Kingdom of Swaziland

Ministry of Health

Swaziland National Implementation Strategy: Improving Health Care Waste Management Systems

SCMS

SWAZIS AND AMERICANS
IN PARTNERSHIP TO FIGHT HIV/AIDS

Acknowledgments

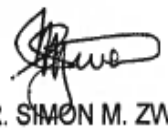
The Ministry of Health (MoH) - Environmental Health Department (EHD) would like to acknowledge, PEPFAR, USAID as well as implementing partners, SCMS consultants and all other conference attendees for their collaborative effort to bring about this Implementation Strategy for health care waste management.

Forward

This five-year National Implementation Strategy (NIS), created for the development of a robust and sustainable health care waste management (HCWM) system, is a coordination tool for the national response built from the efforts and experiences of the Ministry of Health, Ministry of Education, Swaziland Environmental Authority and numerous key stakeholders and implementing partners. The Strategy sets priorities for the nine key component areas of national institutional agreements, HCRW management system, segregation and containerization, collection and storage practices, external collection and transportation practices, health care waste information system, HCW pollution prevention initiatives, minimization and recycling initiatives, treatment and disposal practices and capacity building and community education. The priorities and imperatives reflect the hard choices that need to be made to ensure maximum impact in reducing the incidence of improper management of health care waste (HCW) within a financial and human resources limited sector.

The multisectoral approach will remain the core implementation modality and, as such, the NIS will serve to guide stakeholders on deciding priority interventions in their respective areas of competency and interest. The NIS recognizes the need to strengthen systems for the proper management of health care waste, i.e. national guidelines, standardized training program, standard operating procedures, health care risk waste transport and monitoring and evaluation.

The participatory process through which the NIS was developed has renewed the Ministry of Health of the Kingdom of Swaziland's commitment, motivation and thinking about the road map to the country's vision of a population safe from environmental contamination. The NIS will be a key tool for coordination and oversight for the national response for the next five years. It is my sincere hope that partners, donors and implementers will, to every extent possible, align their support and interventions to the priorities of the NIS and collectively contribute to the achievement of the targets in the most cost-effective way.



DR. SIMON M. ZWANE

DIRECTOR OF HELATH SERVICES
MINISTRY OF HEALTH

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Acronyms

EHO	Environmental Health Office
GKoS	Government and Kingdom of Swaziland
HCF	Health \Care Facility
HCRW	Health Care Risk Waste
HCW	Health Care Waste
HCWM	Health Care Waste Management
IP	Implementing Partner
KPI	Key Performance Indicator
MoH	Ministry of Health
MoL	Ministry of Labour
NGHCWM	National Guideline on Health Care Waste Management
PEPFAR	President's Emergency Plan for AIDS Relief
PPP	Public/Private Partnership
QMS	Quality Management System
SCMS	Supply Chain Management System
SEA	Swaziland Environment Authority
SOP	Standard Operating Procedure
USAID	United States Agency for International Development
USG	US government
WB	World Bank
WHO	World Health Organization
WIS	Waste Information System

Introduction

Health care waste management (HCWM) is an issue of global and national concern, particularly for the Government and Kingdom of Swaziland (GKoS). With the increased prevalence of HIV/AIDS and other infectious diseases in Swaziland, there has been a corresponding increase in generation of health care waste (HCW). This increase, coupled with the lack of a comprehensive National Implementation Strategy, puts health care workers, patients, waste handlers, scavengers, the environment and the general public at risk.

Improper disposal and poor treatment methods can contribute to a host of challenges, from poor air quality to contaminated water and soil. To protect public health and the environment, a sound strategy for managing HCW is crucial.

An effective National Implementation Strategy requires a multi-sector, multi-agency approach, with cooperation and interaction at all levels of society and government. The Ministry of Health-Environmental Health Office (MoH-EHO) is the collaborative unit for developing this strategy and the governing body for all HCWM initiatives. To ensure sustainability, the plan must result in adopted policy that considers global and national interests.

This document outlines a framework for guiding the formulation of a HCWM plan that will support improvements at the national, regional and local levels. Implementing a robust HCWM plan requires a strategy that defines activities and requirements, identifies resources that need to be mobilized and specifies priorities. This strategy document is designed to motivate all interested and affected parties in defining the steps needed to establish a robust and sustainable HCWM system in Swaziland.

