CONSULTING SERVICES PROJECT FOR INTEGRATED SOLID WASTE MANAGEMENT OF LAHORE CITY OF THE STATE OF PUNJAB IN PAKISTAN

MEDICAL WASTE MANAGEMENT REPORT

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CONTENT

PHOTOGRAPH LIST ........................................................................................................ iv

1. CURRENT SITUATION ............................................................................................................... 1
   1.1. Separate Collection of Wastes at Source and Temporary Storage ........................................ 1
   1.2. Transportation of Medical Wastes ....................................................................................... 3
   1.3. Incineration Plants: ............................................................................................................. 3
2. OPERATIONS PERFORMED ...................................................................................................... 4
3. OBJECTIVES AND EXPECTED RESULTS .................................................................................. 9
   3.1. Objectives ............................................................................................................................ 9
   3.2. Excepted Results................................................................................................................... 10
4. RECOMMENDATIONS ............................................................................................................... 11
   4.1. Legal Infrastructure .............................................................................................................. 11
   4.2. Improving Separate Collection of Medical Wastes at Source ............................................. 11
   4.3. Transportation of Medical Wastes inside Unit ................................................................... 13
   4.4. Temporary Storage of Medical Wastes ................................................................................ 14
   4.5. Training of Staff with respect to Medical Wastes .............................................................. 17
   4.6. Transportation of Medical Wastes from Temporary Storages ............................................. 18
   4.7. Medical Waste Disposal Methods ....................................................................................... 20
5. CONCLUSION ........................................................................................................................... 21
6. OUTPUTS .................................................................................................................................... 21
7. ANNEXES ................................................................................................................................... 22
ABBREVIATIONS

ISTAÇ A.Ş.: İstanbul Environmental Management Industry and Trading Company

LWMC: Lahore Waste Management Company
PHOTOGRAPH LIST

Photograph 1.1 Separate Waste Collection Containers................................................................. 1
Photograph 1.2 Infected Waste Collection Container and Infected Waste Image.......................... 2
Photograph 1.3 Green Colored Waste Collection Container for General Wastes ......................... 2
Photograph 1.4 Perforating and Cutting Wastes ........................................................................... 2
Photograph 1.5 Reviewing Temporary Storage Units ...................................................................... 3
Photograph 1.6 Medical Waste Transportation Vehicles ............................................................... 3
Photograph 1.7 Incineration Plant of the Private Hospital .............................................................. 4
Photograph 2.1 Cinnah Hospital Visit ............................................................................................ 5
Photograph 2.2 Cinnah Hospital Separate Waste Collection Applications ...................................... 5
Photograph 2.3 Cinnah Hospital Temporary Storage Unit .............................................................. 5
Photograph 2.4 Meeting held with Head Physician and Administrative Board of Muhammad Navaz Shariff Hospital .............................................................................................................. 6
Photograph 2.5 Muhammad Navaz Shariff Hospital Medical Waste Applications ....................... 6
Photograph 2.6 Children’s Hospital General View and Administrative Board ................................. 6
Photograph 2.7 Children’s Hospital Medical Waste Applications .................................................... 7
Photograph 2.8 Doctors Hospital Visit and Medical Waste Applications ......................................... 7
Photograph 2.9 Waste Management Company Incineration Plant .................................................. 8
Photograph 4.1 Waste Management Company Incineration Plant ................................................. 12
Photograph 4.2 Buckets and Boxes Made of Laminated Cardboard for Cutting and Perforating Wastes ......................................................................................................................... 12
Photograph 4.3 Intra unit Waste Separation Buckets ..................................................................... 13
Photograph 4.4 Intra unit Transportation Containers with Different Sizes ....................................... 13
Photograph 4.5 Medical Waste Temporary Storage Units .............................................................. 14
Photograph 4.6 View of Door and Cooling Part of Medical Waste Temporary Storage Unit .......... 15
Photograph 4.7 Medical Waste Temporary Storage Containers ..................................................... 16
Photograph 4.8 Medical Waste Transportation Sealing Component ............................................. 19
Photograph 4.9 Medical Waste Transportation Vehicle General View ......................................... 19
EXECUTIVE SUMMARY

Introduction

Management of medical wastes is one of the aspects requiring attention in integrated municipal waste management due to infection risk. Medical waste management comprises of 4 basic steps; classification of wastes at the source, collection, treatment by various methods and disposal at special sanitary landfills. For a proper medical waste management, it is required that these 4 steps work in a harmonious manner with each other. Establishment of an integrated systematic requires formation of a strong legal basis and audit mechanism.

