefully remove the pit's cover,
3. Carefully place General and some dry non-sharp waste into the pit,
4. Sprinkle waste with fuel,
5. Carefully light using a lighting stick,
6. Monitor burning until fire runs out,
7. Cover pit

When the pit is about 50cm full, below the ground surface, cover the waste/ash with soil and permanently seal it with cement. While the preferred method of sealing is to use cement, another alternative is to embed a sheet of wire mesh within a final 50cm layer of soil cover.

6.12 References

1. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
2. **A. Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
3. **Kingdom of Swaziland, (2013)**; *National Health Care Waste Management Guidelines,* Ministry of Health and Social welfare, Mbabane, **Kingdom of Swaziland,** February 2013.
4. SANS10248 (The South African National Standard on the Management of Healthcare Waste from Healthcare Facilities)

6.13 Attachments

6.13.1 Attachments 1: Incinerators

The commonly used incineration process for health-care waste is the starved-air incineration. The process is also known as:

- controlled-air incineration,
- pyrolytic incineration,
- two-stage incineration or
- static hearth incineration.

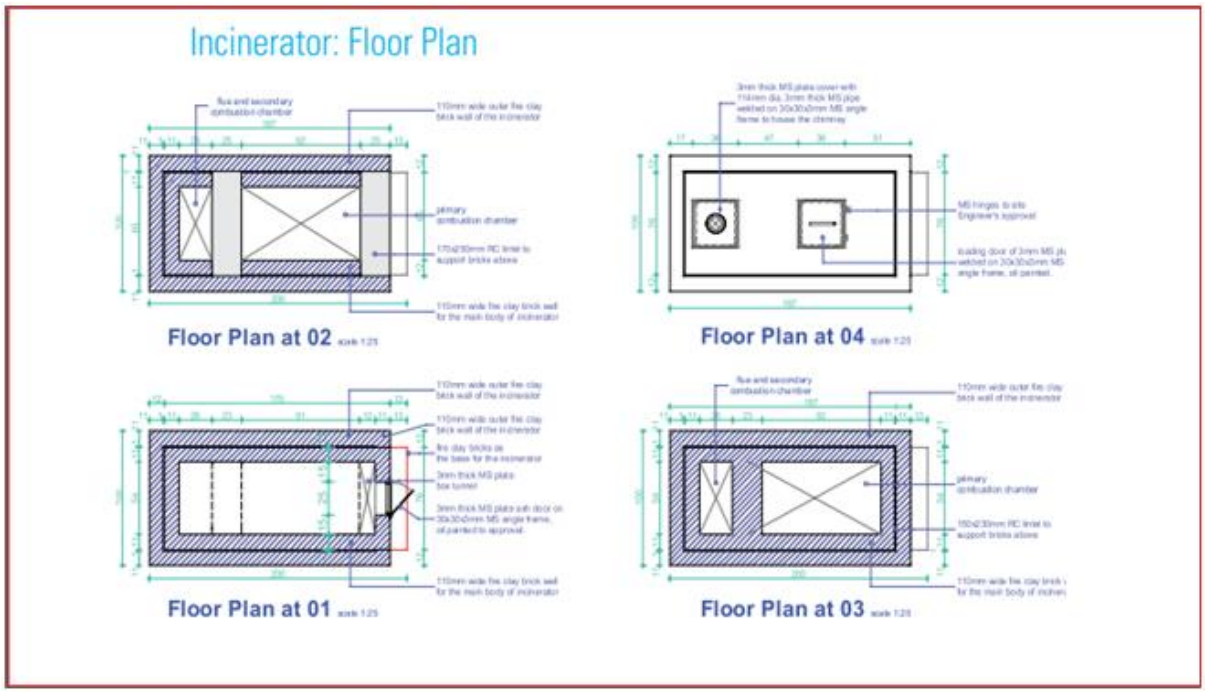
During the incineration the amount of oxygen used is less than the ideal proportion needed for burning the carbon and hydrogen).

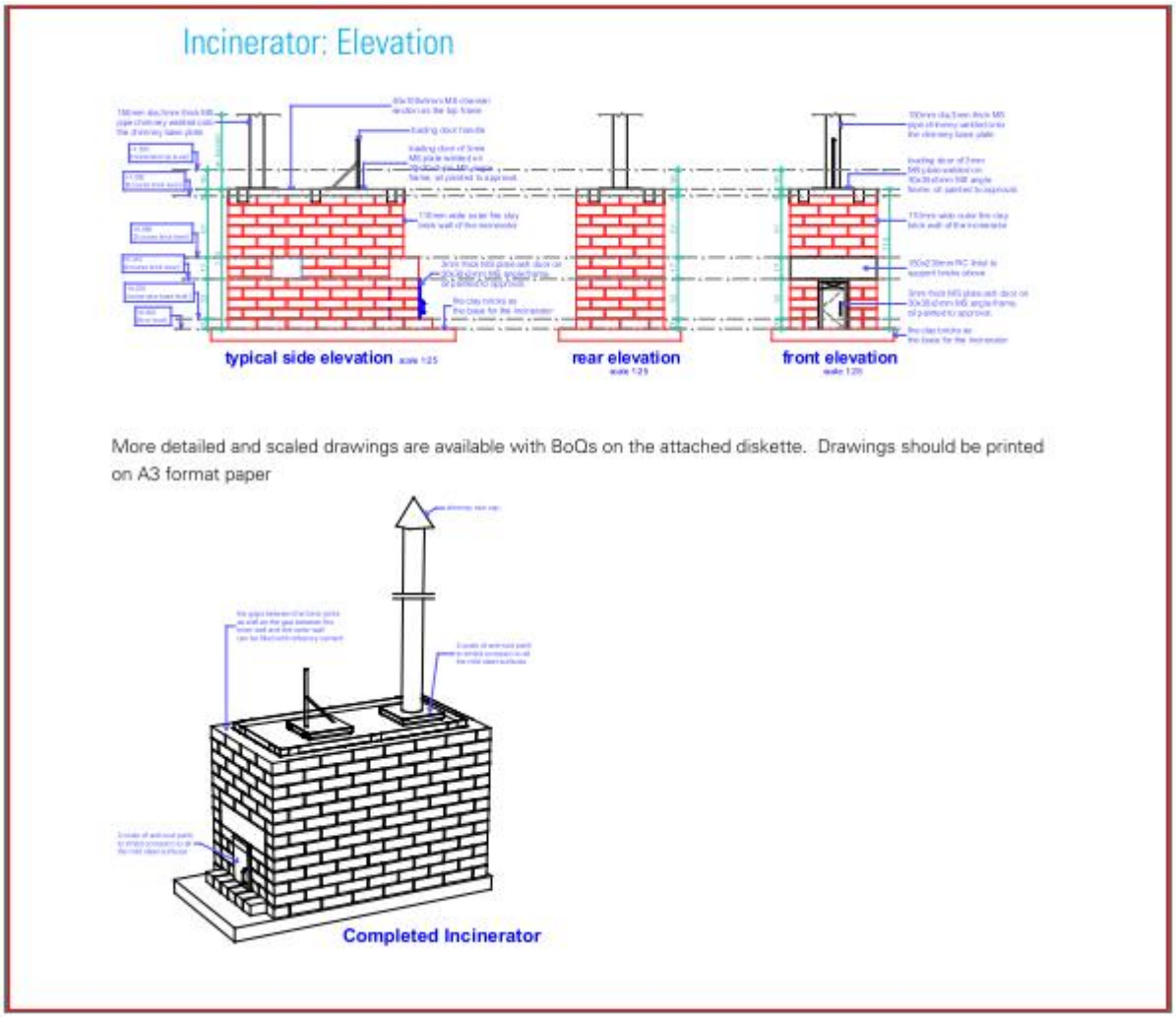
The incinerator comprises a primary chamber and a post-combustion secondary chamber.

In the primary chamber, the waste is thermally burnt by an oxygen-deficient, medium-temperature combustion process (800 to 900 °C), producing solid ashes and gases. The burning is started using a fuel burner and the burning can be done for 1 to 4 hours, depending on the size of the installation.

The gases produced in the primary chamber are further burned at high temperature (ranging from 1100 to 1600 °C) in the secondary chamber, using an excess of air to minimize smoke, carbon monoxide and odours. The temperature must be kept above 1100 °C to realise complete combustion.

Incinerators Design





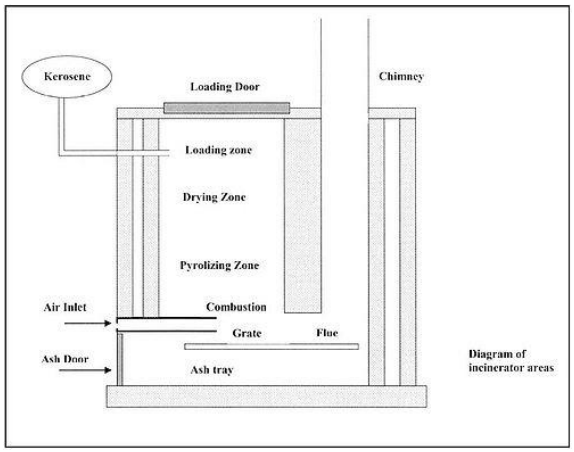


Figure 6-3 Incinerator Designs

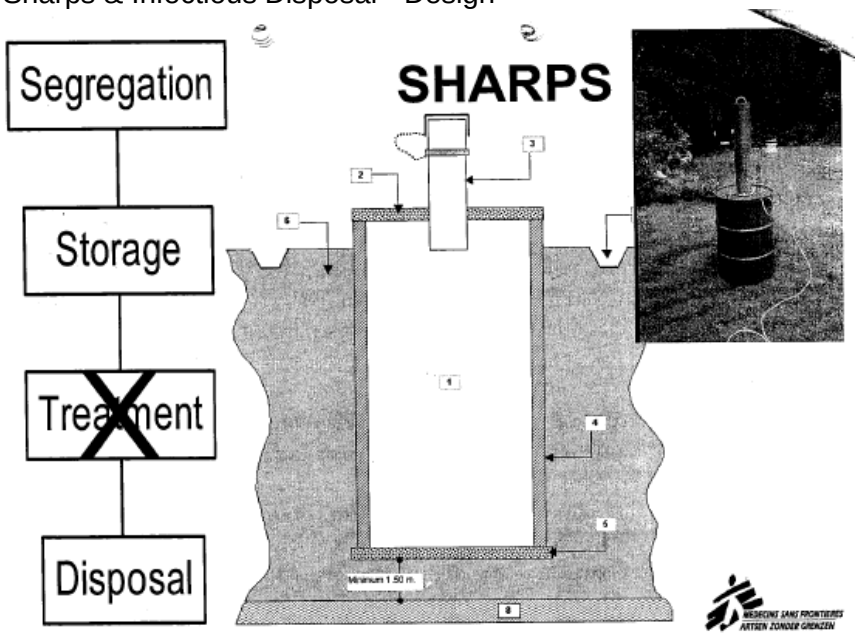
6.13.2 Attachments 2: Pathological Waste pit at Incinerator sites

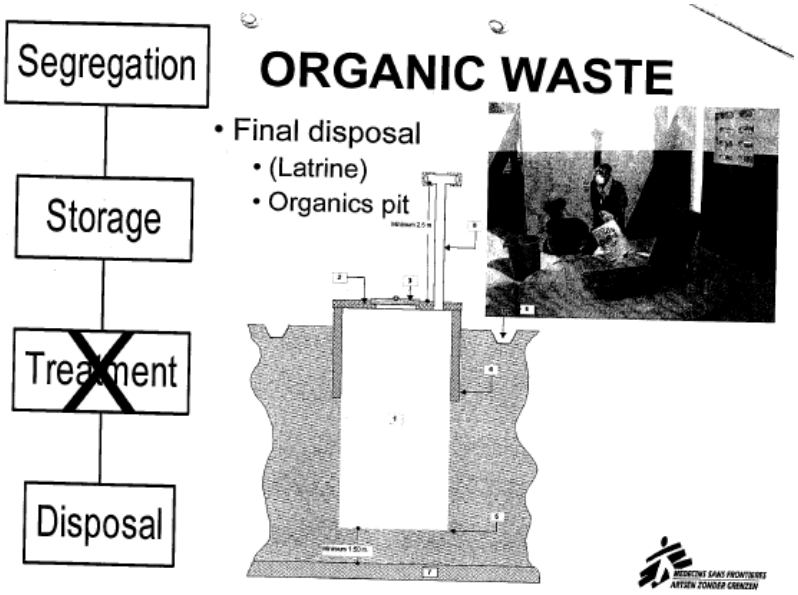
Figure 6-4 Example of Pathological Waste pit at Incinerator sites.

