Islamic Republic of Afghanistan
Ministry of Public Health

COMPREHENSIVE HEALTH CARE WASTE MANAGEMENT PLAN (HCWMP)
FOR THE SYSTEM ENHANCEMENT FOR HEALTH ACTION IN TRANSITION (SEHAT)
PROJECT

October, 2014
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AD</td>
<td>Auto Disabled</td>
</tr>
<tr>
<td>AHNSS</td>
<td>Afghanistan Health and Nutrition Sector Strategy</td>
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<tr>
<td>ARTF</td>
<td>Afghanistan Reconstruction Trust Fund</td>
</tr>
<tr>
<td>BHC</td>
<td>Basic Health Centre</td>
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<tr>
<td>BPHS</td>
<td>Basic Package of Health Services</td>
</tr>
<tr>
<td>CBHC</td>
<td>Community Based Health Center</td>
</tr>
<tr>
<td>CBR</td>
<td>Capacity for Result</td>
</tr>
<tr>
<td>CDC</td>
<td>Center for Disease Control and Prevention</td>
</tr>
<tr>
<td>CHC</td>
<td>Comprehensive Health Centre</td>
</tr>
<tr>
<td>CWTF</td>
<td>Common Waste Treatment Facility</td>
</tr>
<tr>
<td>EC</td>
<td>Environmental Clearance</td>
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<tr>
<td>EMP</td>
<td>Environment Monitoring Plan</td>
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<tr>
<td>EMS</td>
<td>Environmental Management System</td>
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<tr>
<td>EPHS</td>
<td>Essential Package of Health Services</td>
</tr>
<tr>
<td>ESMF</td>
<td>Environmental &amp; Social Management Framework</td>
</tr>
<tr>
<td>GDo PM</td>
<td>General Directorate of Preventive Medicine</td>
</tr>
<tr>
<td>GIZ</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)</td>
</tr>
<tr>
<td>GoA</td>
<td>Government of Afghanistan</td>
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<tr>
<td>HCS</td>
<td>Health Care Services</td>
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<tr>
<td>HCU</td>
<td>Health Care Unit</td>
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<tr>
<td>HCW</td>
<td>Health Care Waste</td>
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<tr>
<td>HCWM</td>
<td>Health Care Waste Management</td>
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<td>HCWMP</td>
<td>Health Care Waste Management Plan</td>
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<tr>
<td>HFs</td>
<td>Healthcare Facilities</td>
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<tr>
<td>HMIS</td>
<td>Health Management Information System</td>
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<tr>
<td>HNS</td>
<td>Health and Nutrition Sector</td>
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<tr>
<td>HW</td>
<td>Health Worker</td>
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<tr>
<td>IMEP</td>
<td>Infection Management and Environment Management Plan</td>
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<tr>
<td>IP</td>
<td>Infection Prevention</td>
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<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
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<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
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<tr>
<td>MOPH</td>
<td>Ministry of Public Health</td>
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<tr>
<td>MSW</td>
<td>Municipal Solid Waste</td>
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<tr>
<td>NEPA</td>
<td>National Environmental Protection Agency</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<tr>
<td>PPA</td>
<td>Performance-based Partnership Agreement</td>
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<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
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<tr>
<td>PPD</td>
<td>Provincial Project Directorate</td>
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<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
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<tr>
<td>RBP</td>
<td>Results Based Planning</td>
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<tr>
<td>SC</td>
<td>Sub-Centre</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>SEHAT</td>
<td>System Enhancement for Health action in Transition</td>
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<tr>
<td>SHARP</td>
<td>Strengthening of Health Activities for the Rural Poor</td>
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<tr>
<td>SHC</td>
<td>Sub health Center</td>
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<tr>
<td>SLF</td>
<td>Sanitary Landfilling</td>
</tr>
<tr>
<td>TPD</td>
<td>Tones per day</td>
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<tr>
<td>UNEP</td>
<td>United Nation Environment Program</td>
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<tr>
<td>USAID</td>
<td>United State Agency for International Development</td>
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<td>WB</td>
<td>World Bank</td>
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<td>WHO</td>
<td>World Health Organization</td>
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EXECUTIVE SUMMARY

1. MAIN OBJECTIVE

The main objective of this document is to provide an environmentally sound, technically feasible, economically viable and socially acceptable healthcare waste management Plan for Afghanistan with cost implication and timeframe for implementation of the same.

2. DEFINITION OF HCWM: Health care waste management (HCWM) is a process to help ensure proper hospital hygiene and safety of health care workers and communities. It includes planning and procurement, construction, staff training and behavior, proper use of tools, machines and pharmaceuticals, proper disposal methods inside and outside the hospital, and evaluation. Its many dimensions require a broader focus than the traditional health specialist or engineering point of view.

3. ADVANTAGES OF GOOD HCWM

The need for proper HCWM has been gaining recognition slowly. It can help control nosocomial diseases (hospital acquired infections), complementing the protective effect of proper hand washing; reduce community exposure to multi-drug resistant bacteria; dramatically reduce HIV/AIDS, sepsis, and Hepatitis transmission from dirty needles and other improperly cleaned/disposed medical items; control zoonosis (diseases passed to humans through insects, birds, rats and other animals); cut cycles of infection; easily and cost-effectively address health care worker safety issues, including reducing risk of needle sticks; prevent illegal repackaging and resale of contaminated needles; avoid negative long-term health effects; e.g., cancer, from the environmental release of toxic substances such as dioxin, mercury and others.

HCW can be subdivided into various categories. Segregation of different waste categories is critically important to enable proper disposal. Approximately 80% of all HCW can be disposed of through regular municipal waste methods. The other 20% can create serious health threats to health workers and communities if not disposed of properly. Disposal methods vary according to type of waste, local environment, available technology, costs and financing, and social acceptance.

Healthcare Waste (HCW): All waste produced in a health-care unit is defined as Health-Care Waste but practically 75-90% of HCW is general waste which is non-infectious and similar in nature to Municipal Solid Waste (MSW).

The remaining 10-25% of the HCW comprising of Infectious Waste (Sharp Waste, Contaminated dressings, anatomical and body parts), Chemical or Pharmaceutical Waste and small amounts of radioactive, cytotoxic or Mercury-based waste, represents an elevated risk as a source of potential infection, injury or other health impact. A miniscule fraction (generally less than 1%) may pose a serious chemical, radiological or physical hazard.

Infectious waste, if not managed properly, can endanger the health of patients, health-care workers, waste-pickers and the people at large and can lead to people dying or getting injured or sick. Sharps Waste poses the highest risk among the entire range of Infectious HCW. The WHO estimates that the
unsafe injection practices may cause 1.3 million people\(^1\) premature death a year. Improper occupational practices and waste handling of infectious waste poses a high risk to health care workers, environment-service staff, waste handlers and the general public.

Waste generated from specific programs/projects is also classified as a HCW. The improper usage of insecticides, pesticides etc. such as rodenticides for control of rats and mice, antimicrobial pesticides, bleach etc. can result in increased contamination of soil and water if precautionary measures are not taken. The final step in rendering the HCW non-infectious is its treatment and disposal. Various technologies are available as alternatives for treating different types of HCW including Chemical Infection, Incineration, Autoclaving, Hydroclaving, Microwaving and the Deep Burial.

There is need to build up the local skills and the expertise for operating the various types of HCWM equipment including the incinerators, autoclaves, microwaves, chemical disinfection, sharps management, as well as the operation of the sanitary land filling facilities. The operational skills as well as the construction technology for the Deep Burial Pits also need to be developed.

4. HEALTHCARE SERVICES DELIVERY SYSTEM IN THE COUNTRY

Healthcare Services is provided in the country through BPHS and EPHS packages.

a. Basic Package of Health Services (BPHS)

The purpose of developing the BPHS was to provide a standardized package of basic services that would form the core service delivery package in all primary health care facilities. The BPHS represented a roadmap that provided policymakers with a clear sense of direction and emphasized essential primary health care as the basis of the health system. As a result, the BPHS has been the catalyst behind the establishment of strong understandings between the MoPH and its major partners; namely the BPHS implementing NGOs and the donors.

The standardized classifications of health facilities that provide the basic services now include the following:

- Health Posts (HPs)
- Health Sub-centers (HSCs)
- Basic Health Centers (BHCs)
- Mobile Health Teams (MHTs)
- Comprehensive Health Centers (CHCs)
- District Hospitals (DHs)

The major healthcare services provided under the BPHS include Maternal and New born care, Child Health and Immunization, Public Nutrition, Communicable Disease and Treatment and Control, Mental Health and Disability and Physical Rehabilitation services and regular supply of essential drugs.

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\(^1\) Bulletin of the WHO, 1999, 77(10)
Thus, type of HCW which could be generated through the BPHS package would include Anatomical Waste, Sharps, Infectious Waste including dressing etc.

b. **ESSENTIAL PACKAGE OF HOSPITAL SERVICES (EPHS)**

The Essential Package of Hospital Services (EPHS) has three purposes: (1) to identify a standardized package of hospital services at each level of hospital, (2) to provide a guide for the MOPH, private sector, nongovernmental organizations (NGOs), and donors on how the hospital sector should be staffed, equipped, and provided materials and drugs, and (3) to promote a health referral system that integrates the BPHS with hospitals. The EPHS defines, for the first time, all the necessary elements of services, staff, facilities, equipment, and drugs for each type of hospital in Afghanistan.

These packages have direct relation with the healthcare waste generation, handling and management of the same in the country. The improvement of healthcare services delivery system means increment in number of people who would get more accessibility of healthcare services and treatments. This would require consideration while formulating the healthcare waste management plan in the country.

5. **DEVELOPMENT OF COMPREHENSIVE HEALTHCARE WASTE MANAGEMENT PLAN**

The MoPH developed a Preliminary HCWM Plan for the first 6 months of the SEHAT project in 2012. The major interventions that were recognized included development and adoption of guidelines for effective healthcare waste management, creating awareness and training to the end user/the waste producer/waste handler.

The preliminary HCWM plan was not purported to cover many issues in detail.

The MoPH recruited and international consultant to work on development of a comprehensive healthcare waste management plan. The consultant along with the officials from the Environmental Health Directorate, MoPH undertook field visits in Kabul, Ghazak, Parwan, Panjashir, and Balkh Provinces having detailed interactions with various stakeholders such as the HCFs( National Hospitals, Regional Hospitals, Provincial Hospitals, District Hospitals, CHCs, BHCs), International Funding Agencies, Department of MoPH, NGOs, Landfill Sites, Municipalities, Regulatory bodies, other relevant agencies etc. Structured Questionnaires were used for eliciting responses from the HCFs in addition to interaction with the Staff there. For other respondents, unstructured and Semi-structured Questionnaires were used to get their inputs, in conformity with the objectives of the HCWMP.

The inputs from the desk research, and interaction with the stakeholders were useful in assessing the regulatory framework and its compliance in practice, present status of HCWM at different types of HCFs, quantities of HCW generated, current technology in use for treatment of HCW and its disposal, Monitoring & Evaluating mechanism, Training Needs Assessment etc. The specific issues such as segregation of HCW and color coding practices, type of equipment in use for collection & transportation, use and disposal of Sharps, development of Landfill facilities for HCW disposal, status of Infection Control etc. were addressed. The plans for management of HCW from rural areas have been worked out separately based on the interaction with the various stakeholders.
These inputs were useful in developing recommendations for the HCWM Plan. A gap analysis was also undertaken to compare the present status and the recommendations made. The Comprehensive HCWMP duly incorporates the gap analysis as well as the capacity of the various stakeholders to adopt and implement the proposed plan.

The plan contains major guidelines to be followed during the implementation stage, provision of pilot projects for CWTFs, alternate technologies for the remote and rural areas, 3rd party monitoring and evaluation framework, format & contents of training programs, procurement policy for major treatment technologies and safety equipment, construction guidelines for sharp and burial pits etc. apart from other aspects such as Segregation, Color Coding, Infection Management, Transportation, Disposal, Sharps Waste Management etc.

6. REVIEW OF EXISTING POLICY FRAMEWORK

Existing Policy Framework which are relevant for Healthcare Waste Management include:

i) Constitution of the Islamic Republic of Afghanistan
iv) MoPH Strategic Plan, 2011
v) Infection Prevention Control Policy, 2005
vi) World Bank Safeguard Policies
vii) IAEA Safety Standards Series Occupational Radiation Protection

On assessment of existing policies, the finding is that there is a enough provisions to deal with the healthcare wastes but the role and responsibility are not clear. It creates ambiguity about the accountability at each level from regulatory authority to healthcare service facilitators. This makes it imperative that the country should have a clear cut rules and regulation, guidelines and standards to be maintained, establishment of linkages between different applicable acts and policies, designation of body, a waste management committee, functions, clear guidelines on ‘reporting system and provision of 3rd Party Monitoring and Evaluation. Like other country, this rule can be christened as ‘Healthcare Waste Management & Handling Rule’.

7. ESTIMATE OF HEALTHCARE WASTE GENERATION IN AFGHANISTAN

The estimate of Healthcare Waste (HCW) and the Biomedical Waste in Afghanistan has been worked out on the basis of prevailing norms of generation of Anatomical Waste, Sharps Waste and other Infectious wastes as well as the general waste (please see Table 4. The total HCW generated in Afghanistan is approx.150 tons per day of which about 27 tons per day is the Bio Medical waste and the rest is the General Waste.
There are around 1989 Health Care Unit situated in Afghanistan and gross total waste generated is 27.0 tones out of which 6.6 tonnes are anatomical wastes, 14.8 are sharp wastes and 5.6 tonnes are other infectious wastes².

The HCW generation in Afghanistan has been worked out on the basis of the number of different types of HCU and the HCW generated at each of these units from the OPD facilities as well as In house Patients (see Table 4 & 5).

8. EXISTING WASTE MANAGEMENT PRACTICES IN AFGHANISTAN

The prevailing Healthcare Waste Management Practices in Afghanistan has been given below in tabular form. It has been prepared based on discussions with various stakeholders.

Table 1: Current status of health care waste management practices.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Existing Practices/Status</th>
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<tbody>
<tr>
<td>Waste Generation</td>
<td>i) Waste Generation not monitored primarily because of lack of proper collection and segregation</td>
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</tbody>
</table>
| Waste Collection           | i) Waste Collected from the OT, General Wards, OPD Lab etc., gets mixed generally.  
                               | ii) Apart from the sharps & Placentas, most of the other waste is collected  
                               | iii) Needle-cutters/Hub – Cutters not used generally                                                                                                             |
| Waste Segregation          | i) General Waste, anatomical waste, & other Infectious wastes are normally collected separately at the point of generation  
                               | ii) Sharps (used AD syringes) collected separately in yellow Boxes, but end up getting mixed during transportation.  
                               | iii) Patients/Visitors in the wards sometimes dump the general waste in the bins near the Nursing Stations                                                                 |
| Color Coding               | i) Color-coding exists only as far as usage of yellow Boxes for used AD syringes and Black bins for other wastes  
                               | ii) No Color-Coding for Bags & the trolleys in which wastes are transported                                                                                                      |
                               | iii) The color-coding for different types of HCW is not consistent and used more as an exception than as a rule lack of Consistency in color-coding often results in different types of HCW getting mixed |
| Waste Transportation       | i) Primary Waste Transportation¹ in Bags Carried manually by trolleys by the Hospital Sanitation Workers  
                               | ii) Secondary Transportation is non-existent as the disposal takes place inside the HCU primarily.                                                                                                      |
| Training                   | i) Most of the Doctors, Nurses & Para-medical staff have been trained in Infection Prevention as per the Country’s IP Policy  
                               | ii) The training schedule & re-training as per the IP Policy is not followed.                                                                                                       |

² Health Care Waste assessment report, produced by Pradeep Dadlani.
³ Primary Transportation is the transportation of the waste from the point of generation to the secondary storage area within the healthcare facilities; Secondary Transportation is the process of moving wastes from the secondary storage areas to the Treatment/Disposal Site.
<table>
<thead>
<tr>
<th>Category</th>
<th>Issue</th>
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| Waste Management Committee       | i) No Provision for a waste Management Committee at HCU level  
|                                  | ii) Focal Person for HCWM not appointed in most of the HCUs  
| Secondary Storage               | i) No proper provision for Secondary Storage of HCW.  
|                                  | ii) No timeframe earmarked for Secondary storage of HCW before its disposal.  
| Treatment & Waste Disposal      | i) No clear cut policy on HCW treatment and disposal  
|                                  | ii) After basic segregation, all hazardous waste either burnt in ovens/single chamber Incinerators or is buried inside the compound  
|                                  | iii) No disinfection equipment such as Microwave/Autoclaves/Shredders installed except a few hospitals  
| Technology                       | i) No Comparative evaluation of various technologies for HCW treatment has been or is being done.  
|                                  | ii) A low level of technology is in use for HCW e.g. Single Chamber Incinerators ovens, Drums, Cemented Kilns etc.  
| Equipment                        | i) The equipment for HCW waste collection, transportation, treatment & disposal is of poor quality with no clear set of guidelines  
|                                  | ii) Non-standardized equipment is being used mostly.  
| Personal Protective Equipment    | i) The PPE such as gloves, goggles, mask, boots etc. is used partially in some of the hospitals.  
|                                  | ii) The guidelines provided in the IP Policy are also not followed in general  
|                                  | iii) No mechanism to monitor the extend of usage of PPE  
| Monitoring & Evaluation          | i) No M&E mechanism for HCWM is in place at HCU level  
|                                  | ii) M&E for HCWM recently included the work Profile for the NGOs under the SEHAT project in the fresh bidding process undertaken in 2013  
| Action Plan                      | i) No road map for implementing HCWM Plan in Place at the Central, Provincial or the HCU level  
| Finance                          | i) No separate budget for financing mechanism for HCWM provided  
|                                  | ii) At the HCW level there is also no budget for HCWM provided, not even for operational costs such as Fuel for the installed Incinerator  
| Public Private Partnership (PPP) | i) PPP in the Health Sector of providing BPHS & EPHS through NGOs has been a success story by & large  
|                                  | ii) However the same is not replicated in the HCWM Sector  
| Personal Hygiene & Sanitation & Pollution Abatement | i) No major focus on Personal Hygiene such as washing of hands PPE etc.  
|                                  | ii) Water Quality at HCU level & Ambient Air Quality (where Incinerators used) is not monitored  
| Construction                     | i) Construction Guidelines for Hospital buildings exist at MoPH, but are outdated and not followed in practice  
| Integrated Holistic Approach     | i) Piecemeal approach to HCWM observed at the HCU level as well as at the Provincial, Regional & National Levels  
| Capacity Building of Env. Health Department, MoPH& Other | i) No Capacity Building exercise undertaken  

4 (Storage area earmarked within the premises of the healthcare facilities for storage of wastes from different sources)
9. DISPOSAL SITE ANALYSIS

Although Bio-Medical Waste accounts for a small fraction of HCW, if it gets mixed with large volumes of non-infectious waste and MSW, the problem gets compounded in terms of the potential adverse effects.