Detections

In the scope of reviewing medical waste management, medical waste technical commission visited totally 4 hospitals in Lahore and several medical waste disposal sites between 03.07.2011 and 08.07.2011. The amount of waste generated at the hospitals correspond to 0,5-0,7 kg/day/bed. Given the solid waste characterization data, it is observed that there is a significant amount of medical waste within municipal wastes. This is an indication that there are problems regarding separate collection of medical waste at its source inside the healthcare organizations. Medical waste management is carried out in the scope of a communiqué issued by central government in 2005 and covering the hospital wastes. In the scope of this communiqué, each healthcare organization is held responsible for separate collection, temporary storage, transportation and disposal of the medical waste formed. This causes a problem for the healthcare organizations which do not have specialized technical staff. In addition, no inspection mechanism has yet been established or operated well by any municipality or governmental institution for follow-up of the system and the works carried out. Disposal process is carried out by 2 incineration plants in Lahore. It is required to follow-up plant operation parameters.

Recommendation

It is required to issue an individual detailed regulations for control of the medical wastes. A comprehensive Medical Waste Management Plan needs to be prepared at general and local level based on this regulations, powers and responsibilities should not only be left on the part of hospital management but governmental authorities need to be included in the system. Collection and disposal process of medical wastes might be carried out by private or public institutions controlled by local management.
Outputs

The outputs to be generated in the scope of this work package:

1. Medical Waste Management Plan
2. An exemplary intra-unit Management Plan
1. CURRENT SITUATION

Medical waste technical commission carried out on-site examinations and detections at three public hospitals (Cinnah hospital, Muhammad Nawaz Shariff Hospital and Children Hospital) and one private hospital (Doctor’s hospital) in Lahore in the scope of the studies carried out with regards to allocation, collection and temporary storage of medical wastes between 03.07.2011 and 08.07.2011. The medical waste applications at the hospitals (allocation, temporary storage, disposal) are carried out in the scope of a notice issued by central government in 2005 and covering all solid wastes. In this scope, municipalities and governmental authorities have no liability with respect to medical waste applications, controls and inspections. Healthcare organizations are held responsible for all the processes ranging from formation of medical waste to disposal in accordance with this notice.

1.1. Separate Collection of Wastes at Source and Temporary Storage

Waste management varies according to hospital at Lahore. The wastes are collected in three groups at some hospitals. Waste collection application at Cinnah Hospital which we visited is carried out using red, yellow and green buckets (Photograph 1.1).

![Photograph 1.1 Separate Waste Collection Containers](image)

*Yellow Bucket*, yellow waste bag is placed inside this bucket which is used for the wastes classified as hazardous. Blood, wastes contaminated with blood, wastes of human tissues and organs at the hospitals are collected inside these buckets in the scope of hazardous waste.

*Red Bucket*, red waste bag is placed inside this bucket which is used for the infected wastes. It is observed that while body parts of the injectors are collected in this bucket, injector nozzles are collected in a different box.
Photograph 1.2 Infected Waste Collection Container and Infected Waste Image

Green Bucket, a white waste bag is inserted in the bucket which is used for the general wastes from services (packaging wastes, food wastes etc.). However, it was detected that infected wastes were also mixed in the green bucket as a result of observations.

Photograph 1.3 Green Colored Waste Collection Container for General Wastes

Perforators and Cutters: After pinpoints are separated in cutting apparatus, they are collected in yellow boxes along with other cutting and perforating wastes and the boxes are inserted in yellow bags when they are full.

Photograph 1.4 Perforating and Cutting Wastes

Temporary Storage: At some of the healthcare organizations in Lahore, it was observed that medical wastes are stored temporarily, however warehouses were unsatisfactory in physical and technical terms (lack of cooling mechanism, insufficient warehouse cleaning, bacteria and virus adhesion on floor and walls, lack of text or symbol indicating the type of waste on the doors etc.) It
was seen that some hospitals did not have a waste warehouse at all and temporary storage was made in the terrace of the hospital in the absence of any closed area, it was seen that bags were left open and wastes were distributed around.