Health Care Waste Management System

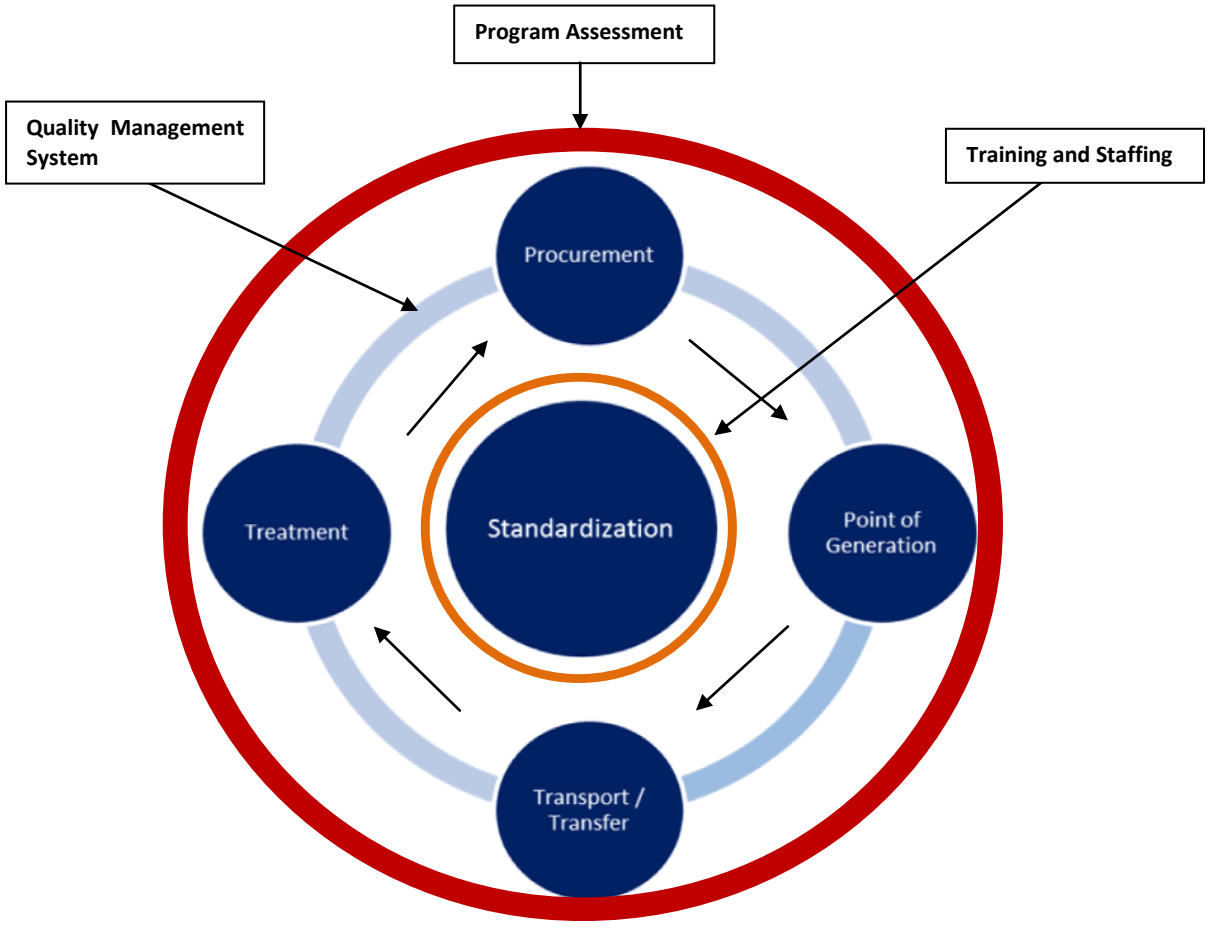
This section provides comments on components of a robust HCWM system and visually depicts its eventual outcome.

The HCWM system is a multi-sector and multi-agency approach. It works in harmony to ensure proper HCWM along its journey from "cradle to grave," ensuring that all aspects of the process are incorporated to reflect a truly integrated waste management approach. The focus of this system is to reduce the risk of mishandling waste while building a sustainable and cost-effective program.

HCWM key system components

A robust HCWM system integrates eight key HCWM components that, when implemented correctly, will ensure the proper management of health care waste. Each component is shown in Figure 1 and described below.

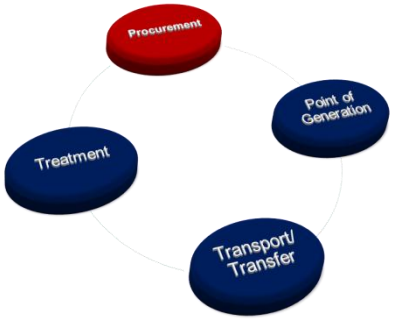
Figure 1. Eight HCWM components



1. Program assessment

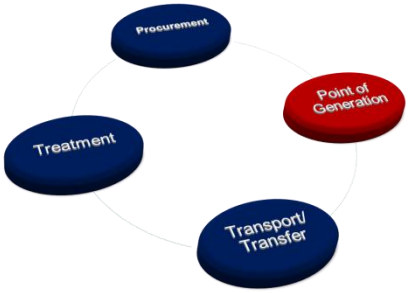
Before developing a HCWM system, it is important to assess current health care practices. The assessment identifies any waste management problems and risks at the national and facility site levels and informs the development of an integrated waste management plan. A HCWM program should be integrated into the country's overall waste management program to help ensure the most cost-effective decisions are made at all levels.

2. Procurement



Procurement planning is needed to enable the HCWM system to meet its specific purchasing objectives, as well as overarching goals. Effective procurement planning will produce more efficient and economical procurements, which will deliver products in an acceptable and timely manner. Procurement planning is the process by which the efforts of all personnel responsible for significant aspects of a project are coordinated and integrated. The formality and detail of the planning and preparation process will vary with the size, complexity and value of the requirement. Since health care risk waste (HCRW) is considered a hazardous substance, quality can never be compromised for the sake of saving money; minimum product specifications are recommended.