The ash from the incinerators must be disposed of in a Sanitary Landfill site. Discussions with the Sanitation Department of Kabul Municipality revealed that a sanitary landfill (SLF) site is under development for the MSW generated in the city. Similar SLF sites could be planned in the other major regional centers such as Jalalabad, Herat, Ghazni, Mazar-I-Sharif cities.

The availability of the soil cover required for covering the landfilled waste on a daily basis is an important factor in planning and designing of a SLF site. The other important criteria which need to be considered for the Disposal/SLF Site include the soil characteristics at the site, ground and surface water analysis, quantum of waste to be landfilled, provision for a recycling/processing facility, availability of land, terrain and other local factors etc. All these factors need to be taken into account while planning a Disposal/SLF.

A visit to the Gazak Landfill site revealed that presently the HCW mixed with the MSW is being disposed of at the site. Aerobic composting of the organic fraction of the MSW is taking place. An area of 4000 m\(^2\) has been earmarked at the Ghazak-II landfill site for disposal of HCW generated in Kabul.

10. ASSOCIATED UTILITY SERVICES

The basic utility services such as Sanitation, Water Supply and Solid Waste Management are an important factor in protecting patients and staff from potential risks. Inadequate and poor management of these services could have adverse impacts, such as outbreaks of water-borne diseases including Viral Hepatitis, Typhoid, Cholera, Diarrhea etc. Moreover, poor management of the non-infectious general waste such as inadequate storage, poor collection and disposal could attract stray animals waste-pickers thereby becoming grounds for vector-borne, water-based and fecal-oral infections. The dumping of solid wastes around the HCU could cause blockage of access roads, water and sewage drains, resulting in an unhygienic environment for protection of health services.

During the field study it has been found that hospitals located in urban areas are well connected with Municipal Solid Waste System and collection and transportation of general wastes are being done on an regular basis but incidence of mixing up of general wastes with healthcare wastes often takes place. This often takes place because of a number of reasons such as negligence, lack of segregation at source and absence of devoted system to handle healthcare waste at the facility, absence of stringent regulatory norms & penalty system and monitoring and evaluation framework.

11. SCAVENGING & RECYCLING

During the field visits to the hospitals, no major scavenging or rag pickers operations were observed. This is probably due to the fact that the recycling industry in Afghanistan is not
very advanced. However, at the major landfill/dumping sites across the country e.g. Gazak in Kabul, some scavenging & recycling activity does exist.

12. HEALTH CARE WASTE MANAGEMENT PLAN

The preliminary plan concentrated on improving the existing Health Care Waste Management in the health sector of Afghanistan, focusing on organizational and implementation arrangements, training and financial implications. The Government of Afghanistan and the MoPH were committed to undertake a proper sectoral assessment of HCWM and develop a comprehensive HCWMP within the first six months of SEHAT implementation, which after approval by the WB would replace the preliminary HCWMP with this comprehensive Healthcare Waste Management Plan.

At the preliminary stage the objective of the plan was to establish the following basic intervention for health care waste management:

- Develop/adopt and disseminate guidelines for the proper management of medical waste to relevant stakeholders;
- Develop/ adapt and implement a training package for health workers on proper healthcare waste management;
- Increase public awareness and promote community participation in municipal solid waste management (e.g. reuse, reduce and recycle);
- Increase the number of health facility with incinerator;
- To monitor the performance and review the Waste Management Plan at least annually;

Based on the situation analysis of HCWM in Afghanistan, the existing practices & status of the major operations have been detailed to identify the gaps. Based on the identified gaps for different operations the objectives for the HCWM plan have been worked out and the corresponding plan activities for the major components have been highlighted below:

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<tr>
<th>S. N</th>
<th>Operations</th>
<th>Existing Practices/Status</th>
<th>Gap</th>
<th>Objectives</th>
<th>Plan Activities</th>
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<tbody>
<tr>
<td>1.</td>
<td>Waste Generation</td>
<td>• Waste Generation not monitored primarily because of lack of proper collection and segregation</td>
<td>• Lack of monitoring, weighing &amp; record keeping of HCW generated at the HCF</td>
<td>• Waste generation to be monitored quantitatively as well as qualitatively. Extensive Reporting System &amp; procedures to be put in place.</td>
<td>• Daily reporting system suggested for waste quantification &amp; monitoring. Also monthly &amp; quarterly reports.</td>
</tr>
<tr>
<td>2.</td>
<td>Waste Collection</td>
<td>• Waste Collected from the OT, General Wards, OPD Lab etc., gets mixed generally.</td>
<td>• Improper Inadequate collection of different</td>
<td>• Color-coded Bins for different stream of HCW i.e. Anatomical</td>
<td>• Different types of HCW to be collected in color-coded</td>
</tr>
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</table>
| 3. | Waste Segregation | • General Waste, anatomical waste, & other Infectious wastes are normally collected separately at the point of generation  
   • Sharps (used AD syringes) collected separately in yellow Boxes, but end up getting mixed during transportation.  
   • Patients/Visitors in the wards sometimes dump the general waste in the bins near the Nursing Stations | • Improper Segregation of the Wastes and mixing of the segregated wastes during collection & transportation | • Different types of HCW to be segregated at source through a clear-cut color coding system.  
   • Color-coded Bins to be provide at appropriate locations in the HCU.  
   • No access to the patients/visitors to the Bins placed near the Nursing Station and OT for collection of Infectious waste, Anatomical Waste & Sharps.  
   • Designated Color coding system for bags, bins, trolleys & secondary storage planned |
| 4. | Color Coding | • Color-coding exists only as far as usage of yellow Boxes for used AD syringes and Black bins for other wastes  
   • No Color-Coding for Bags & the trolleys in which wastes are transported  
   • The color-coding for different types of HCW is not consistent and used more as an exception than as a rule  
   • Lack of Consistency in color-coding often results in different types of HCW getting mixed | • Inconsistency in the color-coding for different types of HCW | • Elaborate but implementable Color-coding mechanism suggested for different types of HCW  
   • Consisted & Uniform Color-Coding for Waste Collection, Transportation, Secondary Storage etc. planned.  
   • Consistent color-coding for HCW collection, segregation, transportation to secondary storage & bags & bins as per the HCWM Plan |
secondary storage faculties to usher in uniformity and alienate the hazards of mixing of the waste & thus ensuring a better HCWM.

| 5. Waste Transportation | - Primary Waste Transportation in Bags Carried manually by trolleys by the Hospital Sanitation Workers  
| | - Secondary Transportation is non-existent as the disposal takes place inside the HCU primarily.  
| | - Unsafe Primary and Secondary Transportation  
| | - Primary Transportation in Bags & Trolleys with the same color-codes as the waste collection Bins  
| | - Secondary Waste Transportation in closed vehicles carrying HCW symbol and duly authorized by NEPA/Environmental Health Department  
| | - Uniform color coded trolleys for primary transportation of segregated HCW and Authorized vehicles for secondary transportation from Hospitals to the Treatment/Disposal site  
| 6. Training | - Most of the Doctors, Nurses & Para-medical staff have been trained in Infection Prevention as per the Country’s IP Policy  
| | - The training schedule & re-training as per the IP Policy is not followed.  
| | - Virtually no training is being done on HCWM  
| | - Re-training as per the IP policy is not done. The refresher training is not provided as per the schedule proposed in the IP Policy.  
| | - The IP training procedures & schedules to be followed strictly in accordance with the IP policy.  
| | - Detailed Training Plan for HCWM worked out covering different stakeholders  
| | - Training Manual to be prepared on HCWM.  
| | - Special emphasis and a detailed training plan based on TNA provided in the HCWMP  
| 7. Waste Management Committee | - No Provision for a waste Management committee at HCU level  
| | - Focal Person for HCWM not appointed in most of the HCU  
| | - No Institutional Mechanism to monitor & record the HCWM at the HCU level  
| | - Detailed Action Plan & Guidelines for forming waste Management Committees at the HCU recommended.  
| | - Plan to include a responsible broad based WMC with a clearly designated Focal Point at the HCU Level  

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5 Primary Transportation is the transportation of the waste from the point of generation to the secondary storage area within the healthcare facilities; Secondary Transportation is the process of moving wastes from the secondary storage areas to the Treatment/Disposal Site.
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<tr>
<td></td>
<td>Secondary Storage</td>
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<tr>
<td></td>
<td>- No proper provision for Secondary Storage of HCW.</td>
<td></td>
<td>- Designated Focal Point for HCWM at the HCU level made essential.</td>
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<tr>
<td></td>
<td>- No timeframe earmarked for Secondary storage of HCW before its disposal.</td>
<td></td>
<td>- The maximum timeframe for Secondary Storage for different types of HCW specified.</td>
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<td></td>
<td></td>
<td></td>
<td>- Provision for a proper secondary storage system in the hospital and maximum time of 48 hours earmarked for transportation to the treatment/disposal site.</td>
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<td></td>
<td>Treatment &amp; Waste Disposal</td>
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<tr>
<td></td>
<td>- No clear cut policy on HCW treatment and disposal</td>
<td></td>
<td>- Policy guidelines &amp; Implementation Plan for HCWM including treatment &amp; disposal suggested.</td>
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<td></td>
<td>- HCW either burnt in ovens/single chamber Incinerators or is buried inside the compound</td>
<td></td>
<td>- Usage of Double-chamber Incinerator, Autoclaves and shredder with guidelines for disposal of Incinerator ash</td>
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<td></td>
<td>- No disinfection equipment such as Microwave/Autoclaves/Shredders installed except a few hospitals</td>
<td></td>
<td>- Policy framework on CWTF recommended.</td>
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<td></td>
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<td></td>
<td>- Plan to include technology and specifications of HCW treatment equipment and operational framework for CWTF</td>
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<td></td>
<td>Technology</td>
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<td></td>
<td>- No Comparative evaluation of various technologies for HCW treatment has been or is being done.</td>
<td></td>
<td>- Comparative evaluation undertaken for alternate technologies for different types of HCW &amp; appropriate recommendation s made</td>
</tr>
<tr>
<td></td>
<td>- A low level of technology is in use for HCWM e.g. Single Chamber Incinerators ovens, Drums, Cemented Kilns etc.</td>
<td></td>
<td>- Plan for technology adaption in the local context and for remote areas also suggested</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Appropriate technology guidelines at various levels of HCUs including those for remote areas included.</td>
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<td></td>
<td>Equipment</td>
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<td></td>
<td>- The equipment for HCW waste collection, transportation, treatment &amp; disposal is of poor quality</td>
<td></td>
<td>- Plan for procurement, Commissioning, Maintenance of</td>
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<td></td>
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<td>- Standards for HCW treatment equipment and the broad</td>
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| 12. | PPE | - The PPE such as gloves, goggles, mask boots etc is used partially in some of the hospitals.  
- The guidelines provided in the IP Policy are also not followed in general  
- No mechanism to monitor the extend of usage of PPE | - Guidelines for PPE not fully followed as laid down in the IP policy  
- Clear-cut guidelines on usage of PPE by various stakeholders in HCWM i.e. Doctors, Nurses, Para-medical Staff and Sanitation workers recommended  
- Strict adherence to the PPE recommended in the IP Policy recommended Guidelines & Framework for usage of PPE provided. | - Plan to strengthen PPE usage as per the IP Policy as well as the regular monitoring of the same. |
| 13. | Monitoring & Evaluation | - No M&E mechanism for HCWM is in place at HCU level  
- M&E for HCWM recently included the work Profile for the NGOs under the SEHAT project in the fresh bidding process undertaken in 2013. | - Lack of M&E mechanism for HCWM at the HCU level  
- A definite M&E framework for HCWM recommended  
- M&E by Independent 3rd Party recommended in addition to the existing structures | - M&E framework to be included in the Plan with provision for 3rd Party monitoring of HCWM at Provincial & National level |
| 14. | Action Plan | - No road map for implementing HCWM Plan in Place at the Central, Provincial or the HCU level | - Absence of a road-map for implementing HCWMP  
- An Action Plan suggested for implementing HCWM at various levels incorporating the time schedule, Training Plan and the costs | - Action Plan with time schedules, training, IEC & financial costs to be suggested |
| 15. | Finance | - No separate budget for financing mechanism for HCWM provided  
- At the HCW level there is also no budget for HCWM provided, not | - No separate budget for HCWM provided at the HCU level.  
- Financing Mechanism with Capital Expenditure (Capex) and Operational Expenditure | - Financial estimated Budgets for both Capital Expenditure & Operational Expenditure for |
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| 16. **PPP** | • PPP in the Health Sector of providing BPHS & EPHS through NGOs has been a success story by & large  
• However the same is not replicated in the HCWM Sector | • PPP in the HCWM Sector not operational | • The scope of the NGOs role to be enhanced in training & capacity building for HCWM  
• 3rd party M&E for HCWM proposed.  
• Special emphasis on a new PPP model for CWTF, proposed for HCWM. | **HCWM to be provided in the Plan.** |
| 17. **Personal Hygiene & Sanitation & Pollution Abatement** | • No major focus on Personal Hygiene such as washing of hands PPE etc.  
• Water Quality at HCU level & Ambient Air Quality (where Incinerators used) is not monitored | • MoPH construction Guidelines for HCUs not followed  
1) Monitoring of Water Quality and Ambient Air including HVAC recommend as per NEPA guidelines. | **Develop new construction guidelines as well as Plan to conform with the same to be included.** |
| 18. **Construction** | • Construction Guidelines for Hospital buildings exist at MoPH, but are outdated and not followed in practice | • Need to implement stringently  
1) Need to develop and adhere to a new set of construction Guidelines emphasized | **Need to include in M&E framework** |
| 19. **Integrated Holistic Approach** | • Piecemeal approach to HCWM observed at the HCU level as well as at the Provincial, Regional & National Levels | • Holistic Integrated approach not followed for HCWM  
1) An Integrated approach with an inclusion of various stakeholders in the HCWM recommend |   |
| 20. | Capacity Building of Env. Health Department, MoPH & other stakeholders | ● No Capacity Building exercise undertaken | ● Lack of capacity among the various stakeholders for implementing HCWMP | 1) Specific actions such as Exposure visit to India. Orientation Program on HCWM for functional heads of all departments of MoPH and extensive capacity Building measures at the Provincial level recommended | ● Training and Capacity Building, Exposure/Orientation visits planned under HCWM Plan. |
| 21. | Waste Water Treatment | ● Waste effluent generated from healthcare facilities and join the drainage without treatment | ● Absence onsite waste treatment system in HCFs | 2) To treat the wastewater effluent generated from HCFs before releasing to drainage | ● Provision to have wastewater testing, onsite treatment, categorization of wastewater from Medical wards, Laboratories, OT, General Area, OPD etc. and Healthcare waste management guidelines and policy |

13. ORGANIZATIONAL STRUCTURE

- **National Level:** The responsibility for ensuring the implementation of the HCWMP lies with the MoPH, which is the implementing agency for the SEHAT. The overall responsibilities will be with the Secretariat (MoPH). The specific responsibility will be of the Environmental Health Department under the General Directorate of Preventive Medicine (GDoPM) of the MoPH. It is important to note that Environmental Health Department and its designated Focal Officer for HCWMP implementation will work in consultation with the GCMU on the HCWM activities and act as focal points to ensure effective, successful implementation of this HCWM plan.
✓ **Provincial Level:** At the provincial level, Provincial Health Directorate (PHD) and Implementing NGOs will be responsible for the implementation of HCWMP. The provincial public health director will assign monitoring Focal Point having proper ToR and will receive needed training for effective implementation of the HCWMP. At the health facilities, this responsibility will lie with the Head of Health Facility.

✓ **District Level:** At the district level, the HCWMP implementation, monitoring and evaluation would be done by the designated focal person for HCWM for that province. Head of the health facility located at the district center will be responsible for implementing the Healthcare Waste Management Plan (HCWMP).

The following flowchart depicts the proposed organizational structure for HCWM system in Afghanistan at the Provincial and National level.
14. PROPOSED ACTION POINTS TO BE UNDERTAKEN AT VARIOUS LEVELS AS PART OF THE HCWM PLAN

The below action points to be undertaken at various level have been compiled on the basis of field visits undertaken at different types of healthcare facilities including BHCs, HSCs, CHCs in Afghanistan, review of existing policies WHO Guidelines & standards and other relevant documents.

A. Highlight of major action points to be undertaken as part of HCWM Plan by MoPH/NEPA

1) Training Kit & Manual (Dari & English versions). A manual would be developed and be made available to the end user i.e. healthcare facilities as a reference book for the following:
   - Setting up of Waste management Committee,
   - Factors to be considered for the selection of technology
• Color codes to be practiced  
• Layout specifications for construction of Deep Burial Pits  
• Safety guidelines to be followed  
• Manual for Symbols and Labels to be used, routes layout etc.  
• Sharps Management Plan

B. Highlight of major action points to be undertaken by HCFs

Highlighted key action points have been identified for implementing HCWM Plan at HCFs including HSCs/BHCs/CHC level are summarized as follows:

1) Formation of Waste Management Committee (WMC) comprising of Heads of the Hospital, Nursing Superintendent, Doctor/Nurse from Infection Control Committee, Sanitary Supervisor, Store-in Charge and supervisor of Housekeeping Staff.