![Photograph 1.5 Reviewing Temporary Storage Units](image1)

**1.2. Transportation of Medical Wastes**

The number of existing vehicles used for transportation of medical wastes at Lahore is 6. 2 of these vehicles belong to children’s hospital and the remaining 4 belong to hospital waste management company. It was observed that the transportation vehicles belonging to children’s hospital had interior body surface made of stainless steel and vehicle bodies had shelf system in the interior. There is no insulation system on the body doors of the vehicles.

![Photograph 1.6 Medical Waste Transportation Vehicles](image2)

**1.3. Incineration Plants:**

Currently, there are two incineration plants at Lahore. One of these plants is established in Children’s Hospital and has an incineration capacity of 200 kg hourly. Disposal of 16 public hospitals is carried out in this plant. The other medical waste disposal plant operates as medical waste incineration plant of a private hospital. Medical wastes of 165 healthcare organizations from Lahore and outside Lahore are taken to this plant and disposed at this plant. The capacity of this plant is approximately 250-300 kg/hour.
2. OPERATIONS PERFORMED

Medical waste team both exchanged technical information with LWMC company officers and completed the programme relevant to medical waste management by site visits in the scope of technical trip to Lahore between 03.07.2011 and 08.07.2011.

1. Day: An introduction meeting was held with the participation of LWMC company officers and officers of some healthcare organizations on the first day of the programme. A detailed presentation concerning formation of medical waste concept, committees established by the countries with regards to medical wastes, requirements for allocation of medical wastes, transportation to temporary warehouses, temporary storage and disposal was made by our team in this meeting. The introduction movie describing the applications from İSTAÇ A.Ş. was shown subsequent to presentation. Many subjects concerning medical waste concept were handled in the question-answer session following the video presentation.

2. Day: Cinnah Hospital was visited on the 2nd day of the programme Vice head physician informed our team of hospital and medical waste applications. It was indicated that the hospital was the 2nd biggest hospital of Lahore, patient circulation was around 4000-5000 daily and hospital had a bed capacity of 1450 beds. It was stated that daily medical waste amount formed at the hospital was around 370 kg/day.
Our team inspected the medical waste applications on-site in emergency department, maternity department and pathology laboratory of the hospital and visited temporary medical waste storage unit of the hospital.

Muhammad Navaz Shariff Hospital was visited following Cinnah Hospital visit. It was stated that capacity of the hospital was 200 beds and daily waste capacity was nearly 25-30 kg/day. Waste applications of the hospital were reviewed following Muhammad Navaz Shariff Hospital Information Meeting. Emergency unit and temporary storage unit of the hospital were visited. It was seen that temporary storage of the medical wastes was made openly in a place at terrace floor.
Photograph 2.4 Meeting held with Head Physician and Administrative Board of Muhammad Navaz Shariff Hospital

Photograph 2.5 Muhammad Navaz Shariff Hospital Medical Waste Applications

3. Day: Children’s hospital was visited on the 3rd day of the programme. Head Physician of the hospital, Prof. Dr. Ahsan Waheed Rathore informed our team of the hospital. It was stated that Children’s Hospital was the biggest and most comprehensive hospital for the children in South Asia and had a capacity of 684 beds and served 130 thousand patients yearly. Daily waste of the hospital is nearly 200 kg/day. There is one medical waste incinerator in the hospital.

Photograph 2.6 Children’s Hospital General View and Administrative Board
Doctors Hospital was visited after Children’s Hospital. General Manager of the Hospital, Zia Ul Hassan Bokhari informed our team of the institution. It was stated that occupancy rate of the hospital was 60%, bed capacity was 220 and daily medical waste amounted to approx. 140 kg/day. It was observed that a waste management plan was established in the hospital without going into particulars. Medical wastes of the hospital are disposed by Hospital Waste Management Company. Hospital services were visited and medical waste applications and temporary storage unit were reviewed.

Hospital Waste Management company was visited following children’s hospital visit. This company receives medical wastes of 165 healthcare organizations at Lahore using 4 medical waste
collection vehicles and also disposes medical wastes of some healthcare organizations outside Lahore. Pharmaceutical wastes are also collected and disposed by this company. Incineration plant is established inside the city and in the hospital garden. There are two incineration chambers in the plant which was established by an American company.