- **A concrete line pit is constructed below where an incinerator is built.**
- **The design and dimensions are similar to the stabilised concrete lined pit**
- **The pit serves two purposes; direct deposit of the ashes after incineration and deposit of Pathological waste.**
- **The Pathological waste is deposited through the PVC pipe illustrated above after being packaged and handled as outlined in ICWM – SOP – 002 and ICWM – SOP – 003.**

6.13.3 Attachments 3: Stabilized Concrete Lined Pit

For Sharps & Infectious Disposal - Design





Design:

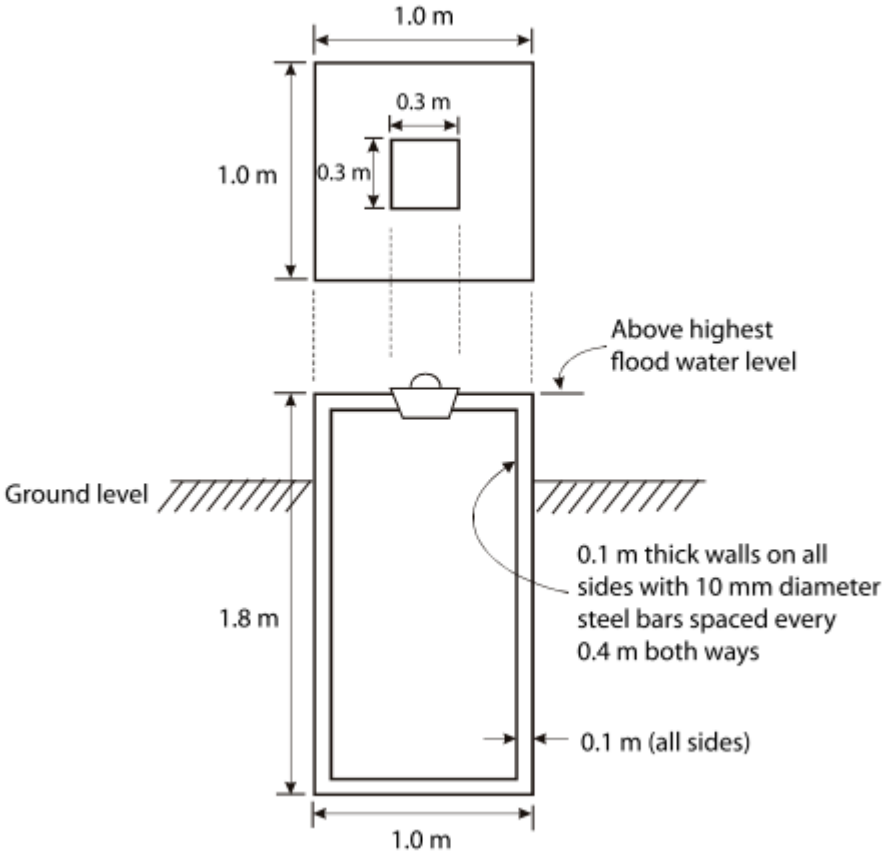
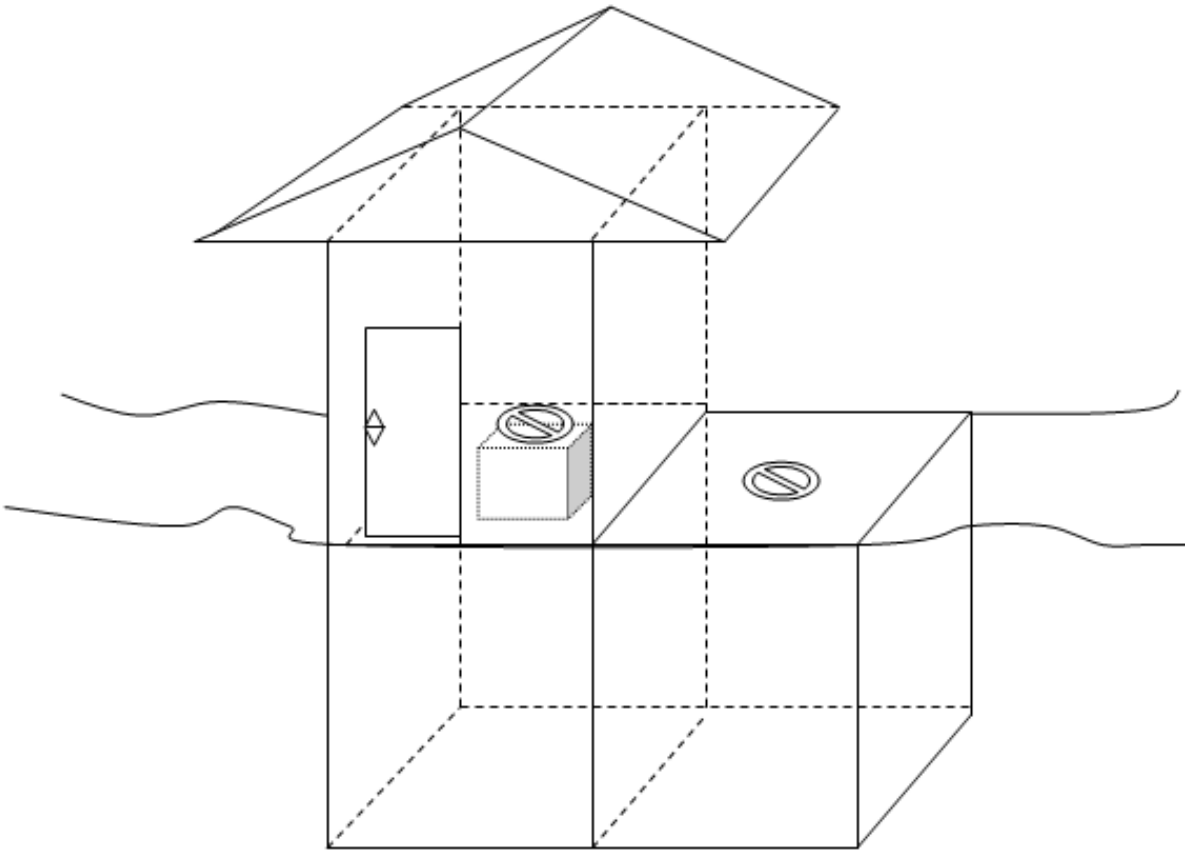


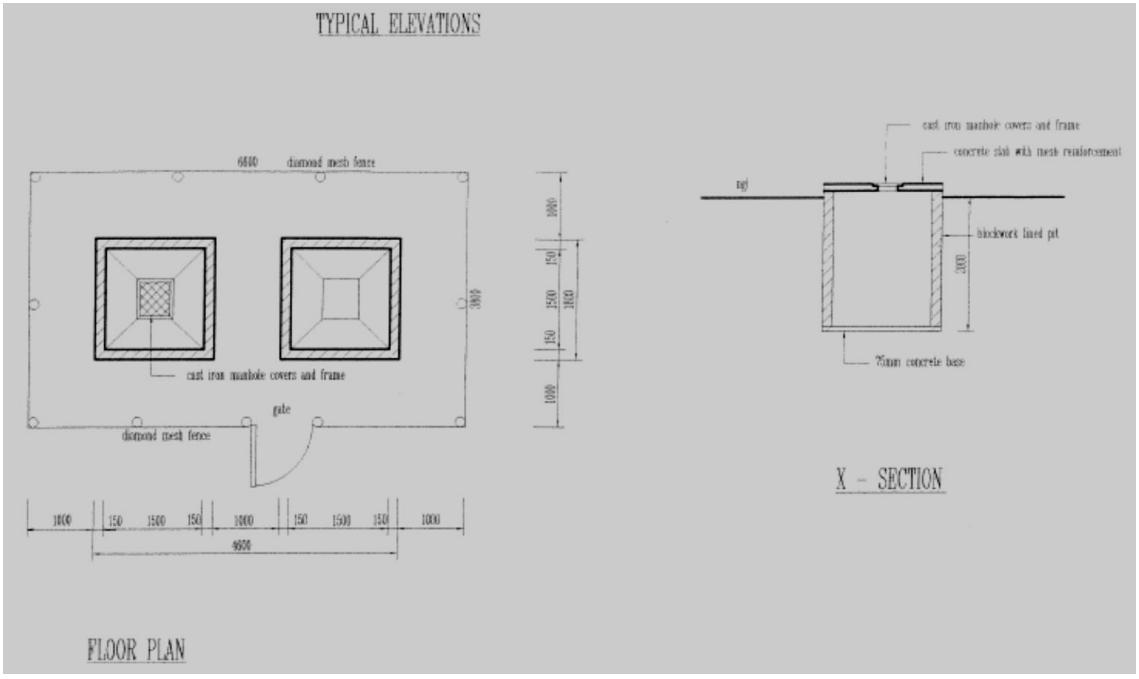
Figure 6-5 Stabilized Concrete Lined Pit Designs

6.13.4 Attachments 4: Concrete Lined Pit - Home Based Care Waste Disposal

Pit with Pit Latrine for home based care

Design:




TYPICAL ELEVATIONS
6600
diamond mesh fence
cast iron manhole covers and frame
gate
diamond mesh fence
1000
150
1500
150
1000
150
1500
150
1000
9600
9800
1000
150
1500
150
1000
cast iron manhole covers and frame
concrete slab with mesh reinforcement
ngl
brickwork lined pit
2000
75mm concrete base
X - SECTION
FLOOR PLAN