2) In-charge Waste Management Committee who also would be the focal point for HCWM at that facility would be given the responsibility to operate and monitor the management of the HCW on a daily basis;

3) Standard segregation procedures should be set-up in all Afghan HCFs by implementing a three bins system that would follow clear cut color coding system, a labeling system as well as waste minimizing procedures;

4) The development of specific treatment/disposal methods according to the type and the location of the HCFs where the waste is generated. For example, For the smaller HCFs and those located in the remote areas with no access with the connectivity, deep burial pits for both disposal off sharps as well as anatomical wastes would be provided in conformity with the standard designed as given in the HCWM.

5) Proper collection points/stores are needed to avoid indiscriminate dumping of the healthcare wastes in the hospital compound where it contaminates the air and the hospital environment.

6) An exhaustive Feedback system would be implemented at HCUs on parameters such as quantity & characterization of HCW, training needs, requirements of HCWM equipment and materials, future trends etc. This feedback would be used to dovetail and improve the existing plan further.

The schematic diagram of HCWM Plan to be adopted at HCFs including HSCs/BHCs/CHCs is presented below.
15. Operational Framework

- **Hospitals and health facility** (HSCs/BHCs/CHCs): As per the revised BPHS Package, 2010/1389 the BHC is a facility offering primary outpatient care, immunizations and Maternal and Newborn care. Services offered include antenatal, delivery, and postpartum care; newborn Care, nonpermanent contraceptive methods; routine immunizations; integrated management of childhood illnesses; treatment of malaria and tuberculosis, including DOTS; and identification, referral, and follow-up care for mental health patients and persons with disabilities including awareness-raising. The CHC covers a catchment area of about 30,000–60,000 people and offers a wider range of services than does the BHC. In addition to assisting normal deliveries, the CHC can handle certain complications, grave cases of childhood illness, treatment of complicated cases of malaria, and outpatient care for mental health patients.

- **Storage Facility**: The shortage of storage areas results in the mixture of waste or creation of overflow which allows animals and scavengers easy access to infectious waste. Another area of concern is the storage of insecticide stocks for vector control activities at primary healthcare facilities. This tends to be poor, with insecticides often being stored close to pharmaceutical stocks or in village houses where spraying operations take place. The responsibility to supervise the internal collection of wastes, their transportation, availability of waste bags, protective clothing and collection carts and crews should be given to a designated officer i.e. the person in-charge of healthcare waste management at the HCF.

- **Infection Control**: It is very important to note and recognize that infection control is the responsibility of all healthcare professionals – doctors, nurses, pharmacists and others. Preventing nosocomial infections requires a hygienic and sanitized environment and maintenance of good practices and use of protective gear. Routine cleaning of the health facility is absolutely essential, as that will keep the environment free from dust and soil.
• **Spill Control:** Spillage usually requires clean up only of the contaminated area. For spillage of infectious material, however, it is important to determine the type of infectious agent; in some cases, evacuation of the area may be necessary. Procedures for dealing with spillage should specify safe handling operation and appropriate protective clothing.

• **Treatment and Disposal of Health Care Wastes**

All HCFs should treat and dispose the medical waste as given below:

- All sharps in their puncture proof containers should be disposed in the sharps pit, which is to be located within the premises of the HCF.
- Infected organic waste, after disinfection, should be taken to the onsite deep burial pits and covered with a layer of lime and soil.
- Infected recyclables such as plastics and metals should be first disinfected using bleach solution and/or autoclaved before sent for recycling.
- If there is no organized collection of garbage/municipal solid waste, the general/communal waste—non-infected—should be managed as follows:
  o Organic waste such as kitchen waste and leaf fallings put in a compost pit, which is to be located within the premises. Standard composting methods such as mixing the waste with leaf fallings and soil should be done. Compost will be available within a few days and this should be used for the garden. Care must be taken to ensure that the organic waste is not infected by segregating the infectious waste at source.
  o Recyclable material such as packaging material and paper should be sold to authorized recyclers or to link with Municipal Wastes. Care must be taken to ensure that the recyclable waste is not infected and kept separated from infectious wastes at all times.

• **Segregation of Waste and Onsite Storage:** Segregation of waste at source is a single most important step in bio-medical waste management. Once bio-medical waste mixes with general waste, the waste management problem magnifies and becomes unmanageable. It is critical that wastes be segregated at the point of generation itself.

**Transportation** of health care Waste: Medical Wastes have to be transported both within the health facility and from the facility to the final disposal location. Properly designed carts, trolleys and other wheeled containers will be used for the transportation of waste inside the facilities. Wheeled containers shall be so designed that they have no sharp edges. Waste handlers must be provided with uniform, apron, boots, gloves, and masks, and these should be worn when transporting the waste as described earlier.

• **Use and Disposal of Auto-Disabled (AD) Syringes**

The MoPH recommends that Auto-Disabled (AD) syringes are to be used for immunization instead of glass or disposable syringes. In parallel to introducing AD syringes, MoPH has also developed and disseminated detailed user guidelines that outline steps that should be followed when using an AD syringe and its disposal.

**16. AWARENESS AND Training**

a) **Awareness:** Every province should plan and undertake general awareness raising activities for Infection Monitoring and Environmental Plan (IMEP), which should include all levels of
healthcare facilities. All IMEP related awareness activities should be fully integrated with those being undertaken under the other national health programs. Professional bodies like health promotion department of MoPH can be involved in enhancing understanding and promoting good practices. At the health facilities, appropriately located display of IEC materials is most effective in ensuring that workers follow segregation, treatment and infection control practices.

b) **Public Consultation:** It is proposed to have extensive public consultations at various levels with different stakeholders such as NGOs, Hospital Administrators, Municipalities, Doctors and other medical staff, elected representatives, community, relevant government ministries and departments in Afghanistan such as NGOs, Hospital Administrators, Municipalities, Doctors and other medical staff, elected representatives, community, relevant government ministries and departments before the proposed HCWM plan is taken up for implementation. It is also suggested that since the “ownership” by the various stakeholders is an important criteria for its success, the HCWM plan may be subjected to minor changes & modifications based on the feedback received during the Public consultations while meeting the overall Environmental compliance criteria and the World Bank Safeguards.

c) **Training:**

i. **Capacity Building at Central and Provincial Levels:** The reinforcement of the institutional capacity will be done at national and provincial levels through specific technical training to support the HCFs in implementation of new HCWM policy

ii. **Health Workers:** The level of awareness among the health workers of the risks of HCW, Good Practices in HCWM, Correct Procedures etc. is quite low. The HCWM Concept has not been adequately propagated among the Health workers in general and their limited awareness is broadly restricted to the Training and procedures covered in the IP protocol.

Even the prescribed training schedules as per the IP Policy are not followed and a majority of the Health Workers have not been imparted the updated training on IP. Visits to some of the HCUs located in the remote/rural areas revealed that the Doctors and the Nursing staff there have not undergone these trainings for a long period.

The PPHD will be responsible for training of its staff in HCWM plan implementation. There are two modules for training modules – (i) train-the-trainer and (ii) regular on-going training within the health facilities. The implementing NGOs will undertake a needs identification to facilitate planning and allocation of budget for this activity. It is envisaged that all health facilities under intervention areas of the SEHAT project have officially recognized trained health personnel who will be responsible for health care waste management. Existing awareness and training materials can be used to further develop the skills for the sound management of health care wastes. These resources will be available at MoPH and NGOs.
I. Introduction

Health care Waste Management consists of solids, liquids, sharps, and laboratory waste that are potentially infectious or dangerous and are considered bio waste.

It must be properly managed to protect the general public, specifically healthcare and sanitation workers who are regularly exposed to healthcare waste as an occupational hazard. In hospitals, medical waste, otherwise known as clinical waste, normally refers to waste products that cannot be considered general waste, produced from healthcare premises, such as hospitals, clinics, doctor’s offices, veterinary hospitals and labs.

Health related activities produce a considerable amount of waste on daily basis as a result of preventive and curative service delivery. The composition of waste produced is in the form of sharps (needles, syringes), non-sharps, blood and other body fluids being infected and non-infected, chemicals, pharmaceuticals and medical devises. Health workers, waste handlers, users of health facilities and the community are all exposed to health-care related waste and ill health as a result of poor management. A good health-care waste management plan could result in healthier communities thereby reducing the cost of health-care, as well as creating opportunities for recycling. A few important principles of sound management of healthcare related waste include:

- Definition of a policy framework;
- Assignment of legal responsibility for safe management of waste disposal to the waste producers;
- Allocation of adequate financial resources and cost recovery mechanisms;
- High level of awareness on proper waste disposal among all health workers in all cadres, as well as on part of patients/families/communities, particularly in case of infectious diseases, such as tuberculosis.

Background of HCWM in Afghanistan:

Since the establishment of a new administration in 2002, the Afghan Government has given the utmost importance to addressing the high rate of maternal and child mortality, especially in rural areas. The MoPH undertook a series of critical and strategic steps: it defined a Basic Package of Health Services (BPHS) and later an Essential Package of Hospital Services (EPHS); it established a system for contracting on a large scale with international and national non-governmental organizations (NGOs) for delivery of these services. The Ministry of Public Health (MoPH) also prioritized monitoring and evaluation of health sector performance. Through the deployment of predominantly local consultants, the MoPH addressed the human resource capacity constraints in terms of managing NGO contracts, tracking health sector progress through rigorous impact level monitoring and performing its stewardship functions effectively.

The proposed support under System Enhancement for Health Action in Transition (SEHAT) project in the health sector will ensure provision of basic services in the project area and past achievements are sustained over time. It will build upon the current support programs of IDA, ARTF and EU and make these more responsive to the present and future needs of the sector by focusing on the medium term system development needs of the sector in a sustainable fashion. With World Bank experience in sector wide and programmatic support, IDA will facilitate and
support systems development and realignment of development assistance to the sector and move towards a sectoral approach so that financing for the sectoral priorities can be better guaranteed through a well-coordinated effort by development partners.

The mission of the MoPH for health in Afghanistan states that improve the health and nutritional status of the people in an equitable and sustainable manner through quality health services provision, advocating for the development of healthy environments and living conditions; and the promotion of healthy lifestyles.”

SEHAT is proposed as a five year program to be funded through IDA and ARTF. The proposed project will include support for BPHS and EPHS services in provinces traditionally supported by the Bank as well as the 10 provinces currently financially supported by the EU. The project has two components:

**Component 1**: sustaining and improving BPHS and EPHS services: the project will support the implementation of the BPHS and EPHS through Performance-based Partnership Agreements (PPAs), i.e. contracts between the MoPH and the implementing non-government organizations (NGOs). It will also support the government’s efforts at delivering the BPHS through contracting in management services in designated provinces, and implementation of urban BPHS in Kabul city (the urban BPHS may be extended to other cities). It will include support to improve access to and quality of BPHS/ EPHS services, and training of additional community midwives and community nurses. In addition, financing will be made available for marginalized population such as prisoners and nomads and HIV/AIDS prevention services for targeted population sub-groups.

**Component 2**: Building the stewardship capacity of the MoPH and system: a) public hospital reform and regulation of both public and private provider; b) building regulatory frameworks and capacity to conduct quality assurance of pharmaceuticals; c) building capacity for effective health promotion; d) development and testing of innovative financing models for the sector; e) building/ strengthening human resources management system including appropriate use of technical assistance, and expanding/ creating training capacity for community midwifery, community nursing and hospital management; f) strengthening procurement and fiduciary system, and g) strengthening monitoring and evaluation including surveillance, HMIS, surveys, operation research, to improve evidence-based decision making. The project will also benefit from CBR support to the health sector.

**Component 3**: Strengthening program management (estimated total cost of US$10 million): This component will support and finance cost associated with system development and stewardship functions of the MOPH.

**Objective of HCWM Plan**: The main objectives of the plan is to identify the most appropriate management and disposal system for health-care waste management in Afghanistan- appropriate being defined as environmentally sound, technically feasible, economically viable, and socially...
acceptable – and to prepare a policy framework and five–year action plan (including both physical investments and training activities) to put in place and implement this system.

II. Policies, Legislation and Regulation

In Afghanistan, existing Policy Framework which are relevant for Healthcare Waste Management include:

i) Constitution of the Islamic Republic of Afghanistan
ii) Environmental Law of the Islamic Republic of Afghanistan
iv) MoPH Strategic Plan, 2011
v) National Infection Prevention Control Policy, 2005
vi) World Bank Safeguard Policies
vii) IAEA Safety standards series occupational radiation protection

Environmental Protection Act, 2007

Constitution of the Islamic Republic of Afghanistan: As per the article 15 of the Constitution, the state is obligated to adopt necessary measures to protect and improve forests as well as the living Environment which is also relevant for Healthcare Waste management in Afghanistan. Next step undertaken by the Islamic Republic of Afghanistan is enactment of Environment Protection Act, 2007 as well as establishment of National Environment Protection Agency. Environmental Protection Act, 2007, Chapter 4 on integrated Pollution control is directly relevant for Healthcare Waste Management issues:

- Art 27: Prohibition against discharges
- Art 28: Pollution control licenses
- Art 29: Reporting and containing discharges
- Art 30: General prohibition and duty of care in relation to waste management
- Art 31: Waste Management Licenses
- Art 32: Hazardous waste management licenses

National Environment Protection Agency (NEPA), Afghanistan came in existence in 2005 and was embodied as policy making institutions and regulatory authority in Afghanistan. The institution draws all power and authority from Environment Act of Islamic Republic of Afghanistan which was promulgated in the year 2007.

MoPH Strategic Plan

MoPH Strategic Plan (2011-15) developed by the Ministry of Public Health (MoPH) has 8 strategic Directions which also emphasis upon the regulation and standardization of quality health services, advocate and promote healthy environment.

This advocates for and promotes healthy environments adopting the following strategic objectives:
1. Strategic Objective 1: To strengthen the stewardship role of MoPH in relation to Environmental Health by developing regulations and clarifying roles and responsibilities under the Environmental Health program
2. Strategic Objective 2: To advocate for increased availability of safe drinking water in order to reduce the burden of disease from contaminated water;
3. Strategic Objective 3: To increase food safety practices to prevent food borne illnesses in food service and retail establishments;
4. Strategic Objective 4: To develop a systematic framework to lead a national process to reduce air pollution and promote clean air (in collaboration with the Environmental Protection Agency)
5. Strategic Objective 5: To create a national multispectral radiation protection forum to agree on and advocate for safe levels of radiation in the country including increasing industry and public awareness of this issue
6. Strategic Objective 6: To create a national multi-stakeholder mechanism for the management of garbage and hazardous wastes (including solid waste and healthcare waste)
7. Strategic Objective 7: To improve hygiene and sanitation throughout the country among the general public and health workers;
8. Strategic Objective 8: To build capacity and improve occupational health and safety among all workplaces;

**Infection Prevention and control Policy, 2005.**

The MoPH's National Policy on Infection Prevention and Control for Hospitals and Health Centers (2005) provide the broad principles of Infection Prevention and control (IPC) for all Afghanistan healthcare facilities. The procedures manual provides the specific guidelines for implementation of effective IPC program in the hospitals and health centers. The objectives of the manual are twofold i.e.

i) To facilitate the implementation of effective implementation of the national IPC policy
ii) To provide the technical guidance necessary for the clinical managers of health facilities to be able to implement an effective IPC program

The IPC Program covers the Nosocomial Infection Surveillance system, Environmental Sampling, occupation Health Program and Safe Injection Practices. The IPC for housekeeping, waste disposal and pest control also has been provided.

**World Bank Safeguard Policies**

The World Bank classifies the proposed projects into one of the four categories depending on the type, location, sensitivity, and scale of the project and the nature & magnitude of its potential environmental impacts. Health Sector Projects are typically classified as Category B (issues are relatively straightforward & mitigation measures are well-defined & implementable).

In category B, the borrower consults projects affected groups and local NGOs about the projects environmental aspects and takes their views into account. Some of the desirable features of a good safeguards management are the following:
1) Anticipate Safeguards Consideration early in the project preparation process
2) Design Projects and Project Schedules to avoid downstream problems & delays
3) Assist Borrowers in complying with Safeguards work requirements

Vector Management in Public Health Projects is governed by The World Bank Operational Policy 4.09. The OP and BP apply to all projects involving Vector management, whether or not, the project finances pesticide under the Pest management policy, the World Bank supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides used must:
   i) have negligible adverse human health effects
   ii) be effective against the target species
   iii) Have minimal effect on non-target species and the natural environment
   iv) Take into account the need to prevent the development of resistance

IAEA Safety Standards Series Occupational Radiation Protection

IAEA Safety Standards Series Occupational Radiation Protection in the Mining & Processing of Raw materials (Safety Guide No. Rs –G-1.6)

Training in Basic health and Safety in relation to radiation may include the following:
   i. The principles of radiation protection (limits and optimization)
   ii. Basic quantities and units in radiation protection
   iii. The properties of and hazards associated with radioactive materials
   iv. The purpose & methods of estimating workers’ radiation does including the use of individual monitoring & measurements
   v. The proper practices to eliminate, limit or control radiation does to workers including personal hygiene & basic techniques of dose reduction such as shielding, distance & time.
   vi. The persons to be contacted on matters of radiation health & safety
   vii. The obligations of workers under the regulations issued by the regulatory body
   viii. The health effects of radiation exposure
   ix. The meaning of warning signs

On assessment of existing policies, enough provisions to deal with the healthcare wastes exist but the role and responsibility are not clear. It creates ambiguity about the accountability at each level from regulatory authority to healthcare services facilitators. This makes it imperative that the country should have a clear cut rules and regulation, guidelines and standards to be maintained, establishment of linkages between different applicable acts and policies, designation of body, a waste management committee, functions, clear guidelines on reporting systems and provision of 3rd Party Monitoring and evaluation. Like other countries, this rule can be christened as ‘Healthcare Waste Management & Handling Rules, Islamic Republic of Afghanistan.'
Health Care Waste

The World Health Organization (WHO) defines health care waste as total waste generated by hospitals, health care establishments, and research facilities in the diagnosis, treatment, or immunization of human beings or animals, and other associated research and services. Hazardous health care wastes can be categorized into different groups as presented in Table 3.