Photograph 2.9 Waste Management Company Incineration Plant
3. OBJECTIVES AND EXPECTED RESULTS

3.1. Objectives

The fundamental objective of waste management is to collect, transport and dispose the wastes in the most economic manner without damaging human health and environment. Since the beginning of twentieth century, it has been understood that success could not be achieved without cooperation of the society in respect of waste management although this has been an issue in the agendas of the governments. From the perspective of human and environment, it is observed that the medical wastes formed in the hospitals do not only jeopardize surrounding of the hospital and the patients but also threat entire environment and community health. Management of medical wastes is required for the purpose of ensuring safety of healthcare staff, society and environment as well as improving and maintaining the prestige and hygiene level of the hospital.

The primary objective at Lahore at the beginning of Medical Waste Management is to establish a sustainable medical waste regulations by reviewing Regulations of Management of Hospital Wastes issued by Ministry of Environment of Pakistani Government in 2005 and taking into account local and international requirements. However, the primary objectives are determined as follows in medical waste management;

1. Identification of the wastes within hospital, classification of the same and maintaining the waste records
2. Collecting, transporting and ensuring the medical wastes generated at Lahore in a planned manner,
3. Determination of number of vehicles, equipment and staff required in the scope of collection and transportation,
4. Determination of internationally valid collection method in collection of medical wastes,
5. Determination of the most convenient method for disposal of medical wastes,
6. Establishment of temporary storage fields or container system for each hospital,
7. Initiation of the works related to obtaining license for both medical waste disposal plants and the vehicles transporting medical waste, addition of this article while revising medical waste regulations,
8. Raising awareness among hospital employees, patients and neighbour community with respect to medical wastes through training or brief notes,
9. Establishment of a medical waste plan at national and regional level, which is based on internationally acceptable environment management standards,
3.2. Expected Results

As a result of aimed works, following will be ensured as well as medical waste management plan established for the purpose of managing medical wastes in a systemic and sustainable manner;

- It will be ensured that the system is maintained in a controlled and sustainable manner since all the processes (collection, transportation and disposal) relevant to medical waste will be carried out from one place by the employees assigned within hospital. Also, state based control mechanism and legal sanctions will play an incentive role in collection, transportation, storage and disposal of medical wastes at the hospitals.

- Recording the wastes will facilitate both arrangement of waste statement forms and preparation of waste management plans.

- Identification and classification of all the wastes within hospital; placement of containers of sufficient size and number according to type and quality of the waste within hospital will ensure healthy performance of collection system.

- All the wastes will be stored in a controlled manner and sent to disposal site within a system upon establishment of temporary storage areas or container system.

- Use of inconvenient medical waste vehicles and illicit transportations will be avoided by means of licensing proceedings. Operation conditions, measurements related to plant and compliance with legislation will be recorded, filed and inspected upon licensing the disposal plant and disturbance to environment and human health will be avoided.
4. RECOMMENDATIONS

It is required to establish and implement the principles, policies and programmes as well as legal, administrative and technical procedures for management of medical wastes; prevention of releasing them to the receiving environment directly or indirectly in a manner to harm environment and human health from their production to disposal, collecting them separately at the source without harming environment and human health, transporting inside a unit, temporary storage, transportation and disposal of such wastes. The system needs to be planned accurately and based on a solid ground so that it could be maintained in a healthy and sustainable way.

4.1. Legal Infrastructure

In the light of detection studies and subsequent evaluations, it is required to establish the legal infrastructure in order to achieve the medical waste management system aimed at Lahore. Each hospital is held responsible for accurate management and final disposal of the wastes generated by it pursuant to Notice on Management of Hospital Wastes issued by Ministry of Environment of Pakistan Government in 2005. In this notice which covers all the wastes of the hospital, it is observed that the institutions under state are not given responsibility directly and follow-up could not be made healthily. Powers and responsibilities of public institutions and medical waste generators should be written explicitly in medical waste management. Inspection mechanism should be established as authorized by public institutions as a result of establishment of legal infrastructure and management plans. This mechanism must be responsible for control and periodic inspections of all activities of state authority from generation of medical waste to its disposal and sanctions must be imposed in case of conflicting with the relevant legislation. Disposal of medical waste might be carried out with public or private sector.