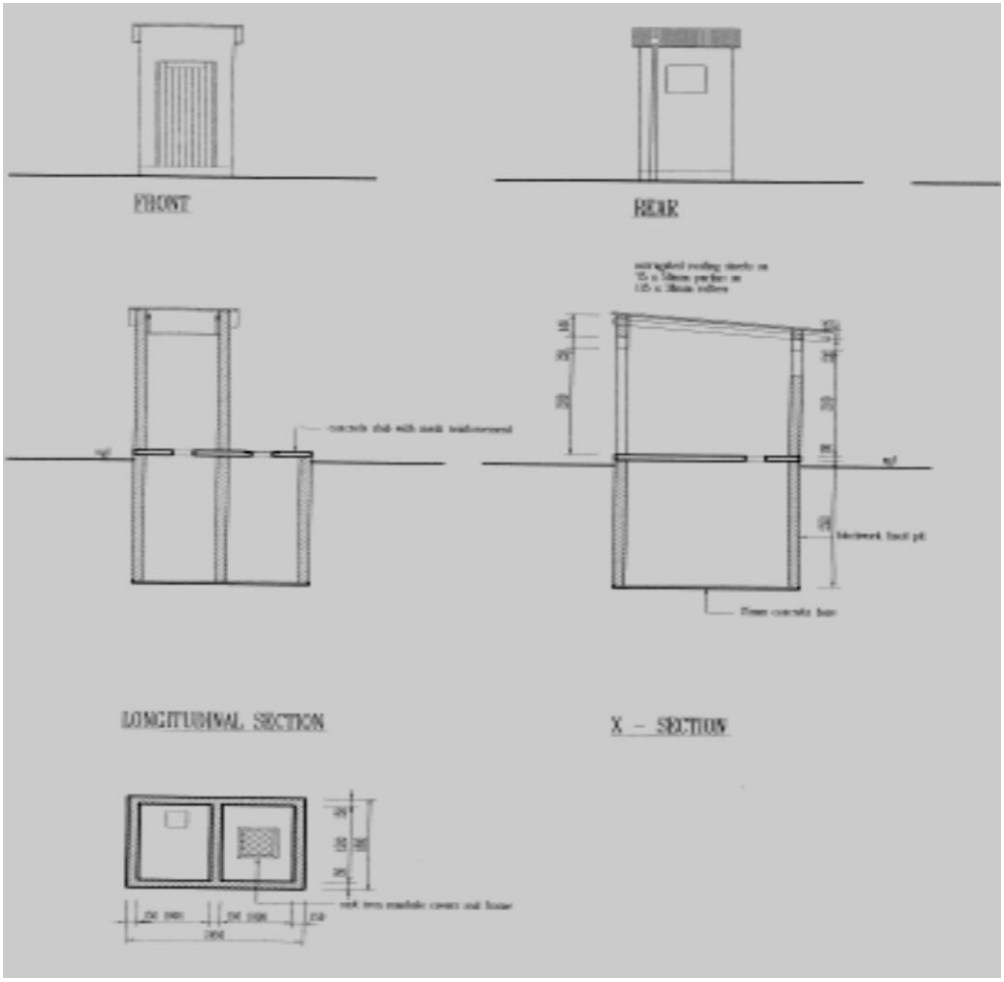


Figure 6-6 Concrete Lined Pit - Home Based Care Waste Disposal

6.13.4 Attachment 4 Training Evaluation Checklist

Questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Explain the procedures for safe treatment of waste in an incinerator
2. Explain the procedures for safe disposal of waste in an Open Pit?
3. Explain the procedures for safe disposal of waste in a Closed Pit?
4. Who is responsible to ensure supplies for incinerators?
5. Who is responsible for auditing and training?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

7. WASTE QUANTIFICATION

Work Instruction Title:	Procedure Number:	Implementation Date:
Waste Quantification	ICWM – SOP - 007	January 2016

7.1 Version

Version Number	Change History
1.0	No change, new procedure to document.....

7.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

7.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

7.4 Purpose

This procedure documents how to quantify health care risk waste generated for the purposes of control, monitoring and statistical capture for analysis. The use of scales to weigh waste is also addressed.

7.5 Scope

Health care risk waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment when handled, packaged, and/or disposed of inappropriately. It is therefore imperative that the waste be quantified for the sake of controlling and monitoring what is being generated.

7.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999

7.7 Prerequisite

7.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

7.7.2 Training

- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public.
- Health Care Waste management awareness shall be continously given to all health care facility and clients.

7.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers

NO.	TERM	DEFINITION
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.

NO.	TERM	DEFINITION
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer,*

NO.	TERM	DEFINITION
		handy men; Drivers; etc.
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

7.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

7.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.

4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

7.11 Procedure

The quantification of waste is necessary for budgetary and logistical projections. The quantification is also needed for statistical determinations and comparisons which are used in facility planning and general management of the waste like off-site transportation and/or treatment and disposal, as billing and budgeting is based on weight in kilograms.

7.11.1 Recording

The Health Care Facility must keep daily records of the following:

- Source / Generator of waste (ward, unit, department);
- Quantity of containers;
- Capacity/volume of containers;
- Weight in kg;
- Categorization (waste stream);
- Date of collection from the source;
- Place for signature of responsible person – to clinch accountability.

Refer to Attachment 1 for an example of two Daily Waste Log Sheets assisting with waste quantification for all the streams of Health Care Risk Waste. Waste log sheets are preferably serialized for tracking and traceability of documents.

7.11.2 Weighing

- Scales are used to determine weights and come in different forms (hanging, platform, etc.). Platform scales are recommended as they can weigh bags and containers, whereas hanging ones cannot weigh a container if it does not have a handle.
- Scales should always be calibrated so that weights are accurate. Calibrations should be executed daily, and should be periodically calibrated by a certified third party to ensure consistent and accurate operation of the scale.
- When temporary storage vessels or reusable containers are used, the scale should be zeroed to exclude the weight of the container such that it

only reflects the weight of the actual waste being treated or disposed off.

- Attach the User's Guide or Operating Manual for the scale you have procured for this purpose to this SOP.

7.12 References

6. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
7. **A. Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
8. **Kingdom of Swaziland, (2013)**; *National Health Care Waste Management Guidelines,* Ministry of Health and Social welfare, Mbabane, **Kingdom of Swaziland,** February 2013.
9. SANS10248 (The South African National Standard on the Management of Healthcare Waste from Healthcare Facilities)

7.13 Documents

1. Attachment 1: Training Evaluation Checklist
2. Attachment 2: Daily Waste Log Sheet Examples

7.12 Attachments

7.12.1 Attachment 1: Waste Log Sheet

Waste Log Sheet for Main Streams that go for Incineration / Burning (Infectious, Sharps, Anatomical/Pathological)

Name of Health Care Facility / Institution:.....

Category of Health Care Facility (Tick the correct one): .....Hospital..... ☐
Health Centre..... ☐
Public Health Facility..... ☐
Private Health Facility..... ☐
NGO Health Facility..... ☐
Veterinary Facility..... ☐
Other (Specify)..... ☐

No.	Waste Stream	Source / Origin	Container Description (packaging)	Capacity / Volume of Container	Quantity of Containers	Total Weight (in kg)	Date	Person who weighed / captured.
	Infectious (non-sharps); Sharps; Anatomical / Pathological	*(Where did the waste come from? Outpatients? Maternity Ward?)*	*(Red bag, sharps container, Red Spec bin, etc)*	*(140 litre red bag, 25 litre red spec bin, 5 litre sharps container etc)*	*1, 2, 3, etc.*		*(Date weighed, captured and removed from site to go for burning or incineration - dd/mm/yyyy)*	*(Name and Surname – clearly put)*
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

NOTE: Spec bins / rigid plastic containers routed for incineration are ideally made of polypropylene

NOTE: Label all containers correctly to reflect the contents. Make sure they are well-sealed.

NOTE: Ensure that your scale is calibrated for accurate weights.

Waste Log Sheet for Other Streams which get stockpiled until further direction

Name of Health Care Facility / Institution:.....

Category of Health Care Facility (Tick the correct one): .....Hospital..... ☐

Health Centre..... ☐

Public Health Facilty..... ☐

Private Health Facility..... ☐

NGO Health Facility..... ☐

Veterinary Facility..... ☐

Other (Specify)..... ☐

	Contents of Container	**Source /Origin**	**Qty of Items**	**Container / Description**	**Capacity / Volume of Container**	**Waste Classification**	**Physical Nature**	**Total Weight (kg)**	**Date**	**Person who weighed / captured**	**Notes**
		Unit / Department: Outpatients; Maternity Ward, Lab, etc.		*Green Bag Green Spec bin ; Black Bag; Cardboard Box; etc.*		*C=Chemical; P=Pharmaceutical; CG=Cytotoxic / Genotoxic; R=Radioactive; PC=Pressurized Containers*	*S=Solid; L=Liquid; G=Gas*		*Date weighed and removed from site / captured / put into storage - dd/mm/yyyy.*		
E.g.	*Ranmoxy 500 capsules (brown / yellow) Exp: 06/2012 popped out of blister packs*	*Pharmacy*	*5000*	*Green Bag*	*40 litres*	*P*	*S*	*4.5*	*24/10/2012*	*Joe Soap*	*Capsules removed from foiled blister packs with latter sent to general waste.*
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
12											
13											
14											

NOTE: Spec bins / rigid plastic containers routed for incineration are ideally made of polypropylene.

NOTE: Label all containers correctly to reflect the contents. Make sure they are well-sealed.

7.12.2 Attachment 2: Training Evaluation Checklist

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Do you need to record where the waste came from as well? Yes / No?
2. Waste is quantified in terms of _____. Fill in the gap.
3. The scale you use to weigh waste should only be used for that purpose. Yes / No?
4. Scales should be calibrated every 5 years or so. Yes / No?
5. Who should be signing off the waste log sheet once the weights have been captured?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

8. OCCUPATIONAL HEALTH AND SAFETY

Work Instruction Title:	Procedure Number:	Implementation Date:
Occupational Health & Safety	ICWM – SOP - 008	January 2016

8.1 Version

Version Number	Change History
1.0	No change, new procedure to document.....

8.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To Evaluate The Implementation Of The Sop Countrywide.

8.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

8.4 Purpose

This procedure is to ensure that all people in the HCWM chain, who at any point handle or come into contact with HCRW, are protected as much as possible by suitable prophylaxis, medical surveillance, and an efficient response to workplace injuries or accidents when they occur, avoiding recurrence as far as reasonably practicable.

8.5 Scope

The production, segregation, transportation, treatment, and disposal of health care risk waste involves the handling of potentially hazardous material. Protection against personal injury is therefore essential for all workers who are at risk. The individuals responsible for management of health-care waste should ensure that all risks are identified and that suitable protection from those risks is provided. The principles of worker health and safety best practice include but are not necessarily limited to the following:

- Proper training of workers handling HCRW
- Provision of proper Personal Protective Equipment
- Establishment of an effective occupational health programme that includes immunization, post-exposure prophylactic treatment, and medical screening and surveillance.

8.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out in the following National laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999
- The Labour Code Order 1992
- Workmen's Compensation Regulations, 2014

8.7 Prerequisite

8.7.1 Health and Safety

- The procedure should be performed in accordance with the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that needs to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative (Public Health Officers) at the Health Facility must be consulted.

8.7.2 Training

- Training on Health Care Waste handling and management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public including PHC.
- Health Care Waste management awareness shall be continously given to all health care facility (staff) and clients.

8.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.

NO.	TERM	DEFINITION
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts.*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box* *sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*

NO.	TERM	DEFINITION
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

8.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

8.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

8.11 Procedure

8.11.1 Training

Workers handling HCRW are always exposed to the potential risks posed by the waste. Thus they should be appropriately trained in health and safety procedures, be well informed of all the potential risks posed by exposure to the HCRW, and understand both the value of immunization and the importance of consistently and continuously protecting themselves by using the correct PPE and maintaining personal and hand hygiene. The importance of reporting incidents (which translate into a breach of health and/or safety) as well as all injuries on duty (including needle stick injuries) should be emphasized and communicated as well. Personnel training should cover the following:

- **Correct PPE** for HCW handlers
- **Correct procedures** for identifying, packaging, handling, transporting and packing the various streams of HCRW.
- **Spillage management** for the various streams of waste.
- Maintenance of **personal and hand** hygiene at all times.
- **Reporting protocol for Incidences**.

8.11.2 Personal Protective Equipment

Health Care Waste Handlers should be protected by wearing personal protective equipment (PPE). Wearing PPE reduces risks from sharps, germs, exposure to blood and other body fluids and splashes from chemicals.