Hazardous clinical wastes pose risks to individuals exposed to them (both within and outside establishments), to workers in waste disposal facilities, and scavengers. Potential hazards associated with these wastes, especially their effects on human health are paramount (Table 4). It is, therefore, necessary to examine such hazardous wastes from broader perspectives—that is, from generation to collection, storage, and disposal.

### Table 3: Health Care Waste Categories and Descriptions

<table>
<thead>
<tr>
<th>Waste category</th>
<th>Description and examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infectious Waste</strong></td>
<td>Waste suspected of containing pathogens (e.g., laboratory cultures, waste from isolation wards, tissues, materials or equipment having been in contact with infected patients, and excreta)</td>
</tr>
<tr>
<td><strong>Pathological Waste</strong></td>
<td>Human tissue or fluids (e.g., body parts, blood and other body fluids, and human fetuses)</td>
</tr>
<tr>
<td><strong>Sharps</strong></td>
<td>Sharp waste (e.g., needles, infusion sets, scalpels, knives, blades, broken glasses, etc.)</td>
</tr>
<tr>
<td><strong>Pharmaceutical Waste</strong></td>
<td>Waste containing pharmaceuticals (e.g., expired pharmaceuticals or no longer needed, contaminated items or containing pharmaceuticals [bottles, boxes])</td>
</tr>
<tr>
<td><strong>Genotoxic Waste</strong></td>
<td>Waste containing substances with genotoxic properties (e.g., waste containing cytotoxic drugs [often used in cancer therapy], genotoxic chemicals)</td>
</tr>
<tr>
<td><strong>Chemical Waste</strong></td>
<td>Waste containing discarded chemical substances (e.g., laboratory reagents, film developer, disinfectants which are expired or no longer needed, solvents)</td>
</tr>
<tr>
<td><strong>Wastes with high content of heavy metals</strong></td>
<td>E.g., batteries, broken thermometers, and blood pressure gauges</td>
</tr>
<tr>
<td><strong>Pressurized containers</strong></td>
<td>E.g., gas cylinders, cartridges, and aerosol cans</td>
</tr>
<tr>
<td><strong>Radioactive waste</strong></td>
<td>Waste containing radioactive substances (e.g., unused liquids from radiotherapy or laboratory research, contaminated glassware, packages or absorbent paper, urine and excreta from patients treated or tested with unsealed radionuclides)</td>
</tr>
</tbody>
</table>
Table 4: Health Effects and Potential Hazards from Clinical Wastes

<table>
<thead>
<tr>
<th>Potential hazards</th>
<th>Health effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious agents</td>
<td>Respiratory infections, genital infections, skin infections, Meningitis, AIDS,</td>
</tr>
<tr>
<td></td>
<td>Viral Hepatitis A, B, and C</td>
</tr>
<tr>
<td>Radioactive</td>
<td>Carcinogenic and mutagenic, skin or eye irritation, nausea, headache, or</td>
</tr>
<tr>
<td></td>
<td>dermatitis, Cancer, burn and skin irritation, headache, dizziness, and vomiting</td>
</tr>
<tr>
<td>Sharps</td>
<td>Double risk: injury and potential transmission routes for HIV, and Hepatitis</td>
</tr>
<tr>
<td></td>
<td>B and C from contaminated sharp</td>
</tr>
<tr>
<td>Pressurized containers</td>
<td>E.g., gas cylinders, cartridges, and aerosol cans, Injury from explosion</td>
</tr>
<tr>
<td>Hazardous chemicals</td>
<td>Intoxication, burns and skin irritation, pollution of groundwater, surface</td>
</tr>
<tr>
<td></td>
<td>water and the air, possibility of fire, poisoning</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>Ineffective medical care from the consumption of expired pharmaceuticals,</td>
</tr>
<tr>
<td></td>
<td>pollution of groundwater, surface water, and air</td>
</tr>
<tr>
<td>Genotoxic waste</td>
<td>E.g., batteries, broken thermometers, and blood pressure gauges</td>
</tr>
</tbody>
</table>

III. Situation analysis of HCWM in Afghanistan and Development of Comprehensive HCWMP

To analyze the present situation of HCW management system in Afghanistan, the following approach & methodology has been adopted.

i) Desk Research: After undertaking of ToR and preliminary meeting with the concerned stakeholders, an exhaustive desk research and internet scanning were undertaken to analyze the present status of the Health Care Waste Management (HCWM) in Afghanistan. The regulatory provisions and the role of different key stakeholders were also analyzed during the desk research. Information on the current magnitude of the problems and trends in HCWM in Afghanistan including generation rates, composition, collection, handling and disposal techniques etc. were also collected through published materials. The existing Draft HCWMP was also analyzed during the desk research.

ii) Interaction with Stakeholders: The desk research was followed by one-to-one interaction with the key stakeholders. A sample of Basic Health Centers (BHC) and Comprehensive Health Centers (CHCs) as well as the regional, provincial and national level hospitals in Afghanistan were contacted through field survey to assess the Health care waste generation, current disposal practices, composition of waste, capacity of the staff at various levels, Training needs etc.
iii) Final HCWM Plan: The said plan will be finalized on receiving a consolidate comments from the concerned stakeholders such as MoPH, Islamic Republic of Afghanistan; the World Bank, Afghanistan, WHO, Afghanistan and other (NGOs etc)

Structure of the health care services delivery system:

The structure of the HCS system in Afghanistan is traditional. At the most peripheral level, community health workers (CHWs) who are non-health professionals with limited but highly targeted training are the initial point of contact for individuals seeking Health Care Services (HCS). The Basic Health Center (BHC), a formal structure maintained by the MoPH, is staffed by health professionals and provides, at a minimum, all of the services that comprise the BPHS. Comprehensive Health Centers (CHCs), the next level of the system, provides the BPHS and additional services including minor and essential surgery. The District and Provincial Hospitals offer a broader array of more sophisticated medical care and, at the pinnacle of the HCS pyramid, tertiary hospitals in the major urban areas provide the most sophisticated care available in Afghanistan’s public Health and Nutrition Sector. There is a large private and traditional HCS sector in Afghanistan as well, about which relatively little is known. The MoPH is in the process of developing regulation and process to fulfill its stewardship role on this aspect of the National HCS as well.

Priority policies:

In line with the Afghanistan Compact of July 2006, the overarching strategic objective of the MoPH is to obtain nearly universal coverage of a standard BPHS through the Contracting Out initiative and the In 2003 (1382), the MoPH adopted the strategy of contracting out the delivery of the BPHS to non-state providers in order to be able to concentrate fully on its role as steward of the Health and Nutrition Sector (HNS). The BPHS is currently being delivered on a contractual basis with NGOs in 31 of the 34 provinces in Afghanistan. In the remaining three provinces, the MoPH is following a Strategic Management approach by which it is, essentially, contracting with its own staff, on the same terms as it contracts with NGOs. To further strengthen and improve the health system in the country, the Essential Package of Hospital Services (EPHS) was endorsed by the MoPH in July 2005. Now the BPHS and EPHS together represent the basic and essential elements of the health system in Afghanistan.

Currently there are 2,221 Health facilities nationwide. These can be subdivided into the following categories or groups:

a. National hospitals=26
b. Regional hospital= 6
c. Provincial hospital= 28
d. District hospital= 75
e. Comprehensive health center=392
f. Basic health center =822
g. Mobile Health Team 103
h. Sub health center = 526
i. Other = 233
Because of implementation of the BPHS and the EPHS through the above listed health facilities, a significant increase in the proportion of the population with access to basic health services has been recorded in the country. The success of the BPHS is also demonstrated in the significant improvement in key Afghan health indicators compared with 2003. Some of the achievements of these policies are:

i. By 2009, 75% of the population was covered since the BPHS launched in the year 2003 as cited by the Health and Nutrition Sector Strategy (HNSS) 2007/08–2012/13.

ii. Use of a modern birth spacing/family planning method among married woman increased from 10% to 20%.

iii. Receipt of antenatal care by pregnant woman increased by 60%

This shows that the health indicators have considerably improved. However, the healthcare waste management system in the BPHS is inadequate in terms of collection, segregation, transportation and disposal of healthcare waste as well as a lack of institutional mechanism for monitoring and evaluation of the same. The major reason for this gap has been due to non-availability of funds, lack of awareness and training at the HCU level.

Development of Comprehensive HCWM Plan

The MoPH developed a Preliminary HCWM Plan for the first 6 months of the SEHAT project in 2012. The major interventions that were recognized included development and adoption of guidelines for effective healthcare waste management, creating awareness and training to the end-user/the waste producer/waste handler.

The preliminary HCWM plan was not purported to cover the following issues in detail:

a. Field study and interactions with the stakeholders
b. Detailed technology evaluation and assessment
c. Technical guidelines & standards to be maintained implementing the plan at the national and provincial levels
d. Additional policy measures needs to be taken to strengthen the monitoring and evaluation system,
e. Clear cut reporting system
f. Role & responsibility for the management of the Healthcare Facilities (HCFs) and provision of setting up Waste Management Committee (WMC) for effective HCW management.
g. Level of awareness available among the most vulnerable due to direct contact with the healthcare waste and associates infection risks such as patients, visitors, nurses, waste collectors, doctors and management of the healthcare facilities.
h. A comprehensive implementation level healthcare waste management plan

The comprehensive HCWMP document has tried to address the aforesaid issues.

The preliminary HCWM plan was used as the starting point for developing a comprehensive HCWM Plan by the consultant.
The MoPH recruited and international consultant to work on development of a comprehensive healthcare waste management plan. The Consultant along with the officials from the Environmental Health Directorate, MoPH undertook field visits in Kabul, Ghazak, Parwan, Panjashir, Balkh etc. and had detailed Interactions with various stakeholders such as the HCFs( National Hospitals, Regional Hospitals, Provincial Hospitals, District Hospitals, CHCs, BHCs), International Funding Agencies, Department of MoPH, NGOs, Landfill Sites, Municipalities, Regulatory bodies, other relevant agencies etc. Structured Questionnaires were used for eliciting responses from the HCFs in addition to interaction with the Staff there. For other respondents, unstructured and Semi-structured Questionnaires were used to get their inputs, in conformity with the objectives of the HCWMP. A copy of the Questionnaire used for HCFs is provided at Annexure III and the list of contacts undertaken by the consultant during the course of preparation of the HCWMP is detailed at Annexure IV.

Various Reference documents and articles were perused by the consultant prior to embarking on the field visits and also during the course of the HCWMP preparation. A partial list of these publications/documents is provided under the title ‘List of References’.

The inputs from the desk research, and interaction with the stakeholders were useful in assessing the regulatory framework and its compliance in practice, present status of HCWM at different types of HCFs, quantities of HCW generated, current technology in use for treatment of HCW and its disposal, Monitoring & Evaluating mechanism, Training Needs Assessment etc. The specific issues such as segregation of HCW and color coding practices, type of equipment in use for collection & transportation, use and disposal of Sharps, development of Landfill facilities for HCW disposal, status of Infection Control etc. were addressed. The plans for management of HCW from rural areas have been worked out separately based on the interaction with the various stakeholders. The major lessons learnt during the interactions with the stakeholders have been highlighted in Table 7 (under the title ‘Existing Waste Management Practices in Afghanistan’).

These inputs were useful in developing recommendations for the HCWM Plan. A gap analysis was also undertaken to compare the present status and the recommendations made. The Comprehensive HCWMP duly incorporates the gap analysis as well as the capacity of the various stakeholders to adopt and implement the proposed plan.

The plan contains major guidelines to be followed during the implementation stage, provision of pilot projects for CWTFs, alternate technologies for the remote and rural areas, 3rd party monitoring and evaluation framework, format & contents of training programs, procurement policy for major treatment technologies and safety equipment, construction guidelines for sharp and burial pits etc. apart from other aspects such as Segregation, Color Coding, Infection Management, Transportation, Disposal, Sharps Waste Management etc.

Some of the major additional coverage in this Draft Comprehensive Healthcare Waste Management Plan as compared to the Preliminary HCWM P is as follows:
i) Exhaustive field survey in various provinces covering the National Hospitals, Provincial Hospitals, Regional Hospitals, District Hospitals, CHCs and BHCs levels.

ii) Identifying the Role of various stakeholders for effective implementation of HCWM Plan.

iii) An overview of the present Infection Prevention and Control Policy, its present status, implementation issues and its integration into the suggested HCWMP.

iv) The present status of HCWM being practiced in the various HCFs across the country with regard to HCW collection, transportation, Secondary Storage, Treatment & Disposal during the implementation of the SEHAT project.

v) The inclusion of HCWM in the agreements/MoUs signed with the NGOs/Implementing Agencies for effective delivery of health services under the SEHAT projects was also studied.

vi) Coverage on the new concepts which emerged during the discussions with the stakeholders e.g. Common Waste Treatment Facility (CWTFT) to have more centralized facilities for treatment & disposal of Healthcare waste rather than at the individual HCF level, wherever implementable.

vii) Identifying the roles, objectives & implementation aspects of Waste Management Committee (WMC) at the HCF level.

viii) A broad Training Need Assessment (TNA) and formulation of training program along with its cost structure and schedule.

ix) Site Analysis for Centralised Treatment & Disposal of Healthcare Waste management in the big towns e.g. Kabul.

x) Implementation Schedule for the Healthcare Waste Management Plan along with its rollout.

xi) Quantification of different types of Healthcare waste at the national level.

xii) Details on Monitoring & Evaluation mechanism to ensure effective implementation of the healthcare waste management plan.

xiii) Alternate models for the Healthcare facilities in the Urban areas and the remotely located and rural HCFs where accessibility is low.

xiv) Design aspects for the Deep burial pits and the Sharp Pits.

xv) Consistent Color Coding system for collection of various types of HCW and during the transportation and secondary storages stage as well.

This comprehensive Healthcare Waste Management Plan takes into the account the present status, the regulatory framework, compliance issues as well as the capacity assessment at the various levels for implementation of the said plan.

**Current Health Care Waste Management Practices in the Afghanistan Health Care Centers:**

The generation of MSW in Kabul has gone up exponentially from 300 TPD to 4500 TPD in last 20 years with the unprecedented rise in the population. Field visits indicate that most of the health facilities are in relatively good state and appear to be properly maintained by government. Water and sanitation at the health facilities are poor. Pipe borne water supply facilities (Saripul, Samangan and Balkh) are either only sparingly functional or do not exist. In the provinces, some wells dry up during the dry season or the water is
polluted. Some of the well heads are polluted or wells poorly constructed. Toilet facilities are also either in a poor state or not functional.

The Incinerators provided at health facilities are made up of local materials (bricks) and have broken down and need rehabilitation. In a large number of instances traditional ovens rather than incinerators are used for disposal of wastes. Some new incinerators may have to be constructed urgently too. However, the major obstacle for improving the HCWM in the country is the lack of proper system from generation to segregation, collection, transportation, decontamination and disposal in the right and standard manner. There is no proper color coded bins identified for the collection of the HCWs, no proper collection or temporary storage rooms and the HCWs are dumped in the open area in the hospitals compounds in many cases even in the country capital Kabul. However, with the exception of proper disposal of the most hazardous categories of waste (needles and syringes), there has been steady progress in Afghanistan on an effective, hygienic and systematic approach to HCWM since the SHARP Project launched. It helped to identify the risk associated with HCW and need to prepare HCWM Plan for the entire country.

The result of survey recently presented also provides information on the precautions and safety measures interventions related to proper disposal of sharps and use of sterilizers, disinfectants at primary health facilities as follows:

1. 83.9 % of HFs are using safety boxes or closed containers for disposal of used sharps,
2. Syringes are being disposed without being recapped at the 66.5% of HFs,
3. 37.2% of HFs indicated posted procedures for decontamination procedure steps,
4. Availability of basin with water source and soap disclosed in the 56.7% of HFs
5. Evidence that disinfectants are being used observed at the 66.1% of HFs,
6. Evidence that the incinerator is being used regularly scored 67.5%,
7. Disposable syringes are being used for all injections, noticed in the 99.7% of HFs,
8. Evidence for regular use of the sterilizer, found in 70.4% of HFs.

EXISTING WASTE MANAGEMENT PRACTICES

Based on personal interaction with the head of Health facilities, staff, onsite observation, existing waste management practices in Afghanistan is provided at Table 3.