4.2. Improving Separate Collection of Medical Wastes at Source

Medical wastes should be collected separately at source without mixing with other wastes during their generation by the relevant healthcare personnel, particularly physicians, nurses, midwives, veterinaries, dentists, laboratory technical staff. Collection equipment should be kept at an appropriate point close to the source where waste is generated. Medical wastes should not be mixed with domestic wastes, packaging wastes and other wastes (radiation and hazardous). The wastes should be checked with radioactive and metal detectors before collecting from the units. Thus, radioactive or similar materials are not mixed into medical wastes. Colourful plastic bags of 100 micron thickness which are resistant against tearing, being punctures, blowing and transportation and which bear “International Biohazard” emblem and “ATTENTION MEDICAL WASTE” phrase on both sides must be used during collecting the medical wastes.
The bags must be filled at ¾ at maximum and closed tightly. These bags are not recyclable and reusable in any manner. Content of medical waste bags can’t be compressed, can’t be removed from bag, can’t be emptied and transferred into another container. Liquid medical wastes must be condensed with adsorbent material and placed into above-mentioned bags.

Cutting and penetrating wastes must be collected inside plastic or similar laminated cardboard boxes or containers which are durable against perforation, tearing, breaking and blowing, are water-proof and leak-proof, are not possible to open and be mixed and bear “International Biohazard” emblem and “ATTENTION! CUTTING and PERFORATING MEDICAL WASTE” phrase.

These collection containers are filled ¾ at maximum, closed tightly and placed into red plastic bags. Perforating-cutting waste containers can’t be compressed, opened, emptied and recovered once filled.

Medical waste bags and perforating-cutting waste containers are replaced when they are filled ¾. New bags and containers must be kept at source of the waste or close to it as ready-to-use.
The wastes generated at healthcare organizations are collected in bags with different colours that can be distinguished easily from each other.

Photograph 4.3 Intra unit Waste Separation Buckets

4.3. Transportation of Medical Wastes inside Unit

Medical waste bags must be collected and transported inside units by staff trained for this job by use of tools with wheels and cover, which are made of plastic or similar material, which do not have sharp edges that may cause damage or perforation on the bags during loading-unloading and which are easy to load, empty, clean and disinfect and which are allocated only for this work.

Photograph 4.4 Intra unit Transportation Containers with Different Sizes

The tools used for transporting the medical wastes inside a unit will be orange and bear “International Biohazard” emblem and “Attention! Medical Waste” phrase. Medical waste bags must be loaded into waste transportation vehicles as tightly closed and without being compressed, contact with hand or body should be avoided during collection and transportation.
Waste bags should never be transported by hand. Waste chimneys and moving belts can’t be used during transportation. Medical wastes and domestic wastes can’t be loaded into the same vehicle and transported in the same vehicle. Waste collection vehicles must be cleaned and disinfected regularly every day. Wastes should be emptied securely in case any bag blows or spills in the vehicles and transportation vehicle is disinfected immediately, the staff who is assigned to transport the medical wastes inside unit are required to wear special clothes during transportation.

4.4. Temporary Storage of Medical Wastes

According to Turkish legislation, the units with a bed capacity of 20 at least are liable for building a temporary waste storage; the units with fewer beds are liable for having containers for the same function. Wastes are kept in such storages or containers before transporting to a disposal site. Keeping time might be extended to one week providing that temperature inside the temporary waste storage is below 4 °C.

Properties of Temporary Medical Waste Storage

- Temporary waste storage must be built as a closed place with two sections. Medical wastes should be collected in the first section while domestic wastes are collected in the second section.

- The volume of temporary waste storage is planned to cover the wastes generated for two days at least.
• Floor and walls of the storage should be covered with a robust, impermeable material which does not retain microorganism and dirt and which is easy to disinfect.

• Sufficient illumination should be provided in the storages and storages should be cooled specially in hot regions.

• Storage doors must be opened outside or must be sliding type. Doors should always be clean and painted. “Attention! Medical Waste” phrase should be written on the door of the section where medical wastes are kept.

![Photograph 4.6 View of Door and Cooling Part of Medical Waste Temporary Storage Unit](image)

• Storage doors should always be kept closed and locked when they are not used, unauthorized access must be prohibited. Storage and its doors should be built not to allow any animal to enter.

• Interior and doors of temporary waste storages should be built in sizes to allow the staff to work easily, to enable the wastes to be emptied, stored and loaded easily.

• Temporary waste storage is built in places where waste transportation vehicles can access and approach easily.