3. Point of generation



The key to minimizing and effectively managing HCW is waste stream identification and segregation. These processes are the responsibility of the generator and should occur as closely as possible to the point of generation.

A formal protocol is needed to identify the categories of waste appropriately. Color coding the relevant waste containers is a quick and easy way of identifying and segregating HCW.

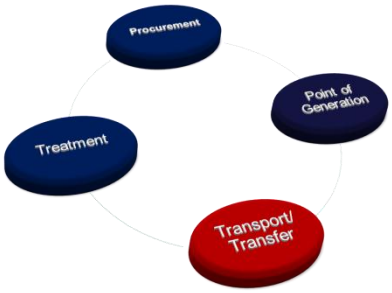
Appropriate containers must be placed in locations where particular streams of waste are generated. It is essential that instructions (visual aids) on waste segregation be posted at each waste generation point to enable and promote sound segregation.

Waste should not be allowed to accumulate at the point of generation nor should it be stored indefinitely; a routine schedule must be developed for collecting and transferring waste.

A temporary storage location at the health facility should be established within the confines of the facility. This location should be secured, inaccessible to unauthorized personnel and away from the public. Before transfer, the waste should be kept in secure, color-coded containers to keep the HCW safe from vermin and insects and to inform waste handlers of the type of waste in the containers.

4. Transport and/or transfer

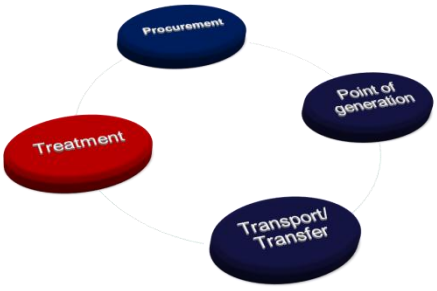
On-site transfer of HCW should be done only by wheeled trolleys, containers or carts. This will ensure the safety of the handler and others. Transport units should be cleaned daily with an appropriate treatment.



Off-site transport of HCW should be conducted in vehicles adequately packed and labeled by the hauler before transport. Transport, packing and labeling of HCW should comply with national regulations that govern the movement of hazardous materials within the country. A consignment note-tracking system should be in place to oversee transport operations. This system will ensure that the safety and legal requirements of the haulers, the facility, the public and the environment are met.

5. Treatment and disposal

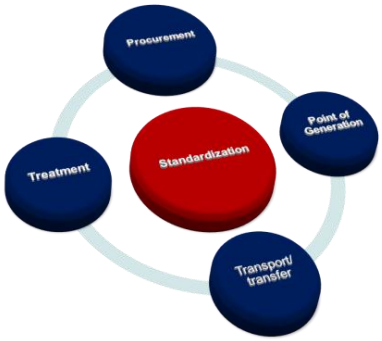
A suitable plan is needed for waste treatment and disposal by incineration or non-incineration technologies, following World Health Organization (WHO) recommendations and international best practices.



Each waste stream warrants unique handling, treatment and disposal/destruction requirements. Selecting the right type of treatment technology for the particular waste stream is paramount. While incineration remains a commonly used technology, as it has the ability to destroy the widest range of waste streams and minimizes volume significantly, consideration should be given to non-burn technologies such as autoclaves

and shredding of waste to minimize air pollution. A number of non-burn technologies are available for rural settings as well as major health care facilities. Some non-burn technologies provide a reduced volume of non-infectious (delisted) waste, which can sequentially be disposed of in the general waste stream.

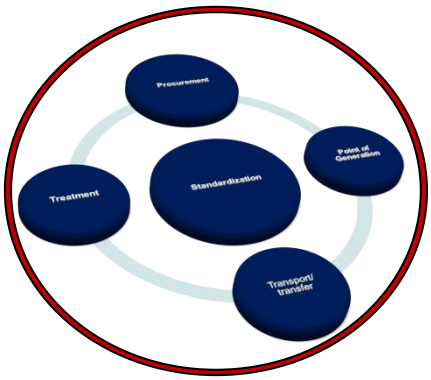
6. Standardization



At the core of the HCWM program is standardization. Some of the main goals of standardization are commoditization, compatibility, interoperability, safety, repeatability, and/or quality. The idea of standardization is close to the solution for a coordination problem, a situation in which mutual gains can be realized only if all parties make mutually consistent decisions.

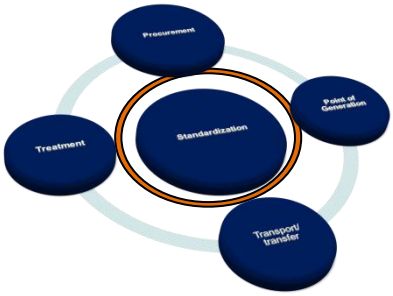
To have a sustainable and robust program, it is essential to develop procedures that outline the standard practices for handling, storing, treating and disposing of hazardous and non-hazardous waste, as well as procurement and training requirements. The development of national policies and standard operating procedures (SOPs) at all levels of the program will provide the reference for these standards.