- Workers handling HCRW should be suitably equipped with the correct PPE.
- The type of PPE used in certain scenarios will be determined by the risk associated with the activity performed, but, in general, the array of PPE made available to workers handling HCRW should include:
    - Body protection – Uniforms, such as conti suits / aprons / fire-armour
    - Face Protection – Masks and protective visors / full-face shields
    - Feet Protection - Safety boots / gumboots
    - Hand Protection – Gloves

Uniforms and other PPE that is washed and reused should not to be taken home by the employee for decontamination – they should be decontaminated on-site and this remains the responsibility of the employer.

Figure 8-1 Personal Protective Equipment (*Source: PATH (2006)*)

8.11.3 Medical Screening, Immunizations and Medical Surveillance

Prior to engagement, Health Care Waste Handlers should undergo a work history, a medical history and a medical examination by a licensed physician. This procedure is used to establish a baseline for the employee's health and which can be used to monitor their future health as it relates to their potential occupational exposures to hazardous agents.

(i) Medical Screening should be carried out as follows (and provided at no cost to the employee)

- At pre-employment and pre-placement examination – baseline medical.
- At periodic medical examinations, usually at 12-24 months intervals.
- At termination of employment or reassignment to a non-covered position if the employee has not had an examination within the last 6 months.
- As soon as possible after an employee has developed signs or symptoms indicating possible overexposure to a hazardous substance.
- On the recommendation of the examining physician.
- As required by specific standards for Hazardous Materials.

(ii) Immunization

- Viral **hepatitis B** infections have been reported among health care personnel and waste handlers, and immunization against the disease is therefore recommended.
- **Tetanus** immunization is also recommended for all personnel handling waste.

8.11.4 Injury on Duty (IOD)

(i) Background

Injury on duty may have serious consequences for both the employee (temporary or permanent disablement) and the employer (claims for compensation). If workers die as a result of an injury on duty, their dependents may also be entitled to claim compensation. Thus this is a serious issue.

- An accident must be reported when it arises out of and in the course of employment resulting in a personal injury for which medical treatment is required.
- Written or verbal notice of an injury at work is to be given to the employer before the completion of the shift.
- Good practice on the side of the employer will be to make a list of all witnesses of the accident for the investigation of the incident.
- Refer to Attachments 1 and 2 for the official forms for this purpose. The employee shall by completion of the forms notify the employer and give a detailed report of the incident, whenever they meet with an accident out of or in the course of employment that leads to personal injury or where medical treatment is required or in the case of death.

(ii) Worker's Compensation

Workers' compensation is a form of insurance providing wage replacement and medical benefits to employees injured in the course of employment in exchange for mandatory relinquishment of the employee's right to sue his or her employer for the injury. The trade off between assured, limited coverage and lack of recourse outside the worker compensation system is known as "the compensation bargain."

Table 8-1 Workers Compensation payments

Injuries and compensation Act, , section

(iii) Incident Reporting and Investigation

Every incident which has occurred must be recorded and reported. The incident must then be investigated and action taken to prevent its costly recurrence. When a "Near Miss" incident occurs there is an even better opportunity to take preventive action before it finally happens.

(a) **Reporting:**
All Injuries, Loss and Near Miss incidents must be reported in the prescribed manner on the Internal Incident Report Form (refer to Attachment 1 for an example / recommended template).

(b) **Investigation:**
All incidents must be appropriately investigated, according to the following:

Serious Incidents: All Serious Incidents must be fully investigated and appropriate actions followed up to completion. All investigations and outcomes must be documented on the Internal Incident Report Form (Attachment 1).

Minor Incidents: All Minor Incidents must be investigated and appropriate actions taken to follow-up on the Internal Incident Report (Attachment 1).

(c) Co-ordination:
The co-ordination of incident reporting, investigation and follow-up is the responsibility of the facility's managerial staff, which will ensure that the above procedure is followed in relevant regions and that monthly numerical and graphical statistics are produced and communicated to all employees throughout the regions.

(iv) IOD Procedure

The following procedure should be followed in case of any occupational incident:

- Notice of the incident must be given to the employer by or on behalf of the worker as soon as is reasonably practicable after the happening thereof, preferably before the end of each shift but not later than one month after the happening **by completion of the prescribed form (attachment 2).**
- The victim shall immediately report to a doctor for medical attention.
- The doctor shall complete a referral form to be forwarded to the district health management team.
- The directorate will report the case to the director of health services who shall set up an investigation team including a panel of doctors to investigate the incident and write a medical report with recommendations.
- Notice of the incident must be given to the Industrial Injuries Commissioner by the employer as soon as is reasonably practicable after the happening thereof, but not later than two weeks after the happening **by completion of the prescribed form (attachment 3).**

- .The worker or his dependant shall make a claim to the Industrial Injuries Commissioner within six months of the incident occurring.

(v) Incapacitation of worker.
Accidents leading to permanent incapacitation and/or constant attendance is required, shall similarly be reported and investigated and the appropriate compensation as recommended by the investigation report, shall be according to sections ????? of the *compensation Act, CAP. ????/.*

(vi) **Fatal Accidents.**
Fatal accidents shall similarly be reported and investigated and the appropriate compensation as recommended by the investigation report, shall be according to section ????? of the *compensation Act, CAP. ?????*

(vii) Occupational Disease
Incapacity or death caused by any disease arising from worker's engagement shall be compensated for if and when the Minister, by way of an order extends the provisions of the *compensation Act, CAP. ?????*, so that compensation can be payable as if it was a personal injury by accident arising out of and in the course of employment.

The extension of the provisions of the Act to incapacity or death caused by certain diseases can be done by invoking the Occupational Diseases regulations.

8.12 References

1. **Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
2. **GoL (2012),** Consolidated Lesotho National Health Care Health Waste Management Waste Management Plan for the Lesotho Maternal and Newborn Health Performance-Based Financing Project August 2012
3. **WHO (2014);** Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland,
4. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
5. *(Reference: http://en.wikipedia.org/wiki/Workers'_compensation)*

8.13 Documents

1. Attachment 1: Example of an Incident / Injury Report Form
2. Attachment 2: Accident Notification Form – Worker To Employer
3. Attachment 2: Accident Notification Form –Employer To Commissioner
4. Attachment 2: Training Evaluation Checklist

8.14 Attachment 1

8.14.1 Attachment 1..... INTERNAL INCIDENT / INJURY REPORT FORM

Table 8-2 Incident/injury report form

INCIDENT / INJURY REPORT FORM TEMPLATE				
Please print clearly and tick the correct box				
Status:	Employee	Contractor	Other	
Outcome:	Near miss	Injury		
1. DETAILS OF INJURED PERSON				
Name:	Phone:	(H)	(W)	
Address:	Sex:	M	F	
	Date of birth:			
	Position:			
Experience in the job:	(years/months)			
Start time:	am	pm		
Work arrangement:	Casual	Full-time	Part-time	Other
2. DETAILS OF INCIDENT				
Date:		Time:		
Location:				
Describe what happened and how:				
3. DETAILS OF WITNESSES				
Name:	Phone:	(H)	(W)	
Address:				
4. DETAILS OF INJURY				

Nature of injury (egg burn, cut, sprain)	
Cause of injury (egg fall, grabbed by person)	
Location on body (egg back, left forearm)	
Agency (egg lounge chair, another person, hot water)	

5. TREATMENT ADMINISTERED

First Aid given	Yes	No		
First Aider name:				
Treatment:				
Referred to:				

SECTION 6-9 MUST BE COMPLETED BY EMPLOYER

6. DID THE INJURED PERSON STOP WORK?

Yes	No	If yes, state date:		Time:
Outcome:	Treated by doctor	Hospitalized	Workers compensation (Injury on Duty - IOD) claim	
	Alternative duties	Rehabilitation	Returned to normal work	

7. INCIDENT INVESTIGATION (comments to include causal factors):

8. RISK ASSESSMENT			
Likelihood of recurrence:			
Severity of outcome:			
Level of risk:			
9. ACTIONS TO PREVENT RECURRENCE			
Action			
By whom			
By when			
Date completed			
10. ACTIONS COMPLETED			
Signed (Manager):	Title:		
	Date:		
Feedback to person involved	Date:		
11. REVIEW COMMENTS			
OHS committee / staff meeting:			
Reviewed by site Manager (signed):	Date:		
Reviewed by Health & Safety Rep.(signed):	Date:		

8.14.2 Attachment 2: Accident Notification Form – Worker To Employer

8.14.3 Attachment 3: Accident Notification Form –Employer To Commissioner

8.14.4 Attachment 4.....TRAINING EVALUATION CHECKLIST

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Should workers handling HCRW have a full medical before they commence work? Yes / No?
2. What immunizations should HCRW workers receive before commencing work?
3. If you receive vaccinations, you don't need to wear PPE. True / False?
4. HCRW Workers should have annual or biannual medicals to monitor their occupational health status. True / False?
5. If you experience a 'near miss' of accident or injury, should you still report it? Yes / No?

I confirm that I have read and understand this procedure: _____

NAME **SIGNATURE** **DATE**

CARRIED OUT BY: _____ _____ _____

EVALUATED BY: _____ _____ _____

SUCCESSFUL: YES/NO

9. HAND HYGIENE

Work Instruction Title:	Procedure Number:	Implementation Date:
Hand Hygiene	ICWM – SOP - 009	January 2016

9.1 Version

Version Number	Change History
1.0	No change, new procedure to document.

9.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

9.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

9.4 Purpose

This document provides procedures on hand hygiene.

9.5 Scope

Effective hand-hygiene is the most cost-effective and simplest measure for health care workers to prevent cross-contamination in the health care setting and wearing gloves is not a substitute for hand hygiene.

9.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005))
- WHO protocol

9.7 Prerequisite

9.7.1 Health and Safety

- The procedure should be performed to ultimately meet the Occupational Health and Safety standards outlined in HCWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

9.7.2 Training

- Training on Health Care Waste management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public to better manage the waste from “Cradle” to “grave”.

9.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.

NO.	TERM	DEFINITION
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.

NO.	TERM	DEFINITION
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box* *sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.

NO.	TERM	DEFINITION
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

9.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

9.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures

2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

9.11 Procedure

9.11.1 General Hand Hygiene

Hand hygiene should be performed upon entering patient areas, before and after patient contact, after removing gloves or before wearing gloves, any time there is a risk of contact with blood or other potentially infectious materials, before and after eating, drinking or smoking, and, before and after using the toilet.

Health care workers should avoid contact with surfaces that are potentially contaminated, such as equipment and other inanimate objects in the patient care setting.
extend past the fingertips as long fingernails may cause patient injury and can increase the risk of glove tearing. Polish, if used, should not be chipped as chipped polish may support the

growth of larger numbers of microorganisms on fingernails.

Artificial nails should not be worn. Fungal growth occurs frequently under artificial nails as a result of moisture becoming trapped between the natural and artificial nail.

Cuticles, hands, and forearms should be free of open lesions and breaks in skin integrity, which increase the risk of patient and clinical staff member infection.

Rings, watches, and bracelets should be removed before performing hand hygiene activities. These items may harbour microorganisms or inhibit their removal.

Fingernails should be kept short, clean, and healthy. Removal of debris underneath fingernails requires the use of a disposable, single-use nail cleaner and running water. Fingernails should not

If hands are visibly soiled, wash them as soon as possible with soap and water as follows (duration of the entire procedure is approximately 40-60 seconds):

1. Wet hands with warm water;
2. Apply enough soap to cover all hand surface;
3. Rotate rubbing hands palm to palm together seven (7) times;
4. Rub right palm over left dorsum with interlaced fingers and vice versa seven (7) times;
5. Rub palm to palm with fingers interlaced seven (7) times;
6. Rub back of fingers to opposing palms with fingers and vice versa seven (7) times;
7. Rotate rubbing of left thumb clasped in palm and vice versa seven (7) times;
8. Rotate rubbing backwards and forwards with clasped finger of right hand in palm and vice versa seven (7) times;
9. Rinse hands with water;
10. Dry hands thoroughly with a single use towel/ electronic device;
11. Use towel to turn off faucet and open door;
12. Discard towel in general waste (black) bin.