Table 5: Existing Waste Management Practices in Afghanistan

<table>
<thead>
<tr>
<th>Operation</th>
<th>Existing Practices/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Generation</td>
<td>• Waste Generation not monitored primarily because of lack of proper collection and segregation</td>
</tr>
<tr>
<td>Waste Collection</td>
<td>• Waste Collected from the OT, General Wards, OPD Lab etc, gets mixed generally.</td>
</tr>
<tr>
<td></td>
<td>• Apart from the sharps &amp; Placentas, most of the other waste is</td>
</tr>
</tbody>
</table>

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7—National Health Services Performance Assessment 2011/2012—JHU/IIHMR
<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle-cutters/Hub – Cutters</td>
<td>Not used generally</td>
</tr>
<tr>
<td>Waste Segregation</td>
<td>General Waste, anatomical waste, &amp; other Infectious wastes are normally collected separately at the point of generation.</td>
</tr>
<tr>
<td></td>
<td>Sharps (used AD syringes) collected separately in yellow Boxes, but end up getting mixed during transportation.</td>
</tr>
<tr>
<td></td>
<td>Patients/Visitors in the wards sometimes dump the general waste in the bins near the Nursing Stations.</td>
</tr>
<tr>
<td>Color Coding</td>
<td>Color-coding exists only as far as usage of yellow Boxes for used AD syringes and Black bins for other wastes.</td>
</tr>
<tr>
<td></td>
<td>No Color-Coding for Bags &amp; the trolleys in which wastes are transported.</td>
</tr>
<tr>
<td></td>
<td>The color-coding for different types of HCW is not consistent and used more as an exception than as a rule.</td>
</tr>
<tr>
<td></td>
<td>Lack of Consistency in color-coding often results in different types of HCW getting mixed.</td>
</tr>
<tr>
<td>Waste Transportation</td>
<td>Primary Waste Transportation³ in Bags Carried manually by trolleys by the Hospital Sanitation Workers.</td>
</tr>
<tr>
<td></td>
<td>Secondary Transportation is non-existent as the disposal takes place inside the HCU primarily.</td>
</tr>
<tr>
<td>Training</td>
<td>Most of the Doctors, Nurses &amp; Para-medical staff have been trained in Infection Prevention as per the Country’s IP Policy.</td>
</tr>
<tr>
<td></td>
<td>The training schedule &amp; re-training as per the IP Policy is not followed.</td>
</tr>
<tr>
<td></td>
<td>Virtually no training is being done on HCWM.</td>
</tr>
<tr>
<td>Waste Management Committee</td>
<td>No Provision for a waste Management committee at HCU level.</td>
</tr>
<tr>
<td></td>
<td>Focal Person for HCWM not appointed in most of the HCUs.</td>
</tr>
<tr>
<td>Secondary Storage⁹</td>
<td>No proper provision for Secondary Storage of HCW.</td>
</tr>
<tr>
<td></td>
<td>No timeframe earmarked for Secondary storage of HCW before its disposal.</td>
</tr>
<tr>
<td>Treatment &amp; Waste Disposal</td>
<td>No clear cut policy on HCW treatment and disposal.</td>
</tr>
<tr>
<td></td>
<td>HCW either burnt in ovens/single chamber Incinerators or is buried inside the compound.</td>
</tr>
<tr>
<td></td>
<td>No disinfection equipment such as Microwave/Autoclaves/Shredders installed excepta few hospitals.</td>
</tr>
<tr>
<td>Technology</td>
<td>No Comparative evaluation of various technologies for HCW treatment has been or is being done.</td>
</tr>
<tr>
<td></td>
<td>A low level of technology is in use for HCWM e.g. Single Chamber Incinerators ovens, Drums, Cemented Kilns etc.</td>
</tr>
<tr>
<td>Equipment</td>
<td>The equipment for HCW waste collection, transportation, treatment &amp; disposal is of poor quality with no clear set of guidelines.</td>
</tr>
</tbody>
</table>

³ Primary Transportation is the transportation of the waste from the point of generation to the secondary storage area within the healthcare facilities; Secondary Transportation is the process of moving wastes from the secondary storage areas to the Treatment/Disposal Site.

⁹ Storage area earmarked within the premises of the healthcare facilities for storage of wastes from different sources.
<table>
<thead>
<tr>
<th>Section</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Protective Equipment PPE</td>
<td>- Non-standardized equipment is being used mostly.</td>
</tr>
<tr>
<td></td>
<td>- The PPE such as gloves, goggles, mask boots etc is used partially in some of the hospitals.</td>
</tr>
<tr>
<td></td>
<td>- The guidelines provided in the IP Policy are also not followed in general</td>
</tr>
<tr>
<td></td>
<td>- No mechanism to monitor the extend of usage of PPE</td>
</tr>
<tr>
<td>Monitoring &amp; Evaluation</td>
<td>- NoM&amp;E mechanism for HCWM is in place at HCU level</td>
</tr>
<tr>
<td></td>
<td>- M&amp;E for HCWM recently included the work Profile for the NGOs under the SEHAT project in the fresh bidding process undertaken in 2013.</td>
</tr>
<tr>
<td>Action Plan</td>
<td>- No road map for implementing HCWM Plan in Place at the Central, Provincial or the HCU level</td>
</tr>
<tr>
<td>Finance</td>
<td>- No separate budget for financing mechanism for HCWM provided</td>
</tr>
<tr>
<td></td>
<td>- At the HCW level there is also no budget for HCWM provided, not even for operational costs such as Fuel for the installed incinerator</td>
</tr>
<tr>
<td>Public Private Partnership (PPP)</td>
<td>- PPP in the Health Sector of providing BPHS &amp; EPHS through NGOs has been a success story by &amp; large</td>
</tr>
<tr>
<td></td>
<td>- However the same is not replicated in the HCWM Sector</td>
</tr>
<tr>
<td>Personal Hygiene &amp; Sanitation &amp; Pollution Abatement</td>
<td>- No major focus on Personal Hygiene such as washing of hands PPE etc.</td>
</tr>
<tr>
<td></td>
<td>- Water Quality at HCU level &amp; Ambient Air Quality (where Incinerators used) is not monitored</td>
</tr>
<tr>
<td>Construction</td>
<td>- Construction Guidelines for Hospital buildings exist at MoPH, but are outdated and not followed in practice</td>
</tr>
<tr>
<td>Integrated Holistic Approach</td>
<td>- Piecemeal approach to HCWM observed at the HCU level as well as at the Provincial, Regional &amp; National Levels</td>
</tr>
<tr>
<td>Capacity Building of Env. Health Department, MoPH&amp; other stakeholders</td>
<td>- No Capacity Building exercise undertaken</td>
</tr>
</tbody>
</table>

**Waste Estimate**

There are currently 2,221 health facilities comprising of National Hospitals, Regional Hospitals, Provincial Hospitals, District Hospital, Comprehensive Health Centre, Basic Health Centre, Sub Health centre and other. The break-up of these along with wastes generation have been provided at Table 6.

The estimate of Healthcare waste and the Biomedical Waste in Afghanistan has been worked out on the basis of prevailing norms of generation of Anatomical Waste, Sharps Waste and other Infectious wastes as well as the general waste. The total HCW generated in Afghanistan is app.150 TPD of which about 27 TPD is the Bio Medical waste and the rest is the General Waste.
Table 6: Illustration of Estimate of Healthcare Waste Generation in Afghanistan

<table>
<thead>
<tr>
<th>S.N</th>
<th>Type of HCU</th>
<th>App. Nos of Units in Afghanistan</th>
<th>Types of HCW</th>
<th>Gross total Waste Generated (Tones)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Anatomical Waste Per unit (kg)</td>
<td>Waste Sharps Per unit (Kg)</td>
</tr>
<tr>
<td>1</td>
<td>National HCU</td>
<td>24</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>2</td>
<td>Regional Hospital</td>
<td>6</td>
<td>57</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>Provincial Hospital</td>
<td>28</td>
<td>19</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>District Hospital</td>
<td>69</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Comprehensive Health Centre</td>
<td>379</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Basic Health Centre</td>
<td>812</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>SHC</td>
<td>472</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Others</td>
<td>199</td>
<td>6.5</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>1989</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The HCW generation in Afghanistan has been worked out on the basis of the number of different types of HCU’s and the HCW generated at each of these units from the OPD facilities as well as In house Patients (please refer Table 7)
### Table 7: Quantity of HCW in Afghanistan

<table>
<thead>
<tr>
<th>S.N</th>
<th>Type of HCU</th>
<th>Types of Bio-Medical Waste</th>
<th>Waste Sharps (Kg)</th>
<th>Other Infection Wastes (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Anatomical Waste (Kg)</td>
<td>Inhouse Patients Waste</td>
<td>OPD</td>
</tr>
<tr>
<td>1</td>
<td>National HCU</td>
<td>0.15</td>
<td>400</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>Regional Hospital</td>
<td>0.15</td>
<td>300</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>Provincial Hospital</td>
<td>0.15</td>
<td>100</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>District Hospital</td>
<td>0.15</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Comprehensive Health Centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Basic Health Centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>SHC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Others(Incl.Pvt Hospitals)</td>
<td>0.15</td>
<td>30</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Source:** The HCWM report Estimate

**Note:** The estimate for the Anatomical Waste, sharps waste & other Infectious waste has been worked out on the basis of the field visits & discussions with the stakeholders. The smaller HCFs such as BHC & SHC would primarily produce waste from the OPD activities and the sharps waste from the Immunization drives.
The HCWM Plan underlines the fact that the Incinerators have been installed at many hospitals. However, many of this equipment are not operational owing to a number of factors such as the following:

1) Lack of trained technicians required to operate the Incinerators
2) Maintenance issues
3) Lack of Funds for the fuel & other operational heads required for their smooth running.
4) Age of the Incinerators

Many of these Incinerators are low technology based, with only a single chamber, low chimney height (3-4m), no temperature Indicators etc.

The MoPH plans to ensure the already-installed incinerators are made operative. Other option is to build or De Montfort Incinerator using local material. Periodic air sampling is envisaged to check the emission standards. The will be done by the third party the result of which will be presented to the related authority. The other requisite measures include lying down of proper maintenance procedures training of the technicians and signing of the Annual Maintenance Contracts (AMCs) with the suppliers of Incinerators so adoption of some good practices with respect to Incinerators would also ensure a better compliance with the HCWM policy. The MoPH will undertake corrective measures for those Incinerators not properly located. Similarly, the issue of disposal of ash from the incinerator will be appropriately addressed.

Disposal Site Analysis

A visit to the Gazak Landfill site revealed that presently the HCW mixed with the MSW is being disposed off at the site. Aerobic composting of the organic fraction of the MSW is undertaken. An area of 4000 sqm has been earmarked at the Gazak II landfill site for disposal of HCW generated in Kabul.

Scavenging & Recycling

During the field visits to the hospitals, no major scavenging or rag pickers operations were observed. This is probably due to the fact that the recycling industry based on the waste generated in the healthcare facilities in Afghanistan is not organized; however, a few recycling operation is going on. there are evidence of scavenging operations, but that is mostly for municipal waste.

The proposed HCWM policy with focus on implementation of CWTFs in some pilot projects would lead to generation of reasonable quantities of recyclable material, specially the Disinfected & treated plastics. The economies of Scale provided by the large scale generation of the recyclable plastics could be used as an incentive & impetus to the recycling industry,
particularly when coupled with the implementation of Segregation of Municipal Solid Waste at the Landfill site.

**Training Needs Assessment**

A broad TNA was carried out for Infection Prevention at the National, Provincial & Regional Hospitals and the Smaller HCUs at the district level and rural areas. A similar analysis was undertaken for TNA for HCWM at different levels of the Health Care Facilities.

The status of staff training in Infection Prevention based on a scale of non-existent (0) to very high (5) among various parameters such as the awareness level, initial training and capacity Building & Retraining as per the IP Policy of the MoPH has been presented in Table ???. A distinct difference was observed in the status of Training of the staff working at the larger hospitals and the smaller/rural HCUs.

A similar broad assessment was also made for the HCWM and it was found to be virtually non-existent (0) to very low (1) in terms of different parameters.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Policy</th>
<th>Awareness Level</th>
<th>Initial Training</th>
<th>Capacity building and Re-training</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Infection Prevention (National, Provincial and Regional Hospital)</td>
<td>Yes</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Infection Prevention (District Hospitals, Smaller HCUs)</td>
<td>Yes</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Healthcare Waste Management (National, Provincial and Regional Hospital)</td>
<td>No</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>Health Care Waste Management (District Hospitals, Smaller HCUs)</td>
<td>No</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**IV. Health Care Waste Management Plan**

The expected outcome of SEHAT project is to contribute to a healthier population and increased human capital by enhancing the use of a set of health nutrition and population services with proven cost effectiveness in the country but this may also create adverse impact on environment and on health if a proper Healthcare Waste Management System is not put in place. Possible adverse environmental impacts are related to operation and are the following: (a) Disposal of medical waste, e.g., sharps, human tissues, blood and laboratory waste; and, (b) Risk associated with handling Health Care Wastes during operation. All these potential environmental impacts
could be managed during the operation of the Health Care Facilities and hospitals if a proper HCWMP is prepared and appropriately implemented.

Keeping in view the above fact, under the SEHAT project, a preliminary plan were prepared to improve the existing Health Care Waste Management system in the country, focusing on organizational and implementation arrangements, training and financial implications. The Government of Afghanistan and the MoPH were committed to undertake a proper sectoral assessment of HCWM and develop a comprehensive HCWMP within the first six months of SEHAT implementation, which after approval by the WB would replace the current preliminary HCWMP.

The objective of the preliminary HCWM Plan was to establish the following basic intervention for health care waste management:

- Develop/adopt and disseminate guidelines for the proper management of medical waste to relevant stakeholders;
- Develop/adapt and implement a training package for health workers on proper healthcare waste management;
- Increase public awareness and promote community participation in municipal solid waste management (e.g. reuse, reduce and recycle);
- Increase the number of health facility with incinerators or other environment friendly technology/equipment;
- To monitor the performance and review the Waste Management Plan at least annually;

This comprehensive Health Care Waste Management Plan is developed based on what already agreed in the Preliminary Health Care Waste Management Plan. Based on the work undertaken, priority interventions for the health care waste management in Afghanistan include:

i) Development of a Manual & Guidelines along with compendium of best practices being adopted in developed or developing countries on Health Care Waste Management and dissemination of the same among the stakeholders, end users etc.

ii) Policy education and awareness

iii) Training of the Trainer and Exposure Visits of the Regulatory Authorities

iv) Formulation of Waste Committee at different levels, Determination of Role and Responsibility

v) Evaluation & determination of technology

vi) Establishment of Common Treatment Facility as Pilot project

vii) Establishment of a new policy framework to facilitate the implementation of the prepared HCWMP.

viii) Preparing the roadmap for ensuring the involvement of the different stakeholders in implementation of the HCWMP.

Based on the situation analysis of HCWM in Afghanistan, the existing practices & status of the major operations have been detailed to identify the gaps. Based on the identified gaps for different operations the objectives for the HCWM plan have been worked out and the corresponding plan activities for the major components have been highlighted in the adjoining Table 9.
<table>
<thead>
<tr>
<th>S.N</th>
<th>Operations</th>
<th>Existing Practices/Status</th>
<th>Gap</th>
<th>Objectives</th>
<th>Plan Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Waste Generation</td>
<td>• Waste Generation not monitored primarily because of lack of proper collection and segregation</td>
<td></td>
<td>Lack of monitoring, weighing &amp; record keeping of HCW generated at the HCF</td>
<td>• Waste generation to be monitored quantitatively as well as qualitatively. Extensive Reporting System &amp; procedures to be put in place.</td>
</tr>
<tr>
<td>2</td>
<td>Waste Collection</td>
<td>• Waste Collected from the OT, General Wards, OPD Lab etc, gets mixed generally. Apart from the sharps &amp; Placentas, most of the other waste is collected Needle-cutters/Hub – Cutters not used generally</td>
<td></td>
<td>Improper Inadequate collection of different streams of HCW</td>
<td>• Color-coded Bins for different stream of HCW i.e. Anatomical Waste, General Waste &amp; Sharps to be provided. Needles Cutters/Hub Cutters to be used for separating used plastic syringes from needles sharps</td>
</tr>
<tr>
<td>3</td>
<td>Waste Segregation</td>
<td>• General Waste, anatomical waste, &amp; other Infectious wastes are normally collected separately at the point of generation Sharps (used AD syringes) collected separately in yellow Boxes, but end up getting mixed during transportation. Patients/Visitors in the wards sometimes dump the general waste in the bins near the Nursing Stations</td>
<td></td>
<td>Improper Segregation of the Wastes and mixing of the segregated wastes during collection &amp; transportation</td>
<td>• Different types of HCW to be segregated at source through a clear-cut color coding system. Color-coded Bins to be provide at appropriate locations in the HCU. No access to the patients/visitors to the Bins placed near the Nursing Station and OT for collection of Infectious waste, Anatomical Waste &amp; Sharps.</td>
</tr>
<tr>
<td>4</td>
<td>Color Coding</td>
<td>• Color-coding exists only as far as usage of yellow Boxes for used AD syringes and Black bins for other wastes No Color-Coding for Bags &amp; the trolleys in which wastes are</td>
<td></td>
<td>Inconsistency in the color-coding for different types of HCW</td>
<td>• Elaborate but implementable Color-coding mechanism suggested for different types of HCW Consisted &amp; Uniform</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **5** Waste Transportation | • Primary Waste Transportation in Bags Carried manually by trolleys by the Hospital Sanitation Workers  
• Secondary Transportation is non-existent as the disposal takes place inside the HCU primarily. | • Unsafe Primary and Secondary Transportation  
• Primary Transportation in Bags & Trolleys with the same color-codes as the waste collection Bins  
• Secondary Waste Transportation in closed vehicles carrying HCW symbol and duly authorized by NEPA/Environmental Health Department | • Uniform color coded trolleys for primary transportation of segregated HCW and Authorised vehicles for secondary transportation from Hospitals to the Treatment/Disposal site |
| **6** Training | • Most of the Doctors, Nurses & Para-medical staff have been trained in Infection Prevention as per the Country’s IP Policy  
• The training schedule & re-training as per the IP Policy is not followed.  
• Virtually no training is being done on HCWM | • Re-training as per the IP policy is not done. The refresher training is not provided as per the schedule proposed in the IP Policy.  
• The IP training procedures & schedules to be followed strictly in accordance with the IP policy.  
• Detailed Training Plan for HCWM worked out covering different stakeholders  
• Training Manual to be prepared on HCWM | • Special emphasis and a detailed training plan based on TNA provided in the HCWMP |

