TERMS OF REFERENCE: SHORT-TERM TECHNICAL ASSISTANCE (CONSULTANCY)
TO CONDUCT A FEASIBILITY STUDY
ON THE MEDICAL WASTE MANAGEMENT SYSTEMS IN JAMAICA

1. BACKGROUND

Medical waste refers to any kind of infectious or hazardous waste that is generated in the immunization, diagnosis, treatment, and disposal of human beings or parts thereof, or in the production or testing of biologicals.

The Ministry of Health and Wellness along with the Regional Health Authorities (RHAs) Agencies and related organizations make up the public health system and are responsible for healthcare delivery across the island. A Ministry of Health study in 2005 indicated that approximately 1596 tonnes of waste is generated annually.

Over the years medical waste management has been plagued primarily with poor segregation and minimization strategies and practices. This has resulted in an overwhelming increase in medical waste, which until these issues are addressed, will always overburden the capacity of the system to treat and dispose of waste. With 83% of the total medical waste being generated by the health facilities in the public sector there is a great need for proper management strategies.

In 2021 a Feasibility Study was conducted by a World Bank Medical Waste Management Consultant. The focus of the study was to determine regional waste generation and capacity requirements for treatment, storage and collection and thereby identifying the capacity and infrastructure needs for medical waste management. However this study did not comprehensively address the waste generated. Its area of focus was primarily on infectious waste with minimal mention of the other categories of waste.

Within the public health sector infectious waste is regulated to some extent but hazardous waste (pharmaceutical, cytotoxic, chemical, radioactive) to a lesser extent. Their

generation rates and categories have not been documented which make it difficult to ascertain capacity and treatment option needs.

2. GOAL OF CONSULTANCY

- To support the Ministry of Health and Wellness by conducting a Feasibility Study which should identify national medical waste - generation, especially of hazardous waste, management, capacity requirements and infrastructure needs
- From the study the Consultant will present the most feasible technical and economic solutions and strategies to improve the medical waste management systems, along with the recommended legal framework to ensure the adherence to best practices and international standards

3. OBJECTIVES OF THE CONSULTANCY

- Assessment the national medical waste management systems identifying waste management practices, types of waste generated, with an emphasis on hazardous waste and the current treatment, storage and disposal capacity
- Identification of viable medical waste treatment options, infrastructure needs and siting for hazardous waste
- Evaluation of the legal framework pertaining to medical waste management to ascertain whether or not the legal requirements are being met
- Review of the proposed governance structure and organizational framework
- To report on the study findings with recommendations detailing the most feasible solutions to improve the efficiency and effectiveness of the medical waste management systems

4. SCOPE OF WORK

4.1 Task 1 - The Consultant will develop an 11 month work plan and implementation schedule to reflect the execution of the following tasks.

4.2 Task 2 - From the findings of the tasks below produce a Situational Analysis Report

4.3 Task 3 - Produce a Technical Report based on the activities listed below

Waste Segregation and Minimization Systems

- Visit all major hospitals, health centres and specialist institutions to include the National Laboratory Services and National Transfusion Service to review their systems of medical waste segregation, storage, transportation and disposal
- Conduct interviews with key stakeholders regarding waste segregation and waste minimization strategies

- Estimate the percentage of wastes which are being segregated, out of the total being generated
- Inspect the storage facilities and estimate the pre-collection volume of medical waste being generated and segregated
- For each of the hospitals visited, estimate the volume/bed/day of refuse. If there are wide variations among the hospitals visited, determine whether the variance is related to compliance with the source segregation system
- Estimate the total quantity of medical waste which would be generated if all hospitals were fully implementing adequate source segregation
- Provide an estimated breakdown in terms of the quantity of medical waste requiring:
  (i) special storage for radiation decay
  (ii) treatment in a medical waste facility
  (iii) amenable to recovery and recycling

Waste Generation

- Conduct interviews with waste generators to ascertain waste management practices
- Determine the quantity and character of medical wastes generated including pathological, infectious, sharps, pharmaceutical, chemical, cytotoxic and radioactive wastes
- Based on the records kept in the health facilities determine the volume and weight of medical wastes being collected. If data does not exist, weigh hospital waste loads for a period of at least 5 days
- Provide an actual/estimated amount and type of waste generated annually at each collection site
- Conduct quality testing to ascertain whether or not the waste is being treated according to specified standards
- Based on the economic level of the area, population growth projections, trends in hospital waste generation and source segregation, project the quantity and characteristics of medical wastes which are expected to be generated over the next 20 years

Collection, Storage and Transportation

- Record observations and make recommendations regarding the collection and transport mechanisms that should be utilised for the different types of HCW generated to ensure the most effective and integrated HCW management
- Make recommendations regarding storage specifications for the varying categories of waste

Treatment and Disposal Options

- Assess the types, quantities and sizes of medical waste materials and make recommendations for non-incineration technologies and facility sizes for treatment and disposal