• Temporary waste storage can’t be built nearby the places involving intense human and patient traffic such as hospital entrance and car park as well as food storage, preparation and sales places.
• Cleaning and disinfection of the section including medical wastes is carried out dry. Section is cleaned, disinfected and medicated if required, after wastes are emptied. After the wastes spilled around as a result of tearing or emptying of a bag including medical waste are collected using appropriate equipment and liquid wastes are condensed by appropriate adsorbent material, such wastes are placed into colourful plastic bags again and section is disinfected along with the equipment used.
• In the section including domestic wastes, there must be a drain system with a grate connected to sewerage system and a pressurized water faucet for cleaning the section easily. Section should be cleaned, disinfected and medicated if required, after wastes are emptied.
• Cleaning equipment, protective clothing, waste bags and containers should be stored in places close to temporary waste storages.

Using the Containers as Temporary Waste Storage

The units which have no bed or have less than 20 beds can use containers as temporary waste storage. The containers to be used for this purpose must have the following technical properties:

Photograph 4.7 Medical Waste Temporary Storage Containers

There must be adequate number of containers with a size to include the medical wastes generated for two days at least. Containers must be placed within the parcel borders involving the unit where they are used, at places getting the sun directly and far from the places involving intense human and patient traffic such as hospital entrance and car park as well as food storage, preparation and sales places.
Interior surfaces of the containers involve sharp edges and vertical corners that might lead the bags to be damaged or perforated during loading-unloading. Overlapping surfaces are combined to each other by slight turns.

The covers of containers must always be kept closed and locked when they are not used, unauthorized access must be prohibited. Covers must be designed and built as not to allow any animal to enter inside the container.

Exterior surface of the containers are painted in orange, “International Biohazard” emblem with an appropriate size to see and with black colour is attached on them as well as “Attention! Medical Waste” phrase, which is also written with black letters.

Containers must always be clean and painted.

Containers are cleaned and disinfected everyday after emptying wastes or immediately following any accident.

**Temporary Storage of Medical Wastes Generated at Small Quantities**

Medical waste bags and medical wastes collected with cutting-perforating waste containers are transported to nearest temporary waste storage by use of medical waste transportation container. In case this is not possible, the medical wastes generated must be collected by medical waste collection and transportation vehicle of the relevant unit. In this case, medical wastes should be preserved safely and placed into a second waste bag if required. Wastes must not be left outside before medical waste collection vehicle arrives, they must not be mixed with domestic wastes and put into containers in which domestic wastes are collected.

**4.5. Training of Staff with respect to Medical Wastes**

The healthcare organizations which generate medical waste and the companies which are responsible for its disposal must ensure periodic training of the staff in charge of medical waste management. In addition, routine health scanning of the staff that is in charge of collection and transportation of the waste inside the hospital must be carried out. The courses regarding training must be organized at different training levels with specialist organizations. Following issues must be handled firstly in such courses:

- Informing and motivating the staff.
- Identifying and classifying the wastes.
Allocating the wastes at their source, preparing them properly for transportation and storage inside the hospital.

Selection and preparation of appropriate equipment and materials

Supply of appropriate protective equipment for the staff and use of them by the staff.

Maintenance, cleaning, disinfection of collection and transportation equipment and temporary storage of wastes in the healthcare organization.

Final disposal methods and technologies

Implementation stages according to Medical Waste Management Plan

4.6. Transportation of Medical Wastes from Temporary Storages

Medical waste vehicles:

- Medical Waste Vehicle must be completely closed, interior must be covered with stainless material, vehicle must be easily clearable, have a smooth surface and have impermeability feature.

- Their exterior surfaces must be painted in orange, there must be phrase and emblem indicating it is a “medical waste transportation vehicle” which can be perceived easily and the vehicles must have been prepared for this duty.
In addition, vehicles must be certified either.

- The vehicles must be equipped with cooling equipment considering the climate conditions of the country. All the documents required for transportation must be kept in the vehicles.
- Vehicle disinfectant must be used for cleaning the vehicles.
  The chemicals used must not contain carcinogen.

**Medical Waste Transportation Staff:**

The staff must go through health controls regularly. They must be trained with respect to occupational risks and have competence in this regard.
The garments of these teams include specially-manufactured clothing, steel footbed boots against injuries as a result of stinging and cutting as well as glasses, mask, bonnet and gloves against the damages by way of inhaling and infection.

In addition, medical waste staff must ensure their protection against possible bacteria and virus by using hand disinfectants.

4.7. Medical Waste Disposal Methods

The medical waste disposal methods used commonly in Turkey are sterilization and incineration. Disposal of medical wastes can be carried out by a public organization or private companies.