Note: alcohol-based hand rubs are not appropriate for use when hands are visibly soiled or contaminated (e.g. blood, saliva and dirt) because these hand rubs do not remove soil or debris.

If hands are not visibly soiled, an alcohol-based hand rub may be used for routine decontamination of hands in the absence of soap and water.

Wearing gloves is NOT a substitute for hand hygiene.

9.12 References

1. “Recommended Practices for Surgical Hand Antisepsis/Hand Scrubs,” in Standards, Recommended Practices, and Guidelines (AORN, 2004).
2. “WHO Guidelines on Hand Hygiene in Health Care,” (WHO, 2006)

9.13 Documents

1. Attachment 1: Training Evaluation Checklist

9.14 Attachments

9.14.1 Attachment 1: Training Evaluation Checklist

Questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Define microorganism?
2. What is the proper procedure for washing your hands?
3. What is an antiseptic?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

10. DECONTAMINATION OF GENERAL SURFACES

Work Instruction Title:	Procedure Number:	Implementation Date:
Decontamination Of General Surfaces	ICWM – SOP - 010	January 2016

10.1 Version

Version Number	Change History
1.0	No change, new procedure to document.

10.2 Review

Review Period	Annually
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

10.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

10.4 Purpose

This document describes methods for the preparation of sodium hypochlorite solution and decontamination procedures for general surfaces.

10.5 Scope

Health care risk waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment when handled, packaged, and/or disposed of inappropriately. Standards to control and minimize these risks are set forth in this document.

10.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)

10.7 Prerequisite

10.7.1 Health and Safety

- The procedure should be performed to ultimately meet the Occupational Health and Safety standards outlined in ICWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

10.7.2 Training

- Training on Health Care Waste management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public to better manage the waste from “Cradle” to “grave”.

10.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers

NO.	TERM	DEFINITION
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.

NO.	TERM	DEFINITION
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer,*

NO.	TERM	DEFINITION
		handy men; Drivers; etc.
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

10.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

10.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.

4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

10.11 Procedure

10.11.1 Equipment and PPE Requirements

The following are recommended equipment and PPE required to perform this procedure.

(i) Equipment

- 10 litre Bucket
- Instrument Brush with Nylon Bristles
- Mixing Spoon with long handle
- Sodium Hypochlorite (Commercial Grade household Sodium Hypochlorite) - example is household bleach.
- Litre Measuring Cup / Jug
- Cloth Towels

(ii) PPE (per person)

- Elbow Length Utility Gloves
- Face Shield or Goggles with Mask
- Heavy Plastic Apron
- Rubber Gum Boots

10.11.2 Procedure

(i) Mixing of Sodium Hypochlorite Solution

a. Wear required PPE (refer to section 10.11.1 above) including reusable utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shields).

b. Determine the percentage of active sodium hypochlorite in the commercial grade sodium hypochlorite solution by reading the active ingredients on the label of the bottle. (Note: sodium hypochlorite concentrations can range from approximately 1% to 10% strength).

c. Using the tables found attached to this document (Attachment 1 & 2), determine the correct amount of sodium hypochlorite and room temperature water required to mix the appropriate solution.

d. Using the appropriate concentrations for the bucket size, carefully pour the water and THEN the required amount of sodium hypochlorite into the bucket. Use the mixing spoon to gently mix the solution.

Table 10-1 Mixing Sodium Hypochlorite Solution

Example: A 10 L bucket should ONLY hold 5 L of the mixed sodium hypochlorite solution. (Attachment 1: 4.55 L of water and 450 mL of sodium hypochlorite equals 5 L of solution for a concentration of 3-5%).

NOTE: The sodium hypochlorite solution should not be reused and a new solution must be made for every cleaning cycle. The solution should also be replaced if it becomes visibly contaminated.

WARNING: Avoid skin and eye contact. Solution may sensitize and may cause skin irritation. This solution is extremely corrosive and harmful if swallowed.

If the solution comes into contact with skin, flush thoroughly with water for 3 minutes. If the solution comes into contact with the eyes, flush with water immediately for 3 minutes and then seek medical attention.

Each chemical product is or should be issued with a materials safety data sheet (MSDS), which relates all hazard information, etc.

(ii) Disposal of Sodium Hypochlorite Solution

To properly dispose of the sodium hypochlorite solution, dilute the solution by adding water to the top of the bucket and then pour the contents of the bucket into an approved waste disposal site or down a drain. This practice reduces pollution risk to the environment.

(iii) Decontamination of General Surfaces

(a) General considerations

For all reusable medical equipment, the most important step in decontamination is thorough cleaning and rinsing. Cleaning primarily removes rather than kills microorganisms. Effective cleaning is a multistep process that relies on several interdependent factors: the quality of the water; the quality, concentration, and type of sodium hypochlorite (or other chosen chemical cleaning product); an acceptable washing method; and proper rinsing and drying.

(b) Process of Cleaning

- Wear the required PPE (refer to section 10.11.1) including reusable utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shields).
- Then follow process 8.1 ‘Mixing of Sodium Hypochlorite Solution’ and prepare a sodium hypochlorite rinse solution as well.
- Dip a clean towel into the sodium hypochlorite solution. Wring the towel to remove excess solution, and then wipe the contaminated surface to remove visible debris. Repeat as necessary until it looks clean.
- If the cleaning solution becomes dirty while cleaning immediately discontinue use and mix a new batch of the sodium hypochlorite rinse solution.
- **Allow the surface to air dry and then wipe** the surface down with a clean wet towel to remove any excess sodium hypochlorite and/or sodium salts.
- To properly dispose of the sodium hypochlorite solution, dilute the solution by adding water to the top of the bucket and then pour the contents of the bucket

down a drain or at a waste disposal site. This practice reduces pollution risk to the environment.

10.12 References

1. ANSI/AAMI ST79: 2010 & A1:2010 & A2:2011 *Comprehensive guide to steam sterilization and sterility assurance in health care facilities.*
2. **Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
3. **WHO (2014);** Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland,
4. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
5. **USEPA (2002);** United States Food and Drug Administration list of approved sterilants (March 2009)

10.13 Documents

1. Attachment 1: Sodium Hypochlorite Concentration Tables
2. Attachment 2: Training Evaluation Checklist

10.14 Attachments

10.14.1 Attachment 1: Sodium Hypochlorite Concentration Tables

Table 10-2 Sodium Hypochlorite Concentration (3-5%)

TOTAL VOLUME OF BUCKET/CONTAINER	AMOUNT OF WATER	AMOUNT OF WATER	AMOUNT OF SODIUM HYPOCHLORITE	AMOUNT OF SODIUM HYPOCHLORITE
Litres (L)	Litres (L)	Millilitres (ML)	Litres (L)	Millilitres (ML)
1	0.91	910	0.09	90
2	1.82	1820	0.18	180
3	2.73	2730	0.27	270
4	3.64	3640	0.36	360
5	4.55	4550	0.45	450
6	5.46	5460	0.54	540
7	6.37	6370	0.63	630
8	7.28	7280	0.72	720
9	8.19	8190	0.81	810
10	9.1	9100	0.9	900

Sodium Hypochlorite Concentration (6-10%)

Table 10-3 Sodium Hypochlorite Concentration (6-10%)

TOTAL VOLUME OF BUCKET/CONTAINER	AMOUNT OF WATER	AMOUNT OF WATER	AMOUNT OF SODIUM HYPOCHLORITE	AMOUNT OF SODIUM HYPOCHLORITE
Litres (L)	**Litres (L)**	**Millilitres (ML)**	**Litres (L)**	**Millilitres (ML)**
1	0.96	960	0.04	40
2	1.92	1920	0.08	80
3	2.88	2880	0.12	120
4	3.84	3840	0.16	160
5	4.8	4800	0.2	200
6	5.76	5760	0.24	240
7	6.72	6720	0.28	280
8	7.68	7680	0.32	320
9	8.64	8640	0.36	360
10	9.6	9600	0.4	400

10.14.2 Attachment 2: Training Evaluation Checklist

Questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. If you have a 10 Litre bucket what is the amount of sodium hypochlorite and water needed to make the proper sodium hypochlorite solution?

2. What is the proper PPE to be worn?

3. How often should you replace the sodium hypochlorite solution?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

11. SPILLAGE MANAGEMENT

Work Instruction Title:	Procedure Number:	Implementation Date:
Spillage Management	ICWM – SOP - 011	January 2016

11.1 Version

Version Number	Change History
1.0	No change, new procedure to document.

11.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

11.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

11.4 Purpose

This procedure describes outlines the process of managing spillages using sodium hypochlorite solution.
Note: Any other suitable chemical substance can be used

11.5 Scope

Health care risk waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment if their spillages are not managed properly. Standards to control and minimize these risks are set forth in this document.

11.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- Environmental Discharge Permit Regulations, 2001
- Environmental Quality Standards Regulations 1999
-

11.7 Prerequisite

11.7.1 Health and Safety

- The procedure should be performed to ultimately meet the Occupational Health and Safety standards outlined in ICWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

11.7.2 Training

- Training on Health Care Waste management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public to better manage the waste from “Cradle” to “grave”.

11.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers

NO.	TERM	DEFINITION
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.

NO.	TERM	DEFINITION
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*

NO.	TERM	DEFINITION
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

11.9 Acronyms

No.	TERM	DEFINITION
1.0	NDSO	National Drug Supply Organisation
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

11.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health

		procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.
4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

11.11 Procedure

11.11.1 Equipment and PPE Requirements

The following are recommended equipment and PPE required to perform this procedure.

(i) Equipment

- 10 litre Bucket
- Instrument Brush with Nylon Bristles
- Mixing Spoon with long handle
- Sodium Hypochlorite (Commercial Grade household sodium hypochlorite) - example is domestic bleach.
- Litre Measuring Cup / Jug
- Cloth Towels

(ii) PPE (per person)

- Elbow Length Utility Gloves
- Face Shield or Goggles with Mask
- Heavy Plastic Apron
- Rubber Gum Boots

11.11.2 Mixing of Sodium Hypochlorite Solution

(i) Mixing of Sodium Hypochlorite Solution

a. Wear required PPE (refer to section 11.11.1 above) including reusable utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shields).

b. Determine the percentage of active sodium hypochlorite in the commercial grade sodium hypochlorite solution by reading the active ingredients on the label of the bottle. (Note: sodium hypochlorite concentrations can range from approximately 1% to 10% strength).

c. Using the tables found attached to this document (Attachment 2), determine the correct amount of sodium hypochlorite and room temperature water required to mix the appropriate solution.

d. Using the appropriate concentrations for the bucket size, carefully pour the water and THEN the required amount of sodium hypochlorite into the bucket. Use the mixing spoon to gently mix the solution.

Table 11-1 Mixing of Sodium Hypochlorite Solution

Example: A 10 L bucket should ONLY hold 5 L of the mixed sodium hypochlorite solution. (Attachment 1: 4.55 L of water and 450 mL of sodium hypochlorite equals 5 L of solution for a concentration of 3-5%).

NOTE: The sodium hypochlorite solution should not be reused and a new solution must be made for every cleaning cycle. The solution should also be replaced if it becomes visibly contaminated.

WARNING: Avoid skin and eye contact. Solution may sensitize and may cause skin irritation. This solution is extremely corrosive and harmful if swallowed.

If the solution comes into contact with skin, flush thoroughly with water for 3 minutes. If the solution comes into contact with the eyes, flush with water immediately for 3 minutes and then seek medical attention.