- Recommendations should be made on the basis of capital cost, operating cost, ease of operation, local availability of spare parts, local availability of operational skills, demonstrated reliability, durability, and environmental impacts
- On the basis of this assessment and recommended technology, suggest a process flow (generation to disposal) for economic and environmentally sound management of medical wastes

4.4 Task 4: An Infrastructure Assessment Report should be generated based on the following

- Recommend an ideal site and size for the treatment and disposal facility
- Determine the optimum number and location(s) of facilities
- Detail the economies-of-scale to be considered for the number, location and size of the treatment and disposal facility
- Examine the travel times and distances for transportation from the various centers of medical waste generation to potential locations for treatment/disposal facilities
- Examine the travel times and distances to drive from the facilities to the location for disposal if not located in the same area
- Economically analyze whether the country would be best served by one or more than one treatment/disposal facilities

4.5 Task 5: Conduct desk top and literature reviews with a view to identify gaps or deficiencies and make recommendations regarding human resource and governance in an Organizational Report

Governance

- State whether a national or regionalised HCW treatment and disposal systems is the most feasible option
- Make recommendations on how should the HCW management services should be organised in terms of ownership (MOHW or RHAs)

Human Resource

- Make recommendations regarding the number and levels/categories of staffing for the efficient operations of the medical waste management system

Legal Framework

- Review the existing regulations, strategies, policies, and enforcement practices and relevant reports concerning the management of medical wastes, and specifically hazardous wastes
- Identify limitations and or deficiencies in the regulatory framework
- Develop specific recommendations on areas which need to be improved within the regulatory framework, so that the stakeholders, in the public health sector from generation

to disposal, have the appropriate incentives and disincentives to ensure proper waste management

4.6 Task 6: Develop a Financial Analysis Report

- Produce a financial report detailing the cost for implementing and operationalizing the proposed recommendations of the study

5. DELIVERABLE(S)

- A Situational Analysis Report
- A Technical Assessment Report
- An Infrastructure Assessment Report
- An Organizational Report
- A Financial Analysis Report
- Draft Feasibility Study Report and Findings Power Point Presentation
- Final Feasibility Study Report

6. QUALIFICATION AND EXPERIENCE

6.1 Education

- A graduate degree in Solid Waste Management, Environmental Engineering, Environmental management or any other related field

6.2 Experience

The Consultant to conduct the feasibility study will need to have:

- Extensive experience in medical waste management and design of treatment/destruction facilities.
- Practical knowledge of the pros and cons of various medical waste treatment/destruction options.
- Familiar with the assessment of technology options under the range of unique skill, management and financial conditions which exist in Jamaica.
- Experience in financial proposal for implementation of the study recommendations.

Resumes of the qualifications and experience of the consultant will be the key criteria used to evaluate the proposal.

6.3 Key Performance Indicators

- Excellent coordination with the team to obtain the necessary information
- Provision of comprehensive recommendations for quality improvement of information materials
- Timely and successful coordination with relevant parties

- Completion of tasks within set deadlines
- Quality of work/outputs

7. COMMENCEMENT DATE & PERIOD OF IMPLEMENTATION

The commencement date will be the day the contract is signed and implementation will be over a minimum of **eleven (11) months.**

8. REPORTING RELATIONSHIPS

The Consultant is ultimately responsible to the Director, Health Promotion and Protection Branch in the MOHW but shall have direct report to the Project Manager, Medical Solid Waste Management Project in collaboration with Director, Medical Solid Waste Management Unit.

9. PAYMENT

The Consultant will be compensated, based on the submission of approved deliverables and invoice in keeping with approved payment plan as follows:

Timeline	**Conditions for Remuneration**	**Percentage Payment**
TBD	Upon submission of an approved work plan/ implementation schedule and an admissible invoice	10%
	Upon submission of The Situational Analysis Report and an admissible invoice	10%
	Upon submission of the Technical Report and an admissible invoice	10%
	Upon submission of an Infrastructure Assessment Report and an admissible invoice	10%
	Upon submission of Organizational Report and an admissible invoice	10%
	Upon submission of Financial Analysis Report and an admissible invoice	10%
TBD	Upon completion of a draft comprehensive Feasibility Study Report as well as an admissible invoice	20%
TBD	Upon completion of a presentation on the findings of the study and final report as well as an admissible invoice	20%

10. SELECTION FRAMEWORK

10.1 Evaluation Criteria

The criteria and weighting system to be used in evaluating proposals are as follows:

- Technical Approach and Methodology (45%) – Understanding of assignment and expected outputs; Appropriateness of techniques for the data collection and evaluation
- Work Plan (25%) – Specification and sequencing of data collection activities; Timeline for Completion of Tasks; Arrangements for coordination of activities and administrative support services
- Qualification and Experience (30%) – this relates to the extent to which the qualifications, skills and experience match the competency requirements

10.2 Pass Mark

- Consultant(s) proposal must obtain a minimum mark of 70% of total marks
- Proposal(s) which do not obtain the pass mark will not be considered for further evaluation and their financials will be returned unopened