**Sterilization**

The disposal method which ensures complete removal of any microbial organisms including bacteria spores by physical, chemical, mechanical methods and radiation (irradiation) or minimizing the level of such microorganism by 99,999%.

**Incineration**

This method allows making the medical wastes harmless by incinerating at high temperatures in special furnace and reducing their volume significantly.

The wastes containing high level of mercury and cadmium such as broken thermometers, used batteries, the radiological wastes containing silver salts, the ampoules containing heavy metals and pressurized containers can’t be exposed to incineration process. Another important aspect in incineration is carrying out the emission measurements. A study needs to be conducted in this respect. Moving the existing incineration plants in Lahore out of city is highly important for human and environment health.
In disposal of wastes, there are alternative disposal systems worldwide according to amount and cost. The most common systems are Sterilization and incineration systems.

After establishing the medical waste management plan and preparing legal infrastructure, it will be recommended how to dispose the medical wastes ultimately in Lahore.

5. CONCLUSION

As specified at the beginning of the report, medical wastes require a management system just like the other wastes. The notice issued in 2005 and covering all wastes seems to be inadequate for management of medical wastes. Improvement of the notice issued in 2005, explicit identification of the shareholders responsible for medical waste management and establishment of inspection/control mechanism will enable the system to be extremely successful. Detailed medical waste management plans should be established in the scope of this notice.

6. OUTPUTS

The outputs expected from work package upon completion will be as follows.

1. Medical Waste Management Plan
2. An exemplary intra-unit Management Plan
## 7. ANNEXES

### Annex 1

**EXEMPLARY INTRA UNIT WASTE MANAGEMENT PLAN FORMAT**

### I-GENERAL INFORMATION

| I.1. | NAME OF THE UNIT               |
| I.2. | ADDRESS                      |
| I.3. | TELEPHONE NUMBER             |
| I.4. | FAX NUMBER                   |

### II-ADMINISTRATIVE INFORMATION

| II.1. | AFFILIATED INSTITUTION OF THE UNIT |
| II.2. | TYPE OF THE UNIT                |
| II.3  | NUMBER OF BEDS                  |
| II.4  | MEDICAL WASTES RESPONSIBLE      |
| II.5  | CONTACT PHONES OF MEDICAL WASTES RESPONSIBLE |

### III-WASTE MANAGEMENT

#### III.1. WASTE MINIMIZATION

- III.1.a) The operations to be carried out for the purpose of reducing formation and amount of domestic wastes.
- III.1.b) The operations to be carried out for the purpose of reducing formation and amount of packaging wastes.
- III.1.c) The operations carried out for the purpose of reducing formation and amount of medical wastes.
- III.1.d) The operations carried out for the purpose of reducing formation and amount of hazardous wastes.

#### III.2. SEPARATE COLLECTION OF WASTES AT THEIR SOURCES

- III.2.a) Separate collection of domestic wastes at their sources, collection equipments to be used for this purpose and properties of such equipment
- III.2.b) Separate collection of packaging wastes at their sources, collection equipments to be used for this purpose and properties of such equipment
- III.2.c) Separate collection of medical wastes (including cutting-perforating wastes) at their sources, collection equipments to be used for this purpose and properties of such equipment
- III.2.d) Separate collection of hazardous wastes at their sources, collection equipments to be used for this purpose and properties of such equipment

#### III.3. TRANSPORTATION OF WASTES, EQUIPMENT AND TOOLS TO BE USED IN TRANSPORTATION

- III.3.a) Transportation of domestic wastes, tools to be used for the purpose of transportation
- III.3.b) Transportation of packaging wastes, tools to be used for the purpose of transportation
- III.3.c) Transportation of medical wastes, tools to be used for the purpose of transportation
- III.3.d) Transportation of hazardous wastes, tools to be used for the purpose of transportation

#### III.4. PLACES INVOLVING WASTE COLLECTION EQUIPMENTS, COLLECTION SCHEDULES AND TRANSPORTATION ROUTE

- III.4.a) Places involving domestic waste collection containers, collection time and route to be followed by waste collection vehicle
- III.4.b) Places involving packaging waste collection containers, collection time and route to be followed by waste collection vehicle
- III.4.c) Places involving medical waste collection containers, collection time and route to be followed by waste collection vehicle
- III.4.d) Places involving hazardous waste collection containers, collection time and route to be followed by waste collection vehicle