Each chemical product is or should be issued with an MSDS, which relates all hazard information, etc.

(ii) Disposal of Sodium Hypochlorite Solution

To properly dispose of the sodium hypochlorite solution, dilute the solution by adding water to the top of the bucket and then pour the contents of the bucket into an approved waste disposal site or down a drain. This practice reduces pollution risk to the environment.

11.11.3 Spillage of Health Care Risk Waste

In the event of a HCRW spillage, whether it is due to a torn bag or a broken seal, the Managerial Staff/ Infection Prevention Control Committee must be informed. The origin of the waste must be determined before the clean-up can begin. Responsibility for clearance of the spillage must be delegated and only carried out by persons trained in the correct procedures, e.g. cleaning of bodily fluids and sharps. The Support Staff are responsible for dealing with the management of spills at health care facilities and for completing the Incident Injury Report Form (Refer to HCWM - SOP - 010 Worker Health and Safety).

(i) Spillage of Infectious Waste – DRY SPILL

1. Clear the spillage area of people and equipment then put on the required PPE (refer to section 7 above) including reusable utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shields). A long-handled dustpan/shovel and brush should be used to gather the spilt materials to minimize contact / exposure.
2. Sweep the material into the dustpan and carefully place the waste into a new RED bag.
3. Once the bag is ¾ full, tie the bag off using the double knot tying method or use a cable-tie and immediately place the waste into the secured HCRW storage area.
4. After the dry infectious waste has been removed from the surface, follow the procedure in HCWM-SOP-010 - Decontamination of General Surfaces, to decontaminate the surface that came into contact with the spilt material.
5. The dust pan/shovel and brush used to clear the waste must also be decontaminated in a sodium hypochlorite cleaning solution after clean-up is complete. If the solution used in step 4 appears dirty, a new solution must be made to decontaminate these

items.
6. Dispose of or decontaminate all PPE and equipment used for the spill clean-up.

(ii) Spillage of sharps – SHARPS SPILL

1. ***Never pick up sharps by hand*.** Clear the spillage area of people and equipment then put on the required PPE (refer to section 11.11.1) including reusable utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shield). A long-handled dustpan/shovel and brush should be used to gather the spilt materials to minimize contact / exposure.
2. Sweep the material into the dustpan and carefully place the gathered material into a new sharps container.
3. Small quantities of sharps may be picked up using disposable forceps/tweezers.
4. After the sharps have been removed from the surface, follow procedure HCWM-SOP-010 - Decontamination of General Surfaces, to decontaminate the surface that came into contact with the spilt sharps.
5. The dust pan/shovel and brush used to clear the waste must also be decontaminated in a sodium hypochlorite cleaning solution after clean-up is complete. If the solution used in step 4 appears dirty, a new solution must be made to decontaminate these items.
6. Dispose of or decontaminate all PPE and equipment used for the spill clean-up.

(iii) Spillage of blood and bodily fluids – WET SPILL

1. Clear the spillage area of people and equipment then put on the required PPE (refer to section 7) including reusable utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shields).
2. Cover the spill with paper towels (or suitable absorbent material alternative) to soak up blood or bodily fluids.
3. After approximately 5 minutes, collect the paper towels and place them carefully into a new RED infectious waste bag.
4. Continue to carefully wipe the surface until all blood and/or body fluids have been visibly removed from the surface and place cloths / paper towels / absorbent material into a RED infectious waste bag. Once done, ensuring that bag is no more than ¾ full, securely tie off the bag with a cable tie or secure double knot. Follow procedure HCWM- SOP -006 Decontamination of General Surfaces, to decontaminate the surface that came into contact with the blood and/or bodily fluids.
5. Immediately after the cleaning process is complete, place the tied-off RED infectious waste bags into the secured HCRW storage area.
6. Dispose of or decontaminate all PPE and equipment used for the spill clean-up.

(iv) Chemical Spillage

Since there are several different kinds of chemicals available on the market, some compatible with each other and others not, it is near impossible to give explicit guidelines with regards to handling chemical waste. It remains the responsibility of the person or department procuring specific chemicals for particular functions to ensure that they acquire a materials safety data sheet (MSDS) for each chemical from the manufacturer, supplier or internet, and investigate, educate and display handling and spill management procedures accordingly.

Example: Procedures for the management of hydrochloric acid

1. Evacuate the area and inform the Managerial Staff/ Infection Prevention Control immediately.
2. Review the MSDS to determine the appropriate action to be taken.
3. Put on the required PPE as stated in the MSDS including utility gloves, apron, rubber boots, and face protection (goggles with mask or full-length face shields).
4. Open all windows and doors to ventilate area.
5. Neutralize with alkaline material (soda ash, lime).
6. Absorb with an inert material (e.g., vermiculite, dry sand and/or earth).
7. Place waste material in a red plastic bag and store according to ICWM- SOP-004 - Waste Storage.
8. Dispose of or decontaminate / neutralize all reusable PPE and equipment used to clean up spill.

11.12 References

1. **ANSI/AAMI ST79:2010 & A1:2010 & A2: (2011);** Comprehensive guide to steam sterilization and sterility assurance in health care facilities.
2. **Kingdom of Swaziland (2013);** Ministry of Health. National Health Care Waste Management Guidelines, February 2013.
7. **Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
8. **WHO (2014);** Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland,
9. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
10. **USEPA (2002);** United States Food and Drug Administration list of approved sterilants (March 2009)

11.13 Documents

1. Attachment 1: *MSDS for hydrochloric acid*
2. Attachment 2: Sodium Hypochlorite Dilution Tables
3. Attachment 3: Training Evaluation Checklist

11.14 Attachments

11.14.1 Attachment 1: *MSDS for hydrochloric acid:*

Spillage Management:
Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in ICWM – SOP - 008. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as sawdust. Do not flush to sewer!

Disposal:
Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and be handled together with the rest of the Chemical waste.

Storage:
Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing.

When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.

11.14.2 Attachment 2: Sodium Hypochlorite Concentration Tables

Table 11-2 Sodium Hypochlorite Concentration (3-5%)

TOTAL VOLUME OF BUCKET/CONTAINER	AMOUNT OF WATER	AMOUNT OF WATER	AMOUNT OF SODIUM HYPOCHLORITE	AMOUNT OF SODIUM HYPOCHLORITE
Litres (L)	Litres (L)	Millilitres (ML)	Litres (L)	Millilitres (ML)
1	0.91	910	0.09	90
2	1.82	1820	0.18	180
3	2.73	2730	0.27	270
4	3.64	3640	0.36	360
5	4.55	4550	0.45	450
6	5.46	5460	0.54	540
7	6.37	6370	0.63	630
8	7.28	7280	0.72	720
9	8.19	8190	0.81	810
10	9.1	9100	0.9	900

Table 11-3 Sodium Hypochlorite Concentration (6-10%)

TOTAL VOLUME OF BUCKET/CONTAINER	AMOUNT OF WATER	AMOUNT OF WATER	AMOUNT OF SODIUM HYPOCHLORITE	AMOUNT OF SODIUM HYPOCHLORITE
Litres (L)	**Litres (L)**	**Millilitres (ML)**	**Litres (L)**	**Millilitres (ML)**
1	0.96	960	0.04	40
2	1.92	1920	0.08	80
3	2.88	2880	0.12	120
4	3.84	3840	0.16	160
5	4.8	4800	0.2	200
6	5.76	5760	0.24	240
7	6.72	6720	0.28	280
8	7.68	7680	0.32	320
9	8.64	8640	0.36	360
10	9.6	9600	0.4	400

11.14.3 Attachment 3 Training Evaluation Checklist

Questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. If you have a 10 Litre bucket what is the proper amount of sodium hypochlorite and water need to make the sodium hypochlorite solution?

2. What is the proper PPE to be worn?

3. How often should you replace the sodium hypochlorite solution?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

12. MERCURY WASTE MANAGEMENT

Work Instruction Title:	Procedure Number:	Implementation Date:
Mercury Waste Management	ICWM – SOP - 012	January 2016

12.1 Version

Version Number	Change History
1.0	No change, new procedure to document.....

12.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

12.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

12.4 Purpose

To ensure that Mercury Waste and Mercury Spillage are managed correctly.

Dangers of Mercury (a.k.a. quicksilver)
Mercury is toxic, and can affect adults, children, and the unborn baby. Mercury volatilizes at room temperature; which means it gives off vapours that are often unseen in normal lighting conditions.

Mercury is an element which bio-accumulates, bio-magnifies, and cannot be destroyed. It is considered a 'special waste' and therefore warrants special handling, storage and final disposal procedures.

Visit www.mercuryfreehealthcare.org for more information.

Sources of Mercury Contamination
Predominant sources of mercury contamination in hospitals are broken thermometers and sphygmomanometers and fluorescent tubes. Thermometer breakages occur mainly in ward areas, and therefore the people most likely to be exposed to mercury vapour are the nursing staff, patients and cleaners, whose equipment often comes into contact with the spilled mercury.

Another source of mercury exposure and possible spillage occurs in the hospital's instrument repair workshop where the instrument technicians carry out maintenance and repair work of the sphygmomanometers.

Phase-out of Mercury Devices
It is a fallacy that your mercury-free alternatives / devices are less accurate. All equipment, including mercury devices, need sound calibration and maintenance management. If you look after your equipment, it will look after you. Globally, the phasing out of mercury-containing devices in health care facilities is well underway and should be imposed at the level of procurement

12.5 Scope

Health care risk waste generated from health care facilities can pose risks to patients, health care workers and visitors and / or the environment when handled, packaged, and/or disposed of inappropriately. Standards to control and minimize these risks are set forth in this document.

12.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out the following national laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)

12.7 Prerequisite

12.7.1 Health and Safety

- The procedure should be performed to ultimately meet the Occupational Health and Safety standards outlined in ICWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

12.7.2 Training

- Training on Health Care Waste management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public to better manage the waste from “Cradle” to “grave”.

12.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood,*

NO.	TERM	DEFINITION
		etc.
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box* *sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.

NO.	TERM	DEFINITION
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

12.9 Acronyms

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6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care

9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

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No.	TITLE	RESPONSIBILITY
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2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE.. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.

4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

12.11 Procedure

12.11.1 Mercury Spill Kit

It is recommended that each facility must have at least 2-3 Mercury Spill Clean-up Kits *available.*

A spill kit should be kept at a **convenient** and **accessible** place. A member of staff should have the **responsibility for the spill kit** and ensuring that the kit is always kept fully stocked.

The spill kit can also be readily produced using some of the materials found in the hospital and purchasing other items as required. **Make a checklist of all the items kept in the Spill Kit** (refer to Attachment 2 for a suggested inventory).

The spill kit should contain the following items as a minimum:

- *Equipment to pick-up visible mercury droplets* (e.g. an aspirator with a narrow tipped tube, a hand-held pasteur (dropping) pipette, a syringe without needle, an eye-dropper or strips of adhesive tape)
- *Torch or Flashlight* to optimize visibility of escaped mercury beads in obscure places.
- *Containers, which can be closed tightly,* for the storage of collected mercury droplets (e.g. hard plastic container with a screw-cap lid – plastic is preferred because is cannot break if dropped or is knocked over).
- *Labels and/or black permanent marker,* for labelling containers / bags.
- *Personal protective equipment* (e.g. disposable gloves, shoe protectors if spillage in ward area, laboratory coat, chemical goggles, mask.)
- *A "caution sign"* (if in ward area), or *biohazardous tape*, to visibly cordon off area.
- *Self sealing (or zip-lock) plastic bags* (for disposal of broken thermometer/ sphygmomanometer column, gloves and any other disposable equipment used in the cleanup process)
- *"User log" sheets*, to be completed after a mercury spill. The form could include the following headings: *"date and time"; location where spill occurred"; type of equipment involved in the spill"; name of person performing cleanup" (see Attachment 1 below).*

Table 12-1 Mercury in Carpets

IMPORTANT

Evidence in the literature shows that removing mercury out of carpets is almost impossible. Carpets also diffuse mercury vapours more extensively. Therefore, the use of a carpet is not recommended in areas where mercury is used.