7. Quality management system



An effective quality management system (QMS) is an essential part of the HCWM system. Quality management focuses on systematically developing and communicating the program's mission, strategies and action plans; empowering employees to continuously improve and increase safety within work processes and within their work environment; and gathering and analyzing key performance indicators to improve organizational and process results. The key elements of a robust QMS are tools that monitor the HCWM program and provide feedback to the facility. These elements include, but are not limited to, training and qualifying personnel; controlling documentation; controlling purchasing; identifying and tracing products at all levels of production; defining and controlling inspection; validating processes; accepting products; instituting protective and corrective action when errors occur; controlling labeling and packaging; handling, storing, distributing and installing; keeping records; and applying servicing and statistical techniques.

8. Training of personnel

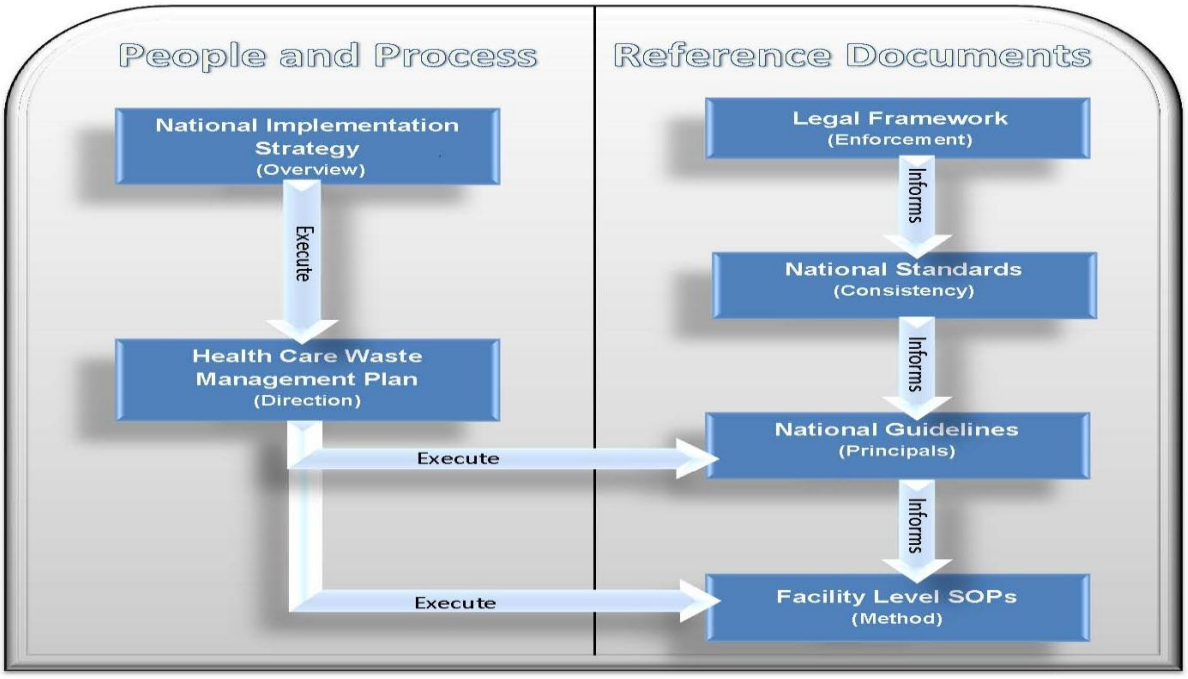


To disseminate standards and policies and turn them into action, a national training course is required. Training personnel at all levels of the program in health and safety best practice, particularly in the context of HCRW, is critical. The training course should include proper identification, segregation, waste packaging/ containerization and labeling, transport, safe waste storage, treatment and disposal. Training should be appropriate for various types of health care establishments, including health centers, hospitals, private facilities, laboratories and universities, as well as customized for each level of staff accordingly. It should be conducted semi-annually to properly educate new staff and refine/refresh the competencies of existing staff in proper waste management techniques. All personnel, including senior management and all medical staff, should be required to attend the comprehensive training course. Behavior change and ownership are two critical elements to consider when designing the training course.

HCWM system essential documents

The National Implementation Strategy and concomitant HCWM Plan integrate four essential reference documents that, when designed and used correctly, provide key stakeholders and implementing partners with a clear "roadmap" for strengthening the management of HCW in a sustainable way. Key documents are shown in Figure 2 and described below.

Figure 2. People, process and reference documents



Reference documents

1. Legal framework

Living in a safe and healthy environment is, universally, a basic human right. Therefore, the first legislative influence on waste management is the country's Constitution. After that, several spheres influence the creation of specific HCWM laws and regulations, for example, water and sanitation, health and safety, conservation, and land and development.