---

10 Primary Transportation is the transportation of the waste from the point of generation to the secondary storage area within the healthcare facilities; Secondary Transportation is the process of moving wastes from the secondary storage areas to the Treatment/Disposal Site.
<table>
<thead>
<tr>
<th>No.</th>
<th>Waste Management Committee</th>
<th>Secondary Storage</th>
<th>Treatment &amp; Waste Disposal</th>
<th>Technology</th>
<th>Equipment</th>
</tr>
</thead>
</table>
| 7   | - No Provision for a waste Management committee at HCU level  
     - Focal Person for HCWM not appointed in most of the HCUs | - No proper provision for Secondary Storage of HCW.  
     - No timeframe earmarked for Secondary storage of HCW before its disposal. | - No clear cut policy on HCW treatment and disposal  
     - HCW either burnt in ovens/single chamber Incinerators or is buried inside the compound  
     - No disinfection equipment such as Microwave/Autoclaves/Shredders installed except a few hospitals | - No Comparative evaluation of various technologies for HCW treatment has been or is being done.  
     - A low level of technology is in use for HCWM e.g. Single Chamber Incinerators ovens, Drums, Cemented Kilns etc. | - The equipment for HCW waste collection, transportation, |
|     | - No Institutional Mechanism to monitor & record the HCWM at the HCU level | - Improper Secondary Storage and the maximum time for storage/frequency of collection not defined | - Lack of Policy for HCWM measures and low quality equipment used for treating HCW | - Low level of technology in use in the current HCWM practices | - Lack of standardization |
|     | - Detailed Action Plan & Guidelines for forming waste Management Committees at the HCU recommended.  
     - Designated Focal Point for HCWM at the HCU level made essential. | - The maximum timeframe for Secondary Storage for different types of HCW specified. | - Policy guidelines & Implementation Plan for HCWM including treatment & disposal suggested.  
     - Usage of Double-chamber Incinerator, Autoclaves and shredder with guidelines for disposal of Incinerator ash  
     - Policy framework on CWTF recommended. | - Comparative evaluation undertaken for alternate technologies for different types of HCW & appropriate recommendations made  
     - Plan for technology adaption in the local context and for remote areas also suggested | - Plan for procurement, Commissioning, |
|     | - Plan to include a responsible broad based WMC with a clearly designated Focal Point at the HCU Level for HCWM | - Provision for a proper secondary storage system in the hospital and maximum time of 48 hours earmarked for transportation to the treatment/disposal site. | - Plan to include technology and specifications of HCW treatment equipment and operational framework for CWTF | - Appropriate technology guidelines at various levels of HCUs including those for remote areas included. | - Standards for HCW treatment equipment and |

11
| 12 | PPE | - The PPE such as gloves, goggles, mask boots etc is used partially in some of the hospitals.  
- The guidelines provided in the IP Policy are also not followed in general  
- No mechanism to monitor the extend of usage of PPE | - Guidelines for PPE not fully followed as laid down in the IP policy  
- Clear-cut guidelines on usage of PPE by various stakeholders in HCWM i.e. Doctors, Nurses, Para-medical Staff and Sanitation workers recommended  
- Strict adherence to the PPE recommended in the IP Policy recommended  
- Guidelines & Framework for usage of PPE by various stakeholders in HCWM i.e. Doctors, Nurses, Para-medical Staff and Sanitation workers recommended | - Plan to strengthen PPE usage as per the IP Policy as well as the regular monitoring of the same. |  
| 13 | Monitoring & Evaluation | - NoM&E mechanism for HCWM is in place at HCU level  
- M&E for HCWM recently included the work Profile for the NGOs under the SEHAT project in the fresh bidding process undertaken in 2013. | - Lack of M&E mechanism for HCWM at the HCU level  
- A definite M&E framework for HCWM recommended  
- M&E by Independent 3rd Party recommended in addition to the existing structures | - M&E framework to be included in the Plan with provision for 3rd Party monitoring of HCWM at Provincial & National level |  
| 14 | Action Plan | - No road map for implementing HCWM Plan in Place at the Central, Provincial or the HCU level | - Absence of a road-map for implementing HCWMP  
- An Action Plan suggested for implementing HCWM at various levels incorporating the time schedule, Training Plan and the costs | - Action Plan with time schedules, training, IEC & financial costs to be suggested |  
| 15 | Finance | - No separate budget for financing mechanism for HCWM provided  
- At the HCW level there is also no budget for HCWM provided, not even for operational costs such as Fuel for the installed incinerator | - No a separate budget for HCWM provided at the HCU level.  
- Financing Mechanism with Capital Expenditure (Capex) and Operational Expenditure (Opex over a 5 year period provided in the HCWM Plan. | - Financial estimated Budgets for both Capital Expenditure & Operational Expenditure for HCWM to be provided in the Plan. |
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 16 | PPP | • PPP in the Health Sector of providing BPHS & EPHS through NGOs has been a success story by & large.  
• However the same is not replicated in the HCWM Sector. | • Investments and Costs for separate heads such as Procurement of equipment, Training, PPE, Maintenance detailed.  
• The scope of the NGOs role to be enhanced in training & capacity building for HCWM  
• 3rd party M&E for HCWM proposed.  
• Special emphasis on a new PPP model for CWTF, proposed for HCWM.  
• PPP role in HCWM to be strengthened with a new CWTF model. |
| 17 | Personal Hygiene & Sanitation & Pollution Abatement | • No major focus on Personal Hygiene such as washing of hands PPE etc.  
• Water Quality at HCU level & Ambient Air Quality (where Incinerators used) is not monitored | • MoPH construction Guidelines for HCU's not followed  
2) Monitoring of Water Quality and Ambient Air including HVAC recommend as per NEPA guidelines.  
• Develop new construction guidelines as well as Plan to conform with the same to be included. |
| 18 | Construction | • Construction Guidelines for Hospital buildings exist at MoPH, but are outdated and not followed in practice  
• Need to implement stringently | 2) Need to develop and adhere to a new set of construction Guidelines emphasized  
• Need to include in M&E framework |
| 19 | Integrated Holistic Approach | • Piecemeal approach to HCWM observed at the HCU level as well as at the Provincial, Regional & National Levels.  
• Holistic Integrated approach not followed for HCWM | 2) An Integrated approach with an inclusion of various stakeholders in the HCWM recommended. |
| 20 | Capacity Building of Env. Health Department, MoPH & other stakeholders | • No Capacity Building exercise undertaken | 3) Specific actions such as Exposure visit to India. Orientation Program on HCWM for functional heads of all departments of  
• Training and Capacity Building, Exposure/Orientation visits planned under HCWM Plan. |
| 21 | Waste Water Treatment | • Waste effluent generated from healthcare facilities and join the drainage without treatment | • Absence onsite waste treatment system in HCFs | 4) To treat the wastewater effluent generated from HCFs before releasing to drainage | • Provision to have wastewater testing, onsite treatment, categorization of wastewater from Medical wards, Laboratories, OT, General Area, OPD etc. and Healthcare waste management guidelines and policy | MoPH and extensive capacity Building measures at the Provincial level recommended |
There are three basic operations involved in healthcare waste management i.e. Segregation, collection & transportation and treatment and disposal. The standard operation guidelines are already well documented and published at WHO website. The objective of compilation of different guidelines is to provide a ready reference for the implementing agency/authority during implementation of HCWM Plan.

a. **Waste Segregation Guidelines**

Waste Segregation is the process of separating different types of waste at the point of production and keeping them isolated, so that collection of different types of waste become an easy and safe affairs of waste handling operations from point of production to disposal of the treated waste. This could be easily done by following recommended color codes (see Table 8).

**Table 10: Recommended Color Codes**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Yellow Bins and Bags</th>
<th>Red Bins and Bags</th>
<th>Black Bins and Bags</th>
<th>White Puncture proof containers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Human tissues, Body parts, organs, sputum</td>
<td>Infectious Solid Waste (Waste generated from disposable items other than the waste sharps such as Tubing, Hand-gloves, saline bottles with IV Tubes, catheters, glass, intravenous sets etc.)</td>
<td>Food articles</td>
<td>Waste Sharps (Needles, blades, glass, scalpels etc. that may cause puncture and cuts including both used and unused sharps)</td>
</tr>
<tr>
<td>2.</td>
<td>Animal Tissues, organs, body parts, carcasses, bleeding parts, fluid, blood and experimental animals used in research, discharge from hospitals, animal houses.</td>
<td>Chemical Waste (Chemicals used in production of biological toxins, disinfectants, Insecticides etc.)</td>
<td>Plastic bottles for soft drinks, juices etc.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Microbiological and Biotechnology Waste and other Laboratory Waste (Waste from clinical samples, pathology, biochemistry, hematology, blood-bank, lab cultures, stocks or specimens of microorganisms, live or attenuated vaccines, dishes used for transfer of cultures etc)</td>
<td>Used Plastic syringes after hub-cutting/needle-cutting operations</td>
<td>Aluminum and metal cans used for food and drinks</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Discarded Medicines and Cytotoxic Drugs</td>
<td></td>
<td>Paper and Board</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Soiled Waste (Items)</td>
<td></td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
contaminated with blood and body fluids including cotton, dressings, soiled plaster-carts, linen, bedding, other materials contaminated with blood)

| packaging material |

General Waste containers should be placed beside infectious waste containers helps in better segregation. Color code of bins and bags should be maintained in uniform manner to avoid any confusion. Proper Label and Symbols must be displayed on bins and bags as per the standard guidelines of WHO. “Guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens by WHO” is available on web for ready reference.

Apart from the color code for the health care waste, the following practices should be adopted:

i) Residuals of the general health care waste should join the stream of domestic refuse or municipal solid Waste for proper waste management

ii) Sharp should all be collected together, regardless of whether or not they are contaminated. Containers should be puncture proof and fitted with covers. It should be rigid and impermeable to contain not only the sharps but also any residual liquids from syringes.

iii) Bags and containers for infectious waste should be marked with the international infectious substance symbol.

iv) Cytotoxic waste, most of which is produce in major hospital or research facilities, should be collected in leak proof and strong containers clearly marked “Cytotoxic Wastes”

v) Radioactive Waste should be segregated according to its physical form; solid & liquid and according to its half-life or potency: Short –live and lived in especially marked containers

b. Storage Guidelines

It is essential to have a designated storage location within the health care establishment. For storage of healthcare waste the recommended color coding techniques needs to be practiced thoroughly so that mix up of different kinds of wastes can be avoided. While earmarking and selecting the storage areas for healthcare wastes the following guidelines should be followed up:

• Storage: An impermeable, hard-standing floor with good drainage, and an adequate water supply to clean and easy to disinfect;

• Good lighting and at least passive ventilation and protection from the sun;

• Storage area should not be situated proximate to fresh food stores or food preparation areas; and

• Supply of cleaning equipment, protective clothing, and waste bags or containers should be located conveniently close to the storage area.
It should also be ensured that storage times for healthcare waste (i.e. the delay between production and treatment), unless a refrigerated storage room is available, should not exceed the following:

- **Temperature Climate**: 72 hours in winter
  48 hours in summer
- **Warm Climate**: 48 hours during the cool season
  24 hours during the hot season

c. **Collection & Transportation Guidelines**

To define the collection system it is necessary to understand the basic steps of Health Care Waste Management Handling System. The basic steps in Health care waste Management handling evolves on Segregation, Collection & Transportation and Treatment and Disposal.

Collection System can be divided under:

- **Primary Collection**: On-Site Collection (Within the Establishment)
- **Secondary Collection**: Off-site Collection (to CWTFs)

Primary collection starts at the point of waste production. The major waste production points in a typical healthcare Facility include Medical Wards, Labour Room, OT & Surgical Room, Pharmaceutical Stores and Labs. The following needs to be practiced:

- Nurses and Staff should ensure that waste bags are tightly closed or sealed when they are about three-quarters full.
- Light-gauge bags can be closed by tying the neck but heavier gauge bags would require plastic sealing tag of the self-locking type. Bags should not be closed by stapling.
- Sealed Sharp containers should not be placed in a labeled, yellow infectious health care waste bags.
- The frequency of the collection should be on room to room basis once in every shift and an ideal time of collection should be the start of every shift.
- Strictly followed and practiced the color code guidelines.
- The collection practices should be designed in a manner that facilitate the movement of waste from point of production to storage/treatment point efficiently while minimizing the risk of personnel.
- Proper training should be given to the contractors or the hospital workers. The driver of the vehicle should be knowledgeable of medical waste and the measures to be taken in case of an accidental spillage.

**On Site Transportation**

Transportation of Waste within the HCFs could utilize wheeled trolleys, containers or carts that are dedicated solely for the purpose.

The selection of on-site vehicle should be based on the following specifications
1. Easy to load and unload
2. No Sharp Edges that could damage waste bags or containers during loading and unloading and,
3. easy to clean

The sample vehicles for this purpose have been illustrated at Figure 2.

**Figure 1**: Sample Wheeled Vehicles (Source: WHO)

**Off-Site Collection and Transportation of Health Care Waste**: The healthcare Waste generator should be responsible for safe packaging and adequate labeling of waste to be transported off-site for treatment and disposal. Packaging and labeling should comply with the guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens provided by WHO. Figure 3 is symbol of International Infection Substance used to denote that vehicle is carrying Healthcare waste or bio-hazardous waste.

**Figure 2**: International Infection Substance Symbol

It should be the responsibility of waste generator to ensure that waste are being treated and disposed of properly as per the guidelines of Health Care Waste Management Plan and to the authorized disposal facility.

The waste should be transported off-site only by the authorized or accredited transporter or carrier by NEPA.

Special packaging requirements for off-site transport in general, the waste should be packaged according to the recommendations provided in sealed bags or containers to prevent spilling during handling and transportation. All waste bags or containers should be labeled with basic information on their content and on the waste producer. This information may be written directly on the bag or container or on preprinted labels, securely attached. For health care wastes, the
following additional information should be marked on the label: waste category, date of collection, place in hospital where produced (e.g. ward), and waste destination.

Any vehicle used to transport health care waste should fulfill the following design criteria:

- The body of the vehicle should be of a suitable size commensurate with the design of the vehicle, with an internal body height of 2.2 meters.
- There should be a bulkhead between the driver’s cabin and the vehicle body, which is designed to retain the load if the vehicle is involved in a collision.
- There should be a suitable system for securing the load during transport.
- Empty plastic bags, suitable protective clothing, cleaning equipment, tools, and disinfectant, together with special kits for dealing with liquid spills, should be carried in a separate compartment in the vehicle.
- The internal finish of the vehicle should allow it to be steam cleaned, and the internal angles should be rounded.
- The vehicle should be marked with the name and address of the waste carrier.
- The international hazard sign should be displayed on the vehicle or container as well as an emergency telephone number.

Further based on different activities related to healthcare services, potential major impacts/issues because of nature of wastes generated out of these activities, mitigation measures, indicators, cost implication to initiate mitigation measures, responsibility for mitigation and supervision and responsibility for monitoring have been worked out in Table 11.

**Table 11: Health Care Waste Management guidelines (HCWMP) Matrix for SEHAT**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Potential Major Impacts/issues</th>
<th>Mitigation Measures</th>
<th>Indicators</th>
<th>Budgets $ (Proposed)</th>
<th>Responsibility for Mitigation and supervision</th>
<th>Responsibility for Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal care</td>
<td>Laboratory waste, sharps, syringes, poor antenatal care. Risk of Infection</td>
<td>Sharps should be placed in special containers and properly labeled before incineration waste disposal.</td>
<td>Implement guidelines and followed good health care practiced.</td>
<td>Not significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health services</td>
<td>Implementing NGOs/ Environmental Health Dept.</td>
<td>GCMU/ Provincial public health directorate third party/ M&amp;E department/JH University</td>
</tr>
<tr>
<td>Delivery and pre-natal care. Handling human parts, immunization</td>
<td>Risk of cross infection if no proper handling of waste including human parts, waste water, and sharps disposables. Contamination of Soils &amp; groundwater.</td>
<td>Sharps should be placed in special containers and properly labeled before incineration waste disposal. Human parts should be disinfected before disposal.</td>
<td>Implement guidelines and followed good health care practiced.</td>
<td>Not significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health services</td>
<td>Implementing NGOs/ Environmental Health Dept.</td>
<td>Provincial public health directorate third part/ M&amp;E department/JH University</td>
</tr>
<tr>
<td>Postnatal Care Immunization</td>
<td>Sharps, disposables</td>
<td>Sharps should be placed in special containers and properly labeled before incineration waste disposal.</td>
<td>Implement guidelines and followed good health care practiced.</td>
<td>Not significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health services</td>
<td>Implementing NGOs/ Environmental Health Dept.</td>
<td>GCMU/ Provincial public health directorate third part/ M&amp;E department/JH University</td>
</tr>
<tr>
<td>Family planning</td>
<td>Risk of cross contamination,</td>
<td>Sharps should be</td>
<td>Implement guidelines</td>
<td>Not</td>
<td>Implementing NGOs/</td>
<td>GCMU/ Provincial</td>
</tr>
<tr>
<td>Laboratory test, injections</td>
<td>sharps, disposables placed in special containers and Properly labeled before incineration waste disposal and followed good health care practiced.</td>
<td>significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health services</td>
<td>Environmental Health Dept.</td>
<td>public health directorate third party/ M&amp;E department/JH University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care of the newborn. Immunization</td>
<td>Risk of accidental infection through poor handling of sharps and cross infections</td>
<td>Sharps should be placed in special containers and properly labeled before incineration waste disposal Implement guidelines and Followed good health care practiced.</td>
<td>Not significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health services</td>
<td>Implementing NGOs/ Environmental Health Dept</td>
<td>GCMU/ Provincial public health directorate third part/ M&amp;E department/JH University</td>
<td></td>
</tr>
<tr>
<td>Storage of Medical Waste</td>
<td>Risk to unauthorized persons and workers if not in proper receptacles, and workers not properly protected.</td>
<td>Proper handling and storage including protective gear according to HCWMP Implement guidelines and followed good health care practiced.</td>
<td>Not significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health services</td>
<td>Implementing NGOs/ Environmental Health Dept</td>
<td>GCMU/ Provincial public health directorate third part/ M&amp;E department/JH University</td>
<td></td>
</tr>
<tr>
<td>Transport of waste to disposal sites</td>
<td>Risk of spread of diseases, personnel exposure to disease and bacteria</td>
<td>Collect waste in closed containers and transport waste in specialized closed vehicles Regular supervision of transporters potters, verify the use of special containers for MW, provide</td>
<td>Not significant cost, this cost will be part of implementing NGOs budget contracting for delivery of health</td>
<td>Implementing NGOs/ Environmental Health Dept</td>
<td>GCMU/ Provincial public health directorate third part/ M&amp;E department/JH University</td>
<td></td>
</tr>
</tbody>
</table>
### Table 12: Categories of health-care waste and their final disposal decision matrix

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Location</th>
<th>In-situ Treatment</th>
<th>End Treatment</th>
<th>Final Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human tissue, body parts and placenta`</td>
<td>OT, Labor Rooms, Wards</td>
<td>Incineration at Common treatment facility</td>
<td>Deep Burial inside the hospital</td>
<td>Incineration ash to be buried in secured landfill</td>
</tr>
<tr>
<td>Cotton, gauze dressings, POPs soiled with blood, pus and other human discharges</td>
<td>All wards, OT, Labor rooms, Lab ICU, Acute wards, Isolation wards</td>
<td>Autoclave/Microwave and shredding at common treatment facility</td>
<td>Landfilling after disinfection and converting them into pieces</td>
<td></td>
</tr>
<tr>
<td>All types of plastics, i.e. plastic syringes, I.V lines, I.V bottles, bags</td>
<td>All wards and departments</td>
<td>Autoclave/microwave and shredding at common treatment facility</td>
<td>Disinfection and mutilation</td>
<td>Formal recycling</td>
</tr>
<tr>
<td>Discarded medicines cytotoxic drugs and heavy chemicals</td>
<td>Stores</td>
<td>Incineration at common treatment facility</td>
<td>Deep burial</td>
<td>Secured landfilling of Incineration</td>
</tr>
</tbody>
</table>

Source: HCWM Preliminary Plan

---

d. End Disposal Plan for HCWM

End disposal of HCW according to the category/type of wastes can be decided using following option.