#### III.5. TEMPORARY STORAGE SYSTEMS

- III.5.a) Place and properties of domestic waste temporary storage (for units with 20 beds and over)
- III.5.b) Place and properties of medical waste temporary storage (for units with 20 beds and over)
- III.5.c) Places containing domestic waste temporary storage containers and properties of containers (for units with 20 beds and over)
- III.5.d) Places containing medical waste temporary storage containers and properties of containers (for units with 20 beds and over)
III.5.e) The closest temporary storage field where medical wastes will be transported for temporary storage (for the units without bed and units specified in Annex-1 to Regulations)

III.6. CLEANING AND DISINFECTION OF COLLECTION EQUIPMENTS
III.6.a) The operations to be carried out for cleaning and disinfecting medical waste transportation vehicles, temporary waste storages or containers
III.6.b) Disinfectants to be used for the purpose of disinfection.

III.7. PRECAUTIONS AND ACTIONS TO BE TAKEN IN CASE OF ACCIDENT
III.7.a) The precautions and actions to be taken in case of injuries likely to occur during collection of medical wastes, intraunit transportation and temporary storage
III.7.b) The precautions and actions to be taken in case of spillages and expansions likely to occur during collection of medical wastes, intraunit transportation and temporary storage
III.7.c) Informing, recording and reporting spillage-expansion and other accidents likely to occur during collection, intraunit transportation and temporary storage of medical wastes.

III.8. RESPONSIBLE PERSONNEL
III.8.a) Responsible staff in charge of collecting and packaging domestic wastes and their job definitions
III.8.b) The personnel in charge of collecting and transporting medical wastes, their job definitions and special clothing to be used during operation
III.8.c) Personnel responsible for operating temporary storage/temporary waste storage containers and their job definitions

III.9. RECORDING AND REPORTING
III.9.a) Determination and recording of medical waste formed
III.9.b) Personnel in charge of recording and reporting
ANNEX 2

MEDICAL WASTE MANAGEMENT PLAN

I-GENERAL INFORMATION

I.1. NAME OF MUNICIPALITY:
I.2. ADDRESS:
1.3 FAX NUMBER:
I.4. FAX NUMBER:
I.5. RESPONSIBLE OF MEDICAL WASTE MANAGEMENT AND CONTACT PHONES:

II-MEDICAL WASTE MANAGEMENT

II.1. MEDICAL WASTE RESOURCES
Names, addresses, phone numbers, number of beds, temporary storage systems and medical waste amounts of healthcare organizations within the borders of the municipality.

II.2. TRANSPORTATION OF MEDICAL WASTES
II.2.a) Equipments and vehicles to be used in collection and transportation of medical wastes, license plates, capacities and license numbers
II.2.b) Medical waste collection schedule, days and times to collect wastes of healthcare organizations, route to be followed by medical waste transportation.
II.2.c) Names of the personnel in charge of collecting and transporting the medical wastes, their job definitions and definition of special garments to be worn by them.

II.3. DISPOSAL OF MEDICAL WASTES
II.3.a) Place of medical waste disposal plant
II.3.b) The methods to be applied for the purpose of disposal, outline of disposal process, date and number of the license obtained for disposal plant
II.3.c) Names of the staff assigned in medical waste disposal plant and their job definitions
II.3.d) The operations to be carried out and the precautions to be taken with respect to collection, transportation and disposal of domestic wastes
II.3.e) Precautions and actions to be taken in emergencies

II.4. CLEANING AND DISINFECTION OF TRANSPORTATION EQUIPMENTS
II.4.a) Operations to be carried out for cleaning and disinfecting the medical waste transportation vehicles and other equipments
II.4.b) Disinfectants to be used for the purpose of disinfection.

II.5. PRECAUTIONS AND ACTIONS TO BE TAKEN IN CASE OF ACCIDENT
II.5.a) The precautions and actions to be taken in case of injuries likely to occur during transportation and disposal of medical wastes
II.5.b) The precautions and actions to be taken in case spillages-expansions likely as well as other accidents to occur during transportation and disposal of medical wastes
II.5.c) Informing, recording and reporting spillage-expansion and other accidents likely to occur during transportation and disposal of medical wastes.

II.6. RECORDING AND REPORTING
The operations to be carried out for recording and reporting the amount of the medical waste collected, transported and disposed and the staff responsible for such operations