Developing a strong legal framework is the basis for enforcing sound health care waste management practices. These legal documents could be enacted at the national, regional and/or city level. They should also establish controls and give agencies the ability to regulate HCW management within the country. The legal framework should include, but not be limited to:

- Laws on:
  - Correct management of health care waste
  - Hygiene and infection control
  - Healthy and safety best practice

- Labor policies
- A structure for accountability
- A mechanism for enforcement
- A court responsible for handling disputes

2. National Standards

This document establishes benchmarks to create confluency and consistency in approach, method and product use. A National Standard is usually modeled on internationally recognized standards (for example, International Organization for Standardization or WHO) so that terms of reference and procedures are consolidated and unified. Standards should include, but not necessarily be limited to:

- Color-coding and labeling requirements
- Minimum product specifications
- Personal protective equipment requirements for different levels of HCRW handlers
- Health and safety best practice
- Storage requirements and times

3. National Guidelines

The National Standards should inform National HCWM Guidelines. The purpose of the Guidelines document is to provide practical and technical advice to its target audience. The guidelines aim to accomplish the following:

- Unpack definitions from standards
- Recommend country-specific infection prevention control and health and safety best practice
- Provide guidance on identifying, segregating, packaging, storing and transporting (internally and externally) health care waste
- Provide treatment and disposal direction for health care waste
- Recommend centralized or decentralized treatment of special health care waste streams

4. Facility-level standard operating procedures

SOPs delineate the standards and guidelines and formulate a customized, step-by-step method to suit the unique environment. SOPs should include, but not be limited to:

- HCWM best practice for each department or functional level
- An up-to-date list of approved methods of treatment and disposal for each waste stream
- Designated responsibilities within the health care facility
- Key steps of HCWM: avoidance, minimization, identification, segregation, handling, transport, and treatment and disposal

- Technical specifications for implementing key HCWM steps

People and process documents

1. National Implementation Strategy

In brief, the purpose of this "living document" is to provide an overview of activities, priorities, timelines, deliverables and institutional responsibilities. It will be tested on a small scale initially, and evolve from there. For further details, refer to the next section.

2. National HCWM Plan

A HCWM Plan fortifies the National Implementation Strategy with the key differences being more detail and inclusion of budget, allocating responsibility to parties/individuals. It clarifies direction for implementation. The HCWM Plan would comprise of some of the following elements:

- Launching a pilot project at representative health care facilities (HCFs), including all steps of the Implementation Strategy
- Assessing lessons learned from the pilot project for incorporation in the second-phase implementation steps
- Defining a HCWM team within existing organizational structures
- Gradually rolling out the Implementation Strategy, including a training program, to all other HCFs
- Investigating potential public-private partnerships, where relevant, to streamline and improve systems or service delivery
- Establishing budget requirements for capacity building and/or system strengthening activities

HCWM National Implementation Strategy

Currently, the GKoS is implementing HCWM programs without a National Implementation Strategy. In brief, the purpose of this "living document" is to provide an overview of activities, priorities, timelines, deliverables and institutional responsibilities. It will be tested on a small scale initially, and evolve from there.

Coherent planning helps to avoid unnecessary duplication of effort or neglect and thus benefits all relevant parties.

Strategy components

The National Implementation Strategy provides the MoH with a national approach that:

- Identifies and mobilizes key stakeholders and implementing partners to design an implementable plan for strengthening and synergizing resources and efforts
- Defines and prioritizes activities required for progress
- Assigns responsibilities within ministries and government agencies, hence promoting accountability
- Determines realistic timelines for completing activities needed to map progress
- Specifically describes deliverables so that progress can be measured and monitored and successive activities can proceed

National Implementation Strategy Schedule

The strategy (activity) schedules were developed based on the findings from the review of the current situation, international best practice, Swaziland Technical Working Group on HCWM, Health Care Waste Management Conference and strategy documents developed during this study.

The strategy schedules are divided into short- (<2 years), medium- (2–5 years) and long-term (>5 years) timeframes. Therefore, the timeframes included should merely be seen as illustrative. The timeframe may need to be adjusted to coincide with budget cycles, since many activities will require financial resource commitments.

The strategy document is intended to be a 'living" document and therefore, should be reviewed annually (or more often) to assess whether objectives are being met and whether revisions are needed. The document should accurately reflect the current situation and desired outcomes.

Implementation of activities follows specific objectives as identified in this Implementation Strategy document. The topics listed below were identified as priorities during the Health Care Waste Management Conference held in October 2011:

- National institutional agreements
- HCRW management system
- Segregation and containerization practices
- Facility collection and storage practices
- External collection and transportation practices
- Health care waste information system
- HCW pollution prevention initiatives
- Minimization and recycling initiatives
- Improved treatment and disposal practices
- Capacity building and community education

Where the responsibility is shared with another division or department, this is indicated within the responsibilities column accordingly.