**Table 12: Categories of health-care waste and their final disposal decision matrix**

<table>
<thead>
<tr>
<th>Category</th>
<th>Location</th>
<th>Treatment</th>
<th>End Treatment</th>
<th>Final Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human tissue, body parts and placenta</td>
<td>OT, Labor Rooms, Wards</td>
<td>Incineration at Common treatment facility</td>
<td>Deep Burial inside the hospital</td>
<td>Incineration ash to be buried in secured landfill</td>
</tr>
<tr>
<td>Cotton, gauze dressings, POPs soiled with blood, pus and other human discharges</td>
<td>All wards, OT, Labor rooms, Lab ICU, Acute wards, Isolation wards</td>
<td>Autoclave/Microwave and shredding at common treatment facility</td>
<td>Landfilling after disinfection and converting them into pieces</td>
<td></td>
</tr>
<tr>
<td>All types of plastics, i.e. plastic syringes, I.V lines, I.V bottles, bags</td>
<td>All wards and departments</td>
<td>Autoclave/microwave and shredding at common treatment facility</td>
<td>Disinfection and mutilation</td>
<td>Formal recycling</td>
</tr>
<tr>
<td>Discarded medicines cytotoxic drugs and heavy chemicals</td>
<td>Stores</td>
<td>Incineration at common treatment facility</td>
<td>Deep burial</td>
<td>Secured landfilling of Incineration</td>
</tr>
<tr>
<td>Category</td>
<td>Origin/Location</td>
<td>Sanitization Method</td>
<td>Final Disposal</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Soiled Linen</td>
<td>OT, labor rooms, ICU, Isolation wards, Acute wards and other wards</td>
<td>1% Hypochlorite solution for 30 minutes</td>
<td>Washed in laundry, Reused after wash</td>
<td></td>
</tr>
<tr>
<td>General waste such as leftover food in patients plates, stationery, fruit waste, unsoiled dressings, gauze and cotton from Green bucket</td>
<td>All wards &amp; departments</td>
<td>Non treatment</td>
<td>Municipal sanitary landfilling of the general waste</td>
<td>NA</td>
</tr>
<tr>
<td>Needles, blades</td>
<td>All wards &amp; departments</td>
<td>1% hypochlorite for 30 minutes</td>
<td>Stored in Puncture Proof Containers</td>
<td>Autoclaved and stored in Puncture proof containers</td>
</tr>
<tr>
<td>Microbiological samples</td>
<td>Labs</td>
<td>5% Hypochlorite solution for 30 minutes</td>
<td>Autoclaving</td>
<td>Autoclaving</td>
</tr>
<tr>
<td>Liquid waste from wards, departments and autopsy rooms</td>
<td>All wards/Autopsy rooms</td>
<td>5% Hypochlorite for 30 minutes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Silver nitrate from X – Ray dept.</td>
<td>X- Ray Dept.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Broken thermometers and sphygmomanometers</td>
<td>All wards &amp; departments</td>
<td>Collected safely in mercury spill kits</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chemicals used in production of biological, used in disinfection or as insecticides</td>
<td>Hospital Stores</td>
<td>-</td>
<td>Send for incineration or secured landfilling</td>
<td>-</td>
</tr>
<tr>
<td>Discarded expired infected blood or its products</td>
<td>Blood Bank</td>
<td>5% hypochlorite solution for 30 minutes</td>
<td>Autoclaved at common treatment facility</td>
<td>Liquid discarded in drainage after disinfection</td>
</tr>
<tr>
<td>Waste Stationery from office</td>
<td>Office</td>
<td>-</td>
<td>Formal recycling</td>
<td>Formal</td>
</tr>
<tr>
<td>Intact glass tubes, petri dishes, empty glass bottles</td>
<td>Lab.</td>
<td>5% Hypochlorite for 30 minutes</td>
<td>Autoclaved in CSSD</td>
<td>Autoclaved in CSSD</td>
</tr>
</tbody>
</table>

(Source: Mainstreaming Environmental Management in the Health Care Sector “Implementation Experience in India & Tool-Kit for Managers, The World Bank)
V. Organizational Arrangements for Implementation

A. National Level

The responsibility for ensuring the implementation of the HCWMP lies with the MoPH, which is the implementing agency for the SEHAT. The overall responsibilities will be with the Secretariat (MoPH). The specific responsibility will be of the Environmental Health Department under the General Directorate of Preventive Medicine (GDoPM) of the MoPH. It is important to note that Environmental Health Department and its designated Focal Officer for HCWMP implementation will work in consultation with the GCMU on the HCWM activities and act as focal points to ensure effective, successful implementation of this HCWM plan.

The HCWM is multi-sectoral in nature and various stakeholders such as the MoPH, NGOs providing BPHS and EPHS in the provinces, Provincial Hospitals, PPDs, National Hospitals, NEPA, Municipalities, Donor Agencies, Private Sector etc. would require a close coordination for effective implementation of HCWM Plan.

Institutional Capacity Building for Effective HCWM at National Level

The Institutional Capacity for HCWM in MoPH needs to be built up considerably for the policy and the plan to be effective. The Environmental Health Department should be made the nodal agency and the focal point for capacity building in the HCWM area in Afghanistan at the National, Regional, Provincial and the rural levels.

The following measures are suggested to build the institutional capacity for HCWM in MoPH:

- A Training-cum-Orientation Trip to the existing modern Common HCWM facilities among the neighboring countries to be arranged which will provide the Environment health staff and the Hospital Administrators with the requisite background information and knowledge about the planning and operational aspects of integrated waste management facility. This orientation trip will also provide the administrators to analyze the viability of the PPP models and the user fees structure of some successfully operating CWTFs.

- The key staff at the Environmental Health Department and the personnel from Health Department at Provincial level should be encouraged to undertake specialized courses/trainings in HCWM to update their knowledge and skills. Suggested contents for the orientation and train- the- trainers program has been later.

- Special focus must be given on building up a team of technicians for Operation and Maintenance functions for the HCWM equipment. The endeavor should be to develop capacity at the Regional level as well to ensure that the procured and installed HCWM equipment is operative with a minimal downtime.
o All key staff members at the MoPH including from the departments such as Administration, Finance, Training, Procurement etc. must undergo a basic training program in HCWM and the policy framework for the same. This will enable them to get familiar with the HCWM concepts, policy framework, plans, procurement schedules, training requirements, financial implications, relevance of the PPP models etc.

o The monitoring and evaluation of the HCWM for the BPHS and EPHS service providers at the provincial level must be entrusted to the respective NGOs. A training program aimed at the capacity building of these NGOs on HCWM needs to be developed and implemented.

o The above mentioned efforts need to be augmented by introducing a Train-the-Trainers program on HCWM. The major stakeholders such as the NGOs, EHD, PPD, and Nursing Heads of major National, Regional and Provincial Hospitals could be trained through this initiative and then they can train the relevant staff in their respective institutions.

o A manual on formation and operation of the HCWM systems at the HCU level needs to be prepared in Dari, Pashto and English by the MoPH in consultation with the experts. The manual must focus on the HCWM policy, framework, Plan, Methodology for formation and operation of a WMC at the HCU level, operational parameters, meeting schedules, major issues, reporting systems, M&E Framework etc. This would help to build the capacity at the HCU level to effectively implement the HCWM policy.

The MoPH recognizes the importance of budget for Infection Control and HCWM is allocated rather than the prevalent zero-cost approach among the health-sector professionals, administrators and workers.

A Program for ensuring local availability of the spare parts for the HCWM Equipment as well as the trained technicians will be implemented by the MoPH. The plant and equipment suppliers for HCWM will be mandated to provide onsite training to the local technicians during the installation and commissioning period and a minimum period of 6 operative months for the equipment.

B. **Provincial Level:**

At the provincial level, Provincial Health Directorate (PHD) and Implementing NGOs will be responsible for the implementation of HCWMP. In the provinces, the provincial public health directorate will assign monitoring Focal Point having proper ToR and will receive needed training for effective implementation of the HCWMP.
At the district level, Provincial Health Directorate (PHD) and Implementing NGOs will be responsible for the implementation of HCWMP. At the health facilities, this responsibility will lie with the Head of Health Facility.

Also, each major hospital supported by SEHAT project will have a HCWM Focal Officer with proper ToR and will report to the Hospital Director/Manager/Sartabib\textsuperscript{11}. Meanwhile, all healthcare workers will be trained and equipped to implement satisfactory infection control practices and sound waste management.

**Institutional Capacity Building for Effective HCWM at Provincial Level**

Infection Control and Waste Management systems require detailed guidance and strategic planning to enable related activities to be implemented in a relevant and structured manner. Most Provinces do not have plans for implementation and monitoring, with the focus being primarily on procurement of consumables and contractual arrangements with outsourced agencies or service providers.

The success of the PPP in providing BPHS and EPHS in the provinces by the NGOs could be a useful stepping stone for implementing HCWM across the country with Private Sector Participation, especially for implementing CWTFs on pilot basis as well as the 3rd party monitoring and evaluation of the HCWM on a regular basis.

The NGOs providing BPHS at the Provincial level should have an inbuilt system for monitoring the HCWM status in the HCUs. This should be made an integral part of the HMIS. The NGOs should also be responsible for monitoring & reporting on any major incidents such as Needle stick Injuries, Shutdown of the Incinerators/other HCWM equipment etc. through exception reports.

Figure 4 is illustration of Institutional Capacity Building needs to be carried out at various levels to ensure proper implementation of HCWM plan as well as monitoring & evaluation of HCWM system.

\textsuperscript{11}Hospital Director is known as Sartabib in Dari language
To implement the HCWM in a comprehensive systematic manner, the critical steps would be to setup linkages between the top to bottom regulatory and HCWM plan implementing body/agency (ies). It would also be necessary to list and clearly spell out the role and responsibility of the different body/agency in implementation of the plan. The proposed organization structure is illustrated at Figure 5.
Role of Different Stakeholders

The Role of different stakeholders in health-care waste management in Afghanistan have been worked out & presented below:

Table 13: Role of different stakeholders in health care waste management

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Legislation</th>
<th>Enforcement</th>
<th>Policies and Guidelines</th>
<th>Capacity Building</th>
<th>Monitoring</th>
<th>Research and development</th>
<th>Executing Agency</th>
<th>Financing and Sustainability</th>
<th>Land Allocation</th>
<th>Collection and Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEPA</td>
<td>Yes*</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MoPH</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Dept. Of Environmental Health</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Municipalities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>WHO</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multilateral organization</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>NGOs and others</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Health-care Facilities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Centralized Facilities and</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Sector/Accreditation Bodies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Yes*: This refers to the active involvement of the organization/institution in the activity specified in the column head.

The roles of the different stakeholders in the policy legislation, enforcement, capacity building etc. have been worked out based on the interaction with the various organizations & key personnel as well as the prevailing Healthcare Structures in Afghanistan.

Additional Regulatory guidelines to be issued

Based on the study of regulatory frameworks and policies available in Afghanistan pertaining to HCW, the need to introduce some of the important guidelines by the relevant authorities for better and effective management of HCW was highlighted. For instance Sanitary Guidelines, User fees, Compact Fluorescent Lamps, Bidding & Procurement Policy etc..

Table 14: Additional regulatory guidelines

<table>
<thead>
<tr>
<th>S.N</th>
<th>Additional Regulatory Guidelines to be issued</th>
<th>Government Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SANITATION GUIDELINES</td>
<td>NEPA, Municipalities</td>
</tr>
<tr>
<td>2.</td>
<td>User Fees</td>
<td>PPP Deptt, MoPH</td>
</tr>
<tr>
<td>3.</td>
<td>CFL Lamps</td>
<td>Ministry of Energy</td>
</tr>
<tr>
<td>4.</td>
<td>Bidding &amp; Procurement</td>
<td>PPP Deptt., MoPH, Private Transaction Advisory Service Providers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Ambient Air &amp; Water Quality Standards</td>
<td>NEPA, Afghan National Standards Authority (ANSA)</td>
</tr>
<tr>
<td>6</td>
<td>Construction</td>
<td>MoPH&amp; Municipality</td>
</tr>
<tr>
<td>7</td>
<td>Infection Prevention</td>
<td>MoPH</td>
</tr>
<tr>
<td>8</td>
<td>Specifications (Standards for HCW Transport vehicles)</td>
<td>MoPH, NEPA, Transport Dept.</td>
</tr>
<tr>
<td>9</td>
<td>Mercury Spillage Control Standards</td>
<td>MoPH, NEPA, Afghan National Standards Authority (ANSA)</td>
</tr>
<tr>
<td>10</td>
<td>Radioactive Wastes Disposal</td>
<td>MoPH</td>
</tr>
<tr>
<td>11</td>
<td>Guidelines for CWTF</td>
<td>MoPH, NEPA</td>
</tr>
</tbody>
</table>

**Figure 4**: Illustration of Proposed Organizational Chart.

**Plan Implementation Schedule**

Implementation of the HCWM Plan would include various activities including Public Consultation & Finalization of the HCWM Plan, Exposure Visits, Training and Capacity Building, Standards for Equipment, Procurement Policy framework, Regulatory Framework modification, Pilot Projects on
CWTF, Implementation of HCWM Plan at the HCU level, NGOs training, Integration with the HMIS, M&E Framework implementation etc. The complete framework for the complete implementation of the HCWM plan is expected to be about 2 years.

The overall implementation plan for HCWM in Afghanistan is illustrated at Figure 5. The proposed Implementation Schedule for HCWM Plan has been detailed at Figure 6. The said plan is expected to be implemented over a period of 24 months approximately.
Figure 5: HCWM Implementation Plan

- Draft Policy & Plan
- Finalisation of Policy and HCWM Plan
- Orientation Program/Train-the-Trainers
- Exposure Visit of a few Major Stakeholders
- Training of NGOs, PPDs, Other Stakeholders
- Regulation Framework
- Implementation of Pilot Project
- Tendering for Pilot Project
- Planning for Pilot Project
- Detailed HCWM Plan
- Monitoring & Evaluation
  - By NGOs
  - By Independent
- HCWM Implementation
  - Procurement
  - WMCs
  - Training
  - Linkages with CWTF (if applicable)
- Procurement
- WMCs
- Training
- Linkages with CWTF (if applicable)
- HCWM Plan for National, Regional, Provincial Hospital
- HCWM Plan for HCU located in Rural/far-flung areas
- Other Legislations, Bye-Laws & Framework (Water, Air, CWTF, landfills, Construction etc)
- Procurement Policy (Laying down of relevant specifications)
- Setting of equipment standards
- Training & Capacity Building, Manpower Resource
- M&E Framework Implementation
- PPP Framework
- Review of HCWM Plan and Course correction if required
Table 15: Proposed implementation schedule for HCWM Plan

| Activities                                                                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Finalization of the Plan Document                                         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Acceptance by Stakeholders                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Exposure Visit                                                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Orientation/Training the Trainers’ Program                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Standards for Bins, Equipment, PPE, Vehicles, Burial Pits, Trolleys etc.  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Procurement                                                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Regulatory Framework                                                       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Pilot Project Planning & Implementation including CWTFs, Landfill Sites, Storage, Secondary Storage, PPE etc. |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Implementation of HCWM Plan                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Guidelines for Regional Hospitals & Provincial Health Care Centre         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| NGO Training                                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| HMIS                                                                       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Pilot Project Roll Out                                                    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| M&E Framework Implementation including 3rd party monitoring                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

The CWTFs proposed to be implemented as part of the HCWM should be implemented based on a PPP model with the Private operator managing the HCW treatment & disposal at the landfill site apart from secondary collection & transportation of the HCWM from the HCUs. The revenue model could be based on a fixed cost to the HCU on a per bed norm on daily basis. The PPP department of the MoPH should be made an important stakeholder in developing this model.
VI. Operational Framework

A. Introduction

This chapter includes an overview of operational guiding principles on the components related to HCWMP. The purpose of this compilation is to have a single, first-level and easy-to-use reference. These guidelines draw from a number of publications / websites of WHO and other organizations.

The standardization of the current HCWM practices with the application of rigorous on-going management and monitoring procedures, based on the Laws and National Guidelines.