12.11.2 Mercury Spill Cleanup Procedure

(Broken thermometers/repair maintenance of sphygmomanometer)

1. Isolate the area of the spill, and visibly so – and evacuate accordingly.
2. Retrieve the **Mercury Spill Kit**.
3. Put on protective clothing (disposable gloves, safety glasses, mask, etc.)
4. Place any broken glass (i.e. broken thermometers or glass sphygmomanometer columns) into a heavy-duty self-sealing (or zip-lock) plastic bag. The bag must be clearly marked to indicate that the contents are contaminated with mercury.
5. Collect all visible droplets of mercury using one of the following methods:
   a. An aspirator with a narrow tipped tube
   b. A syringe (without needle)
   c. A Pasteur pipette and a rubber bulb
   d. Strips of adhesive tape.
6. Place collected mercury in a glass or hard plastic jar (containing sufficient water to cover the mercury) and secure lid (in the hospital environment, hard plastic is preferred as it is not breakable).
7. Use cardboard sheets or masking tape to capture any further escaped beads, using your torch for optimal visibility.
8. Place all cleaning aids, used in the cleanup process, disposable gloves, etc, into a self-sealing plastic bag and label accordingly.
9. Make arrangements with responsible person with regard to disposal procedures of mercury waste.
10. Wash protective visors with liquid soap and warm water and dry with paper towel before returning to Mercury Spill Kit.
11. Wash hands thoroughly with soap and warm water on completion of procedure.
12. Complete the required details in the logbook / control sheet located with the Mercury Spill Kit (refer to Attachment 1).
13. Return the Mercury Spill Kit to the responsible person.
14. Ensure replacement of any used items in the Spill Kit

12.11.3 Recommendations

The Regulations state that the prevention or control of hazardous substances should be implemented in accordance with the *hierarchy of controls*. The hierarchy of controls is a list of measures, in priority order, that can be used to eliminate or minimize exposure to hazardous substances. Application of the hierarchy of control measures involves firstly assessing

whether a hazardous substance can be eliminated. If this is not practicable, substitution should be considered. Following this, consideration should be given to each of the other control measures; isolation, engineering controls, administrative controls and personal protective equipment.

Upon observation of the work procedures involving mercury and consideration of the hierarchy of control measures, the following recommendations should be undertaken to minimize exposure to mercury vapour:

(i) Substitution

The preferred option is the substitution of mercury-based thermometers with digital or mercury-free thermometers (e.g. spirit-filled). The mercury-based sphygmomanometers could also be replaced with aneroid or digital ones.

Considering the following benefits may offset the extra cost:

- Elimination of the mercury hazard
- Elimination of cleanup costs
- Elimination of staff training
- Elimination of disruption of normal services due to spills
- Elimination of high disposal costs of mercury (special disposal)

This option should be strongly considered, particularly in view of mercury alternatives becoming readily available and more affordable. The management should develop a plan to phase out mercury thermometers and sphygmomanometers over a defined period of time.

(ii) Safe Work Procedure

While mercury continues being used (replacement of items with mercury-free products could take some time), the health facility must develop a policy outlining management responsibilities, procedures for working safely with mercury, mercury cleanup and disposal, recording information and staff training.

(iii) Mercury Decontamination

The objective of effective and efficient decontamination of surfaces and objects is to minimize the area that needs to be decontaminated. This is achieved by eliminating the through-traffic and carriage of mercury to other areas and by having a suitable procedure and mercury spill kit to carry out the actual decontamination.

(iv) Training

Staff involved with working or using mercury equipment or involved in mercury cleanup procedures must be provided with adequate information and training on the health effects of mercury, legislative responsibilities and safe work procedures.

(v) Ventilation

If local exhaust ventilation is used during the maintenance/repair of sphygmomanometers, ensure that it is located as close as possible to the working tray such that it draws air away from the operator's breathing zone and is removed to the outside air.

(vi) Use of Vacuum Cleaners

It is strongly recommended that ordinary vacuum cleaners must **not** be used to clean up a mercury spill. The mercury will go through the collection bag into the hot motor housing releasing mercury vapour into the air and therefore increasing the likelihood of personal exposure. The contaminated vacuum cleaner would have to be disposed of properly with the

spilled mercury.

12.12 References

1. **Kingdom of Swaziland (2013),** Ministry of Health. *National Health Care Waste Management Guidelines,* February 2013.
2. **Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
3. **United States Department of Agriculture, (2002)**; *ARS facilities design standards.* 242.1M-ARS. Facilities Division, Facilities Engineering Branch AFM/ARS, United States Department of Agriculture, 2002.
4. **GoL (2012),** Consolidated Lesotho National Health Care Health Waste Management Waste Management Plan for the Lesotho Maternal and Newborn Health Performance-Based Financing Project August 2012
5. **WHO (2014);** Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland,
6. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000
7. **USEPA (2002);** United States Food and Drug Administration list of approved sterilants (March 2009)

12.13 Documents

1. Attachment 1: Mercury Spill Log Sheet (Suggested template)
2. Attachment 2: Mercury Spill Kit – Checklist
3. Attachment 3: Training Evaluation Checklist

12.14 Attachments

12.14.1 Attachment 1.....Suggested Mercury Spill Log Sheet

Table 12-2 Mercury Spill Log Sheet

Serial Code:	*001*
Hospital / Facility Name:	
Date:	
Time:	
Location where spill occurred:	
Type of Equipment involved in Spill:	
Name of Person Cleaning up:	
Names of Persons exposed to	
Amount of Mercury Waste collected:	
Signature of Responsible Person:	
Reported to Occupational Health & Safety Representative:	**Yes / No**

12.14.2 Attachment 2: Suggested Mercury Spill Kit – Checklist

Table 12-3 Mercury Spill Kit – Check List

No.	Name	Quantity	image
1.0	Eyedropper (or syringe without needle) – to pick up the mercury.	4 x 300ml syringes **OR** 4 x eyedropper	
2.0	Hard plastic container with lid – to hold the mercury liquid.	4 x 500ml plastic bottles with screw-top lid	
3.0	Tape (wide, duct, or masking) – to help pick up mercury beads.	1 roll	
4.0	**Plastic bags with zipper seal** – to store mercury-contaminated debris and equipment.	5-7 zip-lock bags	
5.0	**Rubber / latex gloves** – to protect hands from mercury contact.	3 x pairs	
6'0	**Mask** – to protect against inhalation of mercury vapours.	3	

No.	Name	Quantity	image
7.0	**Protective Visors** – to protect against mercury vapours being absorbed.	1	
8.0	**Hard plastic drum** – for consolidation of bulk mercury waste .	1 x 20-30L Clean **'Dry' Drum for used zip-lock bags containing Mercury contaminated debris /containers /equipment**. 1 x 5-10L **Clean 'Wet' Drum for liquid mercury** only. This container should contain dry ice or enough water to cover the Mercury – as this reduces the vapour emission each time it is opened	
9.0	**Cardboard Sheets** – for collecting mercury beads.	5-10 A5 sheets	
10.0	**Flashlight / torch** – to help see the smaller mercury beads which may have escaped the mercury spill.	1	
11.0	**Black Marker and/or labels** – for labelling bags and containers containing mercury or mercury contaminated waste		
12.0	**Control Sheets / Incident Report Book**		To be designed by relevant Facility and in line with their internal policies and procedures.

Quick List Directions:

1. Remove everyone from area.
2. Cordon off area.
3. Retrieve Mercury Spill Kit.
4. Put on PPE.
5. Carefully pick up any broken or sharp objects.
6. Locate visible mercury beads.
7. Collect mercury beads with an eyedropper or cardboard sheets.
8. Place all materials that were used, including gloves, in labelled zip-lock bags.
9. Fill in Mercury Spill Log book / Control Sheets and report to Occupational Health Officer/representative as per your internal policies and procedures.
10. Consolidate mercury and mercury contaminated waste into designated storage drums.
11. Remember to keep the area well ventilated to the outside for at least 24 hours.

12.12.3 Attachment 3 Training Evaluation Checklist

Five questions on SOP's content (Yes/No, multiple choices or open-ended questions):

1. Can you use a vacuum cleaner to clean up a mercury spill? Yes / No?
2. Name 3 items, which one would find in a Mercury Spill Kit.
3. One can use tweezers to pick up mercury droplets that have escaped on the floor. Yes / No?
4. One doesn't have to use a mask when cleaning a Mercury Spill because there is no danger of inhaling it. Yes / No?
5. Must you report it to someone when there has been a Mercury Spill? Yes / No?

I confirm that I have read and understand this procedure: _____

	NAME	**SIGNATURE**	**DATE**
CARRIED OUT BY:	_____	_____	_____
EVALUATED BY:	_____	_____	_____

SUCCESSFUL: YES/NO

13. HEALTH CARE WASTE PRACTICES SUPERVISION AND MONITORING

Work Instruction Title:	Procedure Number:	Implementation Date:
Health Care Waste Practices Supervision And Monitoring	ICWM – SOP - 012	January 2016

13.1 Version

Version Number	Change History
1.0	No change, new procedure to document.

13.2 Review

Review Period	Annual
Review Date	31st January
Comments on Review	To evaluate the implementation of the SOP countrywide.

13.3 Distribution

Location of Master and Electronic Copy	Principal Secretary, Ministry of Health P O Box 514, Maseru 100 +266 22312836 +266 22323010 ps@health.gov.ls
Distribution	• Environmental Health Department • The Directorate of Planning and Information, (MoH). • ***National Drug Supply Organisation (NDSO)*** • National Public Health Laboratories • District Health Teams • Health Care Facilities (Public and Private/NGOs) • Health Training institutions • Environmental Protection Department (MTEC) • Councils / Municipalities • Private Pharmacies • TB Programme

13.4 Purpose

This document provides procedures for supervision and monitoring the HCWM practices in all Health Care institutions.

13.5 Scope

Effective HCWM practices supervision will foster adherence to the provisions of the Health Care Waste Management Policy and Plan and ultimatrely the Standard operating procedures. This procedure gives clear guidelines to be used by District Health Management Teams and MOH EHD to supervise health care waste practices including a scoring system which allows penalties and incentives to be provided to health facility teams based on adherence to set national SOPs

13.6 Regulatory Basis

The formulation of this procedure is in line with and seeks to meet the standards laid out the following laws and statutes:

- Public Health Order No.12 of 1970
- The Environment Act No 10 of 2008.
- Public Health Regulations
- International Health Regulations(2005)
- WHO protocol

13.7 Prerequisite

13.7.1 Health and Safety

- The procedure should be performed to ultimately meet the Occupational Health and Safety standards outlined in iCWM - SOP-008. The SOP covers the health and safety aspects that need to be considered when handling Health Care Waste.
- For any Occupational Health and Safety issues the Environmental Health Representative at the Health Facility must be consulted.

13.7.2 Training

- Training on Health Care Waste management shall be given to all Health Care Waste handlers at all Health Care Facilities, private or public to better manage the waste from “Cradle” to “grave”.