- Ministry of Finance
- Ministry of Health-Environmental Health Department (EHD)
- Ministry of Labor
- Swaziland Environmental Authority

HCWM Implementation Strategy Schedule, 2013–2018

1. National institutional agreements

No.	Activity	Responsibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
A1	**Institutional agreements**												
A1.1	Hold a workshop to identify current gaps	MoH	X								Gaps document	US government (USG)	Completed
A1.2	Review agreements between the MoH and other ministries	MoH	X									Swaziland Environment Authority (SEA)	
A1.3	Create HCWM National Coordinating Committee	MoH-EHD					X				National Committee	MoH	
A1.4	Identify specific roles that each government department (regional, city, national and private) can play in HCRW management, and establish a legal framework	MoH-EHD		X							National framework document	World Bank (WB)	
A1.4.1	Identify EHOs at the government and generator level who will be responsible for overseeing HCW	MOH-EHD and HCF						X	X		Institutional organization	MoH	

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
	management activities as well as other health and safety issues												
A1.5	Collaborate to develop national policies for addressing minimization, identification, separation, handling, transport, treatment and disposal	MoH				X					National policy document	WB	
A1.6	Review National HCWM Plan	MoH-EHD								X	Revised National HCWM Plan	MoH	

2. HCW segregation and containerization practices

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2– 5 years	Long-Term >5 years	Deliverables	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
B1	**HCWM systems and guidelines**												
B1.1	Review and finalize NGHCWM document	MoH-EHD	X								NGHCWM document	WHO/USG	
B1.2	Develop SOPs and awareness documents on HCWM	MoH-EHD	X								SOPs and awareness documents	USG	
B2	**Procurement options for improved HCWM commodities**												
B2.1	Establish line-item budgets for procuring HCWM commodities within the hospital annual budget (i.e., fuel for incinerators, bin liners, sharps containers, and transfer containers)	MoH						X				MoH	
B2.2	Develop procurement and distribution guidelines for improved HCWM equipment and containers	MoH-EHD-MoH procurement						X			National product list for HCWM	MoH/WB	
B2.3	Support the mobilization of central agencies to develop recurring budgets to sustain HCWM practices in the	MoH-EHD							X			MoH	

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2– 5 years	Long-Term >5 years	Deliverables	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
	public facilities.												
B3	**Implementation and training**												
B3.1	Develop user-friendly training material (teaching posters and notes, posters, pamphlets, etc.) in line with the national SOPs and NGHCWM	MoH-EHD				X					Training materials	WB	
B3.2	Implement NGHCWM in all HCFs and universities through training and awareness program	MoH-EHD				X	X	X				WB	

3. HCW facility collection and storage practices

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
C1	**National Guidelines**												
C1.1	Develop the necessary guidelines for properly collecting and storing HCW within HCFs	MoH-EHD	X								NGHCWM	WHO/USG	
C2	**Documentation and guidelines**												
C2.1	Develop suitable SOPs and awareness material based on National Guidelines for proper collection and storage	MoH-EHD	X								SOP and awareness materials	USG	
C2.2	Develop training program for disseminating information on best operating practices in line with guidelines	MoH-EHD				X					Training program	WB	
C2.3	Distribute the information and conduct training and awareness program	MoH-EHD					X	X	X	X		MoH/WB	
C3	**Documentation flow**												
C3	Create standard documentation on movement of waste within a health facility	MoH-EHD	X								Reporting system		
C4	**Monitoring and**												

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
	enforcement												
C4.1	Develop a monitoring plan for improved internal collection and storage practices	MoH-EHD	X	X	X						Monitoring tool	USG/WB	
C4.2	Conduct regular inspections and audits with national standards and policies	MoH-EHD			X	X	X	X	X	X		MoH	

4. HCW external collection and transportation practices

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
D1	**Policy**												
D1.1	Influence the review and development of the necessary legislation to govern collecting and transporting HCRW	MoH-EHD SEA				X					National policy and regulation	WB	
D1.2	Strengthen and monitor the licensing system for transporters (drivers, handlers, and company) of HCRW	SEA MoH					X				Licensing and monitoring		
D2	**Documen-tation and guidelines**												
D2.1	Develop suitable standards document (chain of custody, goods declaration, and other documentatio n)	SEA MoH						X			Documen-tation	WB	
D2.2	Develop suitable guidelines, training and awareness-raising material for disseminating	SEA MoH							X		Training program		

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
	information on standards for collecting and transporting HCRW												
D2.3	Distribute the information and conduct training and awareness-raising programs	SEA MoH							X	X			
D3	**Regional/ national transport and treatment system**												
D3.1	Investigate the possibility of a national/ regional transport and treatment system of HCRW (e.g., hub-and-spoke system; public/private partnerships)	MoH-EHD			X						Feasibility study and project plan	USG	
D3.2	Conduct a regional pilot program	MoH-EHD					X	X			Pilot report	WB	
D3.3	Develop a regional and/or national system for transport, treating and disposing of HCRW	MoH-EHD								X	The development of a hub-and-spoke system for transporting and treating HCRW		

No.	Activity	Respons-ibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
D4	**Monitoring and enforcement**												
D4.1	Develop a monitoring plan for improved collection and transportation of HCRW	MoH-EHD SEA							X		Monitoring tool		
D4.2	Conduct regular inspections and audits	SEA MoH-EHD								X		MoH	

5. Improved treatment and disposal practices

No.	Activity	Responsibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
E1	**Policy**												
E1.1	Influence the review and development of the necessary policy to govern HCRW treatment and disposal	MoH-EHD SEA			X						National policy		
E1.2	Strengthen and monitor a licensing system for treatment and disposal facilities	SEA MoH Ministry of Labour (MoL)							X		Monitoring and licensing system		
E2	**Documentation and guidelines**												
E2.1	Develop suitable guidelines, training and awareness-raising material for disseminating information on best practices for HCRW treatment and disposal	MoH SEA	X	X	X	X	X				Guideline document and training program	USG/WHO/WB	
E2.2	Distribute the information and conduct training and awareness programs	MoH						X	X			MoH	
E3	**Treatment and disposal options**												
E3.1	Assist with upgrade of existing treatment facilities and introduce better operational practices in line	MoH SEA MoL	X	X	X	X	X	X	X	X	New incinerators or non-burn technologies	WB/USG	

No.	Activity	Responsibility	Short-term, 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
	with international best practice												
E3.2	Develop national regulations for incinerator operations	MoH SEA			X						Regulations	WB	
E3.3	Develop a training program on requirements and regulations for incinerator operations	MoH SEA				X					Training program	WB	
E3.5	Implement training program at all HCFs through training and awareness-raising programs	MoH SEA				X						MoH	
E4	**Treatment and disposal options**												
E4.1	Assess alternative treatment and disposal options (particularly for open pits at clinics)	MoH SEA								X		MoH	
E5	**Monitoring and enforcement**												
E5.1	Develop a monitoring plan for improved HCRW treatment and disposal	MoH-EHD SEA		X	X						Monitoring tool		
E5.2	Regularly inspect and audit all treatment and disposal facilities	MoH-EHD SEA		X	X	X	X	X	X	X		MoH	

6. Waste information system

No.	Activity	Responsibility	Short-term, 2 years						Medium-Term 2 –5 years	Long-Term >5 years	Deliverable	Funding source	Status
			1 – 12 months			12–24 months							
			4	8	12	16	20	24					
F1	**Preparation of a waste information system (WIS)**												
F1.1	Define and agree on categories of HCW	MoH-EHD	X								Clear definitions	WHO/USG	Completed
F1.2	Develop WIS to support regulations and national guidelines	MoH-EHD SEA						X			Functional of WIS	WB	
F1.3	Register/license waste service providers (in terms of the regulations)	MoH-EHO SEA						X	X				
F2	**Methodology, documentation and guidelines**												
F2.1	Investigate the most suitable practicable recording system (explore the options of an electronic data recording system)	MoH-EHD		X							Electronic system		
F2.2	Review and update waste monitoring system in line with regulations	MoH-EHD								X	Revised waste guidelines		
F3	**WIS implementation**												
F3.1	Implement the WIS within each region	MoH-EHD								X			

No.	Activity	Responsibility	Short-term, 2 years						Medium-Term 2 –5 years	Long-Term >5 years	Deliverable	Funding source	Status
			1 – 12 months			12–24 months							
			4	8	12	16	20	24					
F3.2	Introduce the WIS to waste generators, service providers and others through awareness-raising programs and guidelines on the WIS	MoH-EHD								X			
F4	**Analysis of WIS data**												
F4.1	Ensure each region has capacity to record and analyze the WIS data (staff, technical equipment, budget)	MoH-EHD								X	Functional WIS that is constantly being updated, monitored and analyzed		
F4.2	Record and analyze WIS data and use for future planning and decision-making	MoH-EHD								X			
F5	**Monitoring and enforcement**												
F5.1	Introduce mechanisms (penalties or incentives) to ensure waste system is used and information reported to each region when requested	MoH-EHO								X	80–100% participation		
F5.2	Audit the WIS system for HCW in line with the HCRW strategy, policies and	MoH-EHD								X	Audit report		

No.	Activity	Responsibility	Short-term, 2 years						Medium-Term 2 –5 years	Long-Term >5 years	Deliverable	Funding source	Status
			1 – 12 months			12–24 months							
			4	8	12	16	20	24					
	HCWM plan												
F5.3	Conduct comprehensive program review system to ensure it is still relevant; update as needed	MoH-EHD								2017	Assessment report		

7. HCW pollution prevention

No.	Activity	Responsibility	Short-term 2 years						Medium-Term 2 –5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
G2	**National/local policy**												
G2	Influence the drafting of national policy on pollution prevention	SEA MoH-EHD								X	National policy		
G3	**Monitoring and enforcement**												
G3.1	Revise monitoring tool to enforce requirements of the acts and regulations at the national and local levels	MoH-EHD SEA								X	Revised monitoring tool		

8. HCW minimization and recycling initiatives

No.	Activity	Responsibility	Short-term , 2 years						Medium-Term 2–5 years	Long-Term >5 years	Deliverable	Funding Source	Status
			1–12 months			12–24 months							
			4	8	12	16	20	24					
H1	**Legislation and policies**												
H1.1	Finalize, enact and implement policy regulations and plans for minimization and recycling	MoH-EHD SEA				X					Enact policy	WB	
H2	**Green procurement**												
H2.1	Assess and develop HCF greening information document and guidelines	MoH-EHD SEA								X	Guideline document		
H3	**Recycling**												
H3.1	Conduct a recycling economy study to assess the feasibility of expanding local opportunities for recycling	MoH SEA								X	Assessment report		
H3.2	Assess the possibility of cooperative agreements with industry and/or the introduction of public/private partnerships (PPPs)	MoH SEA								X	Cooperation or PPP agreement		

Conclusion: The Way Forward

The National Implementation Strategy is essentially an overview to facilitate and direct the development of a robust HCWM system. This overview needs to be unpacked into manageable and adaptable actions so that the HCWM plan can be easily implemented. Currently, the MoH has already begun this process with funds from the USG and the World Bank. It is crucial that this strategy be revisited and reviewed each year to update content where applicable, whether it is new activities, new funding, new responsibilities and/or new timelines.