13.8 Abbreviations & Definitions

NO.	TERM	DEFINITION
1.0	Anatomical Waste / Pathological Waste	Anatomical Waste (also often referred to as pathological waste) consists of tissues, organs, body parts, blood and bodily fluids from patients, human foetuses and animal carcasses, but excludes teeth and hair.
2.0	Biohazard Symbol	This symbol is required on the side of all infectious and sharp waste containers
3.0	Cleaning	Removal of contamination from an item to the extent necessary for the further processing or for the intended use.
4.0	Clinical Staff	This includes all staff involved in and related to the observation and treatment of actual patients rather than theoretical or laboratory studies. *Examples: nurses; doctors; phlebotomists; dentists; etc.*
5.0	Chemical Waste	Consists of discarded solid, liquid, and gaseous products that contain dangerous or polluting chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping and disinfecting procedures. Chemical waste from health care may be hazardous or non- hazardous. *Example: pharmaceutical waste, cytotoxic / genotoxic waste and radioactive waste.*
6.0	Colour-coding System	A system for relating the contents of packaging / containers by using different colours.
7.0	Containerization	Often used interchangeably with the word packaging. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
8.0	Contaminated	State of having been actually or potentially in contact with a contaminant. *Examples: pollutant, radioactivity, chemical, blood, etc.*
9.0	Decontamination	Process or mode of action to reduce contamination to a safe level.
10.0	Decontamination Area	Area of a health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
11.0	Hazard	Intrinsic potential property or ability of any agent, equipment, material, or process to cause harm.
12.0	Health Care Facility	Place or site where professional health services are dispensed to human or animal patients or where biological research is carried out. *Examples: laboratory, hospital, clinic, free-standing operating theatre, mobile clinic health centre and village health posts..*
13.0	Health Care General Waste	Comparable to domestic/municipal/household waste, this type of waste does not pose special handling problems or hazards to human health or to the environment.

NO.	TERM	DEFINITION
14.0	Health Care Risk Waste	All waste generated by health care establishments, research facilities, and laboratories that could pose a health risk to health workers, the public, or the environment.
15.0	Identification	The process of visually recognizing relevant health care waste streams at the point of generation.
16.0	Infectious Waste	This is waste that may have been in contact with human blood or bodily fluid and may have the ability to spread disease. *Examples: gauze, cotton, dressings, laboratory wastes, IV fluid lines, blood bags, gloves, anatomical waste, surgical instruments and pharmaceutical waste.*
17.0	Infection Prevention Control (IPC) Staff	Infection Prevention Control Committee Members.
18.0	Managerial Staff	This includes all staff in an administrative or decision-making capacity for the relevant facility(ies). *Examples: administrator; manager; senior matron; senior medical officer.*
19.0	Microorganism	Entity of microscopic size, encompassing bacteria, fungi, protozoa, and viruses.
20.0	Minimum recommended concentration (MRC)	Minimum concentration at which a liquid chemical sterilant is suitable for the decontamination procedure.
21.0	Packaging	Often used interchangeably with the word containerization. Refers to the materials used to wrap and safely contain the relevant waste streams to prevent exposure during transport till final disposal. *Examples: rigid plastic containers, flexible plastic bags, lined fibre-board box sets, etc.*
22.0	Personal Protective Equipment (PPE)	Specialized clothing or equipment worn by an employee for protection against a hazard.
23.0	Segregation	Systematic separation of health care waste into designated categories.
24.0	Sharps Waste	This is waste that may puncture the skin and cause disease. *Examples: needles, infusion sets, scalpels, knives, blades, lancets, and broken glass.*
25.0	Sodium Hypochlorite Solutions	Widely used for decontaminating surgical instruments, laboratory equipment and spot-disinfection of countertops and floors in health care facilities. *Example: House hold bleach like Java, Madar, Aue Dejave, etc are the common local trade names for concentrated sodium hypochlorite, which is sold widely.*

NO.	TERM	DEFINITION
26.0	Special Waste	Comprised of hazardous and non-hazardous waste, which has physical or chemical characteristics, or both, that are different from anatomical / pathological, chemical, radioactive, and general waste that requires special packaging and/or handling. *Example: lead, batteries, mercury, pressured containers, infectious laundry, microbiological waste, infectious food waste, amputated limbs and electronic waste. and pharmaceutical wastes*
27.0	Support Staff	This includes all staff in an ancillary or assisting role to other staff. This level of staff usually emerges with a lower level of education and skill competency than the other staff groups. *Examples: Cleaners; Orderlies; store hand ; Health Labourer, handy men; Drivers; etc.*
28.0	Technical Staff	This includes all staff involved in a field related to a particular subject, art, or craft, or its techniques, which is non-clinical. *Examples: Accounts / Finance; Stores; Biomed; Maintenance.*
29.0	Poupinel oven	Electronically controlled dry heat oven for sterilising medical equipment.
30.0	cytotoxic	Having destructive action on cells, usually only certain types of cell - Any agent or process that kills cells.
31.0	genotoxic	Chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer.

13.9 Acronyms

No.	TERM	DEFINITION
1.0	***NDSO***	***National Drug Supply Organisation***
2.0	HCF	Health Care Facility
3.0	HCRW	Health Care Risk Waste
4.0	HCW	Health Care Waste
5.0	HCWM	Health Care Waste Management
6.0	IPC	Infection Prevention Control
7.0	PPE	Personal Protective Equipment
8.0	PHC	Primary Health Care
9.0	MOH	Ministry of Health
10.0	MOH-EHD	Ministry of Health – Environmental Health Department
11.0	QA	Quality Assurance
12.0	SOP	Standard Operating Procedure
13.0	MTEC	Ministry of Environment, Tourism and Culture
14.0	MSDS	Materials Safety Data Sheet

13.10 Responsibilities and Accountabilities

No.	TITLE	RESPONSIBILITY
1.0	Managerial Staff	• Obtain and be familiar with national waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Ensure staff is trained on the proper procedures. • Budget for adequate supply of ICWM products and activities. • Ensure adequate supply of ICWM products. • Advocate for staff health and safety. • Ensure clinical other staff dealing with infectious waste are immunized accordingly and are aware of occupational health procedures
2.0	Clinical Staff	• Follow waste management policies and procedures. • Practice safe operating procedures and wear appropriate PPE. • Follow colour-coded waste segregation system. • Notify Support Staff when HCW containers are ¾ full for collection and replacement. • Notify Stores when HCW container stock is running low to ensure sound stock control. • Reporting all occupation related injuries that happen as a result of HCWM
3.0	Technical/Support Staff (HCW Handlers)	• Follow waste management policies and procedures. • Institute safe operating habits and wear appropriate PPE. • Place appropriate HCRW containers at designated locations. • Know colour-coding system and use it correctly. • Practice safe operating procedures and wear appropriate PPE. • Collect correctly filled (no more than ¾) HCW containers. • Ensure a clean and orderly environment at the facility. • Record keeping—record number of filled HCW containers, identify supply needs, report stock outs. • Store HCRW in a dedicated and secure location.

4.0	Environmental Health Staff	• Obtain and be familiar with national and Health facility waste management policies and guidelines. • Enforce facility waste management plan (goal, budget, staff, roles, supervision, training, reporting, etc.). • Train staff on proper procedures for identification, segregation and packaging of HCW. • Conduct quality audits and verify compliance with ICWM SOPs and National Guidelines. • Advocate for staff health and safety. • Notify Stores when HCW container stock is running low to ensure sound stock control.

13.11 Procedure

Waste management is a continual task demanding a permanent effort from each and every person at the health care facility. Regular supervision and monitoring should ensure that the desired standard is maintained. The monitoring of ICWM is part of the overall quality management system. To measure the efficiency of the ICWMP, as far as the reduction of infections is concerned; activities should be monitored and evaluated, in collaboration with concerned institutions: MoH, MTEC, Local Authority, NGOs, etc.

13.11.1 Supervision of Practices

The District Health Teams and MOH EHD will supervise health care waste practices at all health care institutions in the country. The following procedure shall apply:

- At least once every quarter the District Health Teams and/or MOH EHD will conduct inspection visits to all health care facilities in their respective regions.
- The areas to be monitored shall be as outlined in table 13-1 below.
- Each parameter shall be given a score ranging from 1 =poor to 5 = excellent
- Any facility scoring less than 45% of their maximum possible scores shall undergo more rigorous scrutiny which may involve the assistance of MTEC.
- Any facility scoring more than 75% of their maximum possible scores shall be accordingly rewarded.

13.11.2 Measurable Indicators

At the facility level, the following framework and measurable indicators shall be monitored regularly *(Tick the appropriate score and add the total at the bottom)*:

Table 13-1 Measurable indicators

No.	ISSUE		GRADING				
			1	2	3	4	5
1.0	**HCW management structure:**						
1.1	Is a waste management plan in place						
1.1	Is waste minimisation at source being practices?	appropriate purchasing system					
		Stock control system in place					
		Waste Recovery system (recycling eg card board).					
		Use of re-usable products.					
1.2	standard of hygiene						
1.3	ICWM awareness of staff						
1.4	ICWM awareness of patients						
1.5	Recording of amounts of waste generated						
1.6	Dedicated financial resources for ICWM						
1.7	Clearly delegated and functioning ICWM responsibilities						
1.8	training and awareness creation activities						
2.0	**HCW collection:**						
2.1	Do waste handlers have PPE						
2.2	Is waste being segregated						
2.3	Are bins /bin liners colour coded/labelled properly						
2.4	Sufficient and appropriate collection containers						
2.5	Is frequency of waste removal as per plan						
2.6	environmentally friendly handling of waste						
3.0	**HCW on-site transportation and storage:**						
3.1	cleanliness and functioning of transport equipment						
3.2	execution of recommended transport procedures						
3.3	status of storage facilities----cleanliness						
3.4	separate storage of hazardous items						
3.5	emergency equipment						
3.6	lock and safety measures at storage site, including signage						
3.7	Is there responsible staff						
4.0	**HCW off-site transportation and storage:**						
4.1	cleanliness and functioning of transport equipment						
4.2	Is transport safe and secure (covered)						
4.3	execution of recommended transport procedures						
4.4	Is appropriate paper work used during transportation (consignment notes/delivery notes)						
5.0	**HCW treatment:**						
5.1	Is treatment facility on site or off-site		on site			off-site	
5.2	Incinerator for sharps						
5.3	Incinerator for infectious waste						
5.4	proper functioning of incinerator						
5.5	maintenance procedure						

5.6	safety regulation for operation					
5.7	safe disposal of ash					
5.8	Trained operator in place					
5.9	**Stabilised concrete lined pit for sharps and contaminated waste**					
5.10	Pit mouth secured					
5.11	Pit site secured					
5.12	Limited human traffic close to pit					
5.13	Correct deposition of waste in pit					
5.14	Open Pit for burning general waste only					
5.15	Open pit well maintained					
6.0	**HCW final disposal:**					
6.1	Proper operation of landfill site					
6.2	Proper operation of ash pit					
6.3	proper operation of waste pit for infectious waste					
6.4	transport of chemical and radioactive waste					
7.0	**General cleanliness:**					
7.1	containers not overfull					
7.2	no used sharps outside or protruding from sharps containers					
7.3	no foul-smelling waste in facility or on premises					
7.4	no litter in facility or on premises					
7.5	no faeces on premises					
7.6	Waste pits not overfull.					
	Total score					

13.12 References

1. **Prüss, E. Giroult, P. Rushbrook, (1999)**; Safe management of wastes from health-care activities; World Health Organization, Geneva, 1999.
2. **WHO (2014);** Safe management of wastes from health-care activities, Second edition, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Geneva 27, CH-1211, Switzerland,
3. **Lars M. Johannessen, Marleen Dijkman, Carl Bartone, David Hanrahan, M. Gabriela Boyer, Candace Chandra (2000)**; Health Care Waste Management Guidance Note, Health, Nutrition, and Population (HNP), The World Bank, May 2000