Collaboration among all stakeholders is critical to move this forward. These stakeholders include suppliers and buyers; hospitals and health care providers; regulators; implementing partners and ministries; and leaders of local, regional, national and international institutions. Each group can contribute different assets such as tools and skills, enabling behavior, and techniques to monitor and measure the plan's progress and success. These stakeholders must take leadership positions in their areas of expertise and all work together to attain the goals set out by this National Implementation Strategy.

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Annex 1 : Conference Attendees

Ministry of Health	**Principal Secretary**
Benedict Xaba	Dr. Steven Shongwe

Name	**Organization**
Agnes Dlamini	MoH
Albert Mndzebele	MoH
Alfred Murye	University of Swaziland
Alson Kunene	Senior Health Administrator
Bongani Sigudla	National Health Care Waste Management (NHCWM) Coordinator
Cebile Dlamini	Mbabane Government Hospital
Celiwe Malinga	EHO, Mbabane Public Health
Constance Maziya	City of Mbabane
Constance Vilakati	MoH
Dr. B.Z. Radebe	Royal Swaziland Sugar Corporation
Dr. Mark Mills	Manzini/Mbabane Private Clinic
Dr. Mirira, Munamato	PEPFAR
Dr. Ernest Peresu	Ubumbo Sugar Limited Chief Medical Officer
Dr. R. S. Nxumalo	Ministry of Agriculture
Dr. Vusie Magagula	Deputy Director, MoH
Dr. Zizwe Cindzi	Ministry of Agriculture
Dr. Simon Zwane	Director, MoH
Dudu Dube	Principal Environmental Health Officer (PEHO), MoH
Dudu Mbuli	Regional Health Administrator
Dumsani Shongwe	Senior Health Planner
Dumsile Simelane	Good Shepherd Hospital
Edmund J. Dlamini	Chief Environmental Health Officer, MoH
Elmon Dlamini	EHO, Lubombo Region
Fikile Bulunga	Hospital Administrator, P/Peak
Funwako Dlamini	Shiselweni, RegionalEnvironmental Health Officer
Jabu Mthethwa	MoH
Jillian Zwane	MoH
Lili Simelane	MoH
Lungle Gumbi	Matsapa Town Board
Madzinane Sikelela	Mbabane City Council
Mandla Bhembe	EHO, Shiselweni Region
Maqhawe Magongo	NHCWM Coordinator
Mboni Dlamini	Swaziland Environment Authority
Mcebo Xaba	Good Shepherd Hospital
Mduduzi Dlmini	Swaziland Environment Authority
Mefika Zwane	Hospice@Home
Michael Jele	Ministry of Housing
Micheal Mndzebele	National Laboratory Administrator
Milton Lokothwako	EHO, Manzini Region
Mirriet Jonga	MoH
Mkhosi Khumalo	Hospital Administrator, Hlatikulu
Mlondolozi Dlamini	Regional Health Administrator
Mzwandile Mthethwa	Ministry of Labour
N. Ndlovu	Program for Appropriate Technology in Health
Natalie Kruse-Levy	PEPFAR
Nhlanhla Mnisi	Mankayne Hospital Administrator

Nicholas Manyatsi	EHO, Shiselweni Region
Nicole Pahl	SCMS
Nimod Dlamini	EHO, Shiselweni Region
Nkululeko Maphosa	Mbabane Government Hospital
Patricia Nkambule	MoH
Peter Ehrenkranz	PEPFAR
Phiwi Mabuza	Swaziland National AIDS Programme
Rejoice Nkambule	Deputy Director, MoH
Richard Mamba	City of Manzini
Samson Haumba	University Research Co.
Samuel Mkoko	Doctors Without Borders
Sandile Malaza	RFM Hospital
Sipho Shongwe	PEHO, MoH
St. Theresa Mncina	Nursing Manager, Public Health Unit (PHU)
Talent Dlamini	Mbabane Government Hospital
Thandie Gxaba	World Bank Consultant
Themba Simelane	Hospice@Home
Thembi Ntshangase	EHO, Mbabane PHU
Thembisile Khumalo	Chief Nursing Officer
Thoko Ngubeni	Regional Health Administrator
Thulile Dlamini	Quality Coordinator, MoH
Vera Habedi	Doctors Without Borders
Vusi Matsebula	
Vuyile Dlamini	Legal Advisor, MoH
Welcome Motsa	
William M. Shongwe	Regional Health Administrator
William Ndlela	University of Swaziland
Xolile Dlamini	Mbabane Government Hospital
Zakhele Soko	Good Shepherd Hospital
Zama Radebe	Matsapa Town Board
Zanele Dlamini	MoH