Action Points for development of a comprehensive Healthcare Waste Management Plan include the following:
A few key action points have been identified for implementing HCWM Plan

1) Formation of Waste Management Committee (WMC) comprising of Heads of the Hospital, Nursing Superintendent, Doctor/Nurse from Infection Control Committee, Sanitary Supervisor, Store-in Charge and supervisor of Housekeeping Staff
2) The designation of a Health-Care Waste Management Officer (HCWMO) who should be given the responsibility to operate and monitor the management of the HCW on a daily basis;
3) Standardized segregation procedures should be set-up in all Afghan HCFs by implementing a three bins system that should be systematically associated with a color coding, a labeling system as well as minimizing procedures;
4) The development of specific treatment/disposal methods according to the type and the location of the HCFs where the waste is generated.
5) Proper collection points/stores are needed to avoid the current stage dumping of the medical wastes in the hospital compound where it is contaminating the air and the hospital environment. (Table 3 above)
6) Feedback form from HCUs on Quantification & characterization of HCW as well as existing status
7) Training Kit & Manual (Dari & English versions). A manual may be developed which should be made available to the public and the end-user as a reference book for the following:
   • Setting up of Waste management Committee,
   • Factors to be considered for the selection of Technology
   • Color codes to be practiced
   • layout specifications for construction of Burial Pits
   • Safety guidelines to be followed
   • Manual for Symbols and Labels to be used, routes layout out etc.
   • Sharp Management Plan
The development of manual is already underway.

8) Orientation Program for all Major stakeholders
9) Setting Standards and specifications for Equipment
10) Regional, Provincial & HCU level plans
11) Exposure visit of Major stakeholders i.e. Environmental Health, PPP Divin. Major MoPH Stakeholders i.e. Hospital Administrators
12) Pilot Project with Kabul Municipality
13) Train the Trainers program
14) NGOs training on HCWM and Monitoring & Evaluation
15) Bidding of Pilot Project with active involvement of PPP Division, MoPH
16) Procurement of Equipment
17) Plans for Building Ambient Air specs, Burial Pits, Drinking Water Quality, Chimney Height for Incinerators with assistance from NEPA
18) Identification of Nodal persons/Focal Points at Provincial & HCU level
19) Formation of waste Management committee
20) Specific Plans for HCU's location Remote Area/Rural Areas
21) Report on Feasibility of CWTFs & action plan
22) AMC's for the existing Incinerators and other HCWM equipment
23) Recruitment of an Independent Agency for 3rd party M&E of HCWM in each of the Provinces
24) System for Approving/Registering Special Vehicles for carrying BMW.
25) Reporting Formats for HCWM at HCU level, Provincial level & the National Level
26) Roll-out Plan at the National, Regional & Provincial levels
27) Evaluate the impact of the HCWM Preparatory & Initial phase to develop the strategy for the subsequent years
28) Training of the technicians handling HCWM equipment such as Incinerators, Autoclaves, Microwaves and shredders
29) Training of the Focal Persons at the Provincial level responsible for planning & implementing HCWM in the respective provinces.

The role and responsibility of Waste Management Committee, their functions etc. have been illustrated at Annexure V.

B. Hospitals and health facility

HSCs/BHCs/CHCs

The operational framework and overall plan for healthcare waste at this level depends upon what services are being offered and identification of types of waste and quantity of waste to be generated from these facilities.

As per the revised BPHS Package, 2010/1389 the BHC is a facility offering primary outpatient care, immunizations and Maternal and Newborn care. Services offered include antenatal, delivery, and postpartum care; newborn Care, nonpermanent contraceptive methods; routine immunizations; integrated management of childhood illnesses; treatment of malaria and tuberculosis, including DOTS; and identification, referral, and follow-up care for mental health patients and persons with disabilities including awareness-raising.

The services of the BHC cover a population of about 15,000–30,000, depending on the local geographic conditions and the population density. In circumstances where the population is very isolated, the catchment population for a BHC can be less than 15,000. The minimal staffing requirements for a BHC are a nurse, a community midwife, and two vaccinators. Depending upon the scope of services provided and the workload of the BHC, up to two additional health care workers may need to be added to perform well-defined tasks (e.g., supervision of community health workers and

The CHC covers a catchment area of about 30,000–60,000 people and offers a wider range of services than does the BHC. In addition to assisting normal deliveries, the CHC can handle certain complications, grave cases of childhood illness, treatment of complicated cases of malaria, and outpatient care for mental health patients. Persons with disabilities and persons requiring physiotherapy services will be screened, given advice and referred to appropriate services in the area. The facility usually has limited space for inpatient care, but has a laboratory. The staff of a CHC is larger than that of a BHC; it includes both male and female doctors, male and female nurses, midwives, one (male or female) psychosocial counsellor when mental health activities are implemented, and laboratory and pharmacy technicians. Physiotherapists will visit CHCs on an outreach basis from the district hospital.

Typical health care wastes to be generated from above health facilities include Sharps, Pathological waste and potential infectious wastes. These can be further elaborated as Needles, Scissors, Razors, Broken glass, Body tissue, Fetuses, Body fluids, etc. Dressings, PVC tubing, Culture dishes, Test tubes, Vials, etc.
The incinerator as a treatment and disposal technology is not viable as in absence of requisite quantity of waste these become inoperative. The ideal approach would be that these wastes from point of production would be segregated according to the color codes and anatomical wastes would be buried inside the burial pit and sharps into sharp pit after shredding and autoclaving of the same. The other general wastes (food etc.) needs to be linked with the MSW wastes. Wastes such as plastic bags, piston, syringe barrel etc. may be sent for recycling after getting them disinfected. Refer the Figure 6 illustrating the steps involved in this approach. Option II in given in the figure can be adopted where CWTF is viable or located in nearby areas.

Figure 7 Schematic Diagram of HCWM Plan to be adopted at HSCs/BHCs/CHCs level

The guideline for construction of pits is provided at Annexure VI. This method is not new for Afghanistan; this is already being practiced at some of the healthcare facility already doing this. This method is also compliant with the Infection Prevention Control Act and Policy of the country which clearly underlines and prohibits the burning of infectious wastes. A table, containing evaluation of different technologies and factors to be considered while opting the technology for health care waste management, is provided at Annexure VII.

C. Storage Facility

All health-care facilities would be required to have a clearly designated waste storage area. The Waste storage area has to be well-ventilated, with adequate space to store infectious and non-infectious waste, and secured from pilferage. The shortage of storage areas results in the mixture of waste or creation of overflow which allows animals and scavengers easy access to infection waste. Another area of concern is the storage of insecticide stocks for vector control activities at primary healthcare facilities. This tends to be poor, with insecticides often being stored close to pharmaceutical stocks or in village houses where spraying operations take place. The responsibility to supervise the internal collection of wastes, their transportation, availability of waste bags, protective clothing and collection carts and crews should be given to a designated officer, i.e. In charge of HCWMO at the HCF.

The storage areas within the premises of the HCFs where no in-situ treatment & disposal is recommended and are linked with the CWTF, a uniform color-coding for different types of HCW needs to be followed as with the Bins, Bags & Trolleys to ensure uniformity & avoid confusion.
D. Infection Control

It is very important to note and recognize that infection control is the responsibility of all healthcare professionals – doctors, nurses, pharmacists and others. Preventing nosocomial infections requires a hygienic and sanitized environment and maintenance of good practices and use of protective gear. Routine cleaning of the health facility is absolutely essential, as that will keep the environment free from dust and soil.

Running water, soaps or antiseptic and facilities for drying without contamination, are required for healthcare workers to maintain cleanliness at all times. As a general practice of maintaining good hygiene, the floors of the healthcare facility should be first swabbed with a wet cloth, then swept to remove grits to avoid dust carrying pathogens from rising into the air and, finally, swabbed with a disinfectant solution. The swab cloth should be washed with detergent after every use. Infected linen in the hospital should be carefully packed in plastic bags, taken to the washing area, stored in bleach solution and then washed with the usual cleaning agents.

Spill Control

Spillage usually requires clean up only of the contaminated area. For spillage of infectious material, however, it is important to determine the type of infectious agent; in some cases, evacuation of the area may be necessary. Procedures for dealing with spillage should specify safe handling operation and appropriate protective clothing. In case of skin and eye contact with hazardous substance, there should be immediate decontamination. The exposed person should be removed from the area of the incident for decontamination, generally with copious amounts of water. Special attention should be paid to the eyes and any open wounds. In case of eye contact with corrosive chemicals, the eyes should be irrigated continuously with clean water for 10-30 minutes; the entire face should be washed in a basin, with the eyes being continuously opened and closed.

General Guidance for Spill control

a) Vacate and secure the area to prevent further exposure of other individuals.
b) Provide first aid and medical care to injured individual.
c) Inform the designated person (usually the waste management officer) who should coordinate the necessary actions.
d) Determine the nature of the spill.
e) Provide adequate protective clothing to personnel involved in cleaning –up
f) Limit the spread of spill.
g) Vacate all people not involved in cleaning up of the spillage involves particularly hazardous substance.
h) Neutralize or disinfect the spilled or contaminated material if indicated.
i) Collect all spilled and contaminated material (sharps should never be picked up by hand; brushes and pans or other suitable tools should be used). Spilled material and disposable contaminated items for cleaning should be placed in the appropriate waste bags or containers.
j) Decontaminate or disinfect the area, wiping up with absorbent cloth. The cloth (or other absorbent material) should be turned during the process, because this will spread the contamination. Working from the least to the most contaminated part, with a change of cloth at each stage should carry out the decontamination. Dry cloth should be used in the case of liquid spillage; spillage of solids, cloth impregnated with water (acidic, basic, or neutral as appropriate) should be used.
k) Decontaminate or disinfect any tools that were used.
l) Seek medical attention if exposure to hazardous material has occurred during the operation.

E. Treatment and Disposal of Health Care Wastes

All HCFs should treat and dispose the medical waste as per Table 11.

- All sharps in their puncture proof containers should be disposed in the sharps pit, which is to be located within the premises of the HCF.
- Infected organic waste, after disinfection, should be taken to the onsite deep burial pits and covered with a layer of lime and soil.
- Infected recyclables such as plastics and metals should be first disinfected using bleach solution and / or autoclaved before sent for recycling.
- Collection of garbage / municipal solid waste, the general / communal waste – non-infected - should be managed with Common municipal waste treatment facilities. Organic waste such as kitchen waste and leaf fallings would be collected and transported with common municipal solid waste and depart for windrow composting at the landfill site. Recyclable material such as packaging material and paper should be sold to authorized recyclers or to link with Municipal Wastes. Care must be taken to ensure that the recyclable waste is not infected and kept separated from infectious wastes at all times.

All equipment used for bio-medical waste treatment should be periodically maintained. Both preventive and corrective maintenance schedules and records should be retained in the HCF.

Activities undertaken to improve health services, especially in major health centers and hospitals will inevitably create waste that is potentially hazardous. Health care wastes are typically more hazardous that other types of wastes and are of concern in assessing proposed health care improvement activities. To address these concerns, it is essential to put in place safe and reliable methods for handling and proper disposal of HCW.

Health care waste includes all wastes generated in the delivery of health care services. WHO (1999a) estimates that 75-90% of waste produced by HCF originates from non-risk or general sources (e.g., janitorial, kitchens, administration) and is comparable to domestic waste. The remaining 10-25% of HCWM is classified as hazardous and poses a variety of potential health risks.

Table 16: General Waste Management Rules

<table>
<thead>
<tr>
<th>Option</th>
<th>Waste Category</th>
<th>Treatment and disposal</th>
<th>Current practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Human anatomical waste (human tissues, organs, body parts)</td>
<td>Incineration/ deep burial</td>
<td>Incineration/ deep burial</td>
</tr>
<tr>
<td>2</td>
<td>Animal waste (animal tissues, organs, body parts carcasses, bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals colleges, discharge from hospitals, animal houses)</td>
<td>Incineration/ deep burial</td>
<td>Incineration/ deep burial</td>
</tr>
<tr>
<td>3</td>
<td>Microbiology &amp; Biotechnology waste (wastes from laboratory cultures, stocks or specimens of micro-organism live or attenuated vaccines, human and animal cell culture used in research and infectious agents from research and industrial laboratories, wastes from production of biological, toxins, dishes and devices used for transfer of cultures)</td>
<td>Local autoclaving/ microwaving/ incineration</td>
<td>Local autoclaving/ incineration</td>
</tr>
<tr>
<td>4</td>
<td>Waste sharps (needles, syringes, scalpels, blades, glass, etc. that may cause puncture and cuts. This includes both used and unused sharps)</td>
<td>Disinfection (chemical treatment/ autoclaving/ microwaving and mutilation/ shredding)</td>
<td>Disinfection (chemical treatment/ autoclaving)</td>
</tr>
<tr>
<td>5</td>
<td>Discarded medicines and cytotoxic drugs (wastes comprising of outdated, contaminated and discarded medicines)</td>
<td>Incineration, destruction and drugs disposal in secured landfills.</td>
<td>Incineration, destruction and drugs disposal in secured landfills.</td>
</tr>
<tr>
<td>6</td>
<td>Solid waste (items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines beddings, other material contaminated with blood)</td>
<td>Incineration / autoclaving/ microwaving</td>
<td>Incineration / autoclaving</td>
</tr>
<tr>
<td>7</td>
<td>Solid waste (wastes generated from disposable items other than the waste sharps such as tubing, catheters, intravenous sets, etc)</td>
<td>Disinfection by chemical treatment/ autoclaving/ microwaving and mutilation shredding</td>
<td>Disinfection by chemical treatment/ autoclaving</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8</td>
<td>Liquid waste (waste generated from laboratory and washing, cleaning, house-keeping and disinfecting activities)</td>
<td>Disinfection by chemical treatment and discharges into drains</td>
<td>Disinfection by chemical treatment and discharges into drains</td>
</tr>
<tr>
<td>9</td>
<td>Incineration Ash (ash from incineration of any bio-medical waste)</td>
<td>Disposal in municipal landfill</td>
<td>deep burial in the health facility</td>
</tr>
<tr>
<td>10</td>
<td>Chemical waste (chemicals used in production of biological, chemicals used in disinfection, as insecticides, etc)</td>
<td>Chemical treatment and discharge into drains for liquids and secured landfill for solids</td>
<td>NA</td>
</tr>
</tbody>
</table>

F. Segregation of Waste and Onsite Storage

Segregation of waste at source is a single most important step in bio-medical waste management. Once bio-medical waste mixes with general waste, the waste management problem magnifies and becomes unmanageable. It is critical that wastes be segregated at the point of generation itself. The following Table 17 gives the segregation method that should be used for the various categories of waste. All waste containers should be made of good quality plastics or other strong material. These should have smooth inner and outer surfaces to avoid dirt / dust sticking in indentations. They should be lined with non-chlorinated plastic liners and should be kept closed at all times. The onsite storage locations should be properly planned and be made available. Ideally, these should be nearest to the point of generation. Where potentially infected wastes are generated, 2% bleach solution (freshly prepared twice a day) should be put in the waste container and the waste should be put in the container having this solution. The quantity of waste in each of the waste containers should be weighed and a log should be maintained. This should be done prior to evacuating the container into the final onsite disposal.

| Table 17: SHC, BHCs, and CHCs’ Wastes |
|---|---|---|---|
| **Type of Waste generated** | **Waste management method** | **Staff training** | **Remarks** |
| **Sharps:** | | | |
| Needles | Segregation into puncture-resistant containers. Deep burial. | Use training provided to vaccinators as the basis for staff handling this type of waste. | Segregation into puncture-resistant containers. Deep burial. |
| Scissors | | | |
| Razors | | | |
| Broken glass, etc. | | | |

| **Pathological waste:** |
|---|---|---|---|
| Body tissue | Deep burial. | Teach staff to dispose of these materials immediately. | Will need designs for deep burial pit covers that allow these wastes to be easily dumped |
| Fetuses | | | |
| Body fluids, etc. | | | |

| **Potentially infectious waste, containers with blood products:** |
|---|---|---|---|
| Dressings | Deposit into color-coded bag. | Make staff more aware of the dangers of this kind of waste and how to store these materials | Little experience with segregating and proper disposal of these materials |
| PVC tubing | Deep burial. | | |
| Culture dishes | | | |
| Test tubes | | | |
| Vials, etc. | | | |

The waste from containers should be transported to the appropriate disposal points. All personnel responsible for the waste containers should wear gloves, masks, aprons and proper footwear. The personnel should wash their hands and feet with soap and disinfectant solution after every handling of these containers. Cleaning (sweeping and swabbing) should be undertaken twice daily and all the waste from the dust bins should be emptied twice a day. No infectious wastes should be stored beyond 24 hours.
G. Transportation of health care Waste

Medical wastes have to be transported both within the health facility and from the facility to the final disposal location. Properly designed carts, trolleys and other wheeled containers will be used for the transportation of waste inside the facilities. Wheeled containers shall be so designed that they have no sharp edges. Waste handlers must be provided with uniform, apron, boots, gloves, and masks, and these should be worn when transporting the waste as described earlier.

H. Use and Disposal of Auto-Disable (AD) Syringes

The MoPH recommends that Auto-Disable (AD) syringes are to be used for immunization instead of glass or disposable syringes. In parallel to introducing AD syringes, MoPH has also developed and disseminated detailed user guidelines that outline steps that should be followed when using an AD syringe and disposing of AD syringes. Table 18 defines the steps to be followed for use and disposal of AD syringes.

Table 18: Instruction for use of AD syringes

<table>
<thead>
<tr>
<th>No.</th>
<th>Steps/ Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the correct syringe for the vaccine to be administered</td>
</tr>
<tr>
<td>2</td>
<td>Check the packaging. Don’t use if the package is damaged, opened or expired.</td>
</tr>
<tr>
<td>3</td>
<td>Peel open or tear the package from the plunger side and remove the syringe by holding the plunger. Discard the packaging into a black plastic bag.</td>
</tr>
<tr>
<td>4</td>
<td>Remove the needle cover/cap and discard it into the black plastic bag. Do not move the plunger until you are ready to fill the syringe with the vaccine and do not inject air into the vial as this will lock the syringe</td>
</tr>
<tr>
<td>5</td>
<td>Take the appropriate vaccine vial, invert the vial, and insert the needle into the vial through the rubber cap. Insert the needle such that the tip is within the level of the vaccine. If inserted behind you may draw air bubble, which is very difficult to expel. Do not touch the needle or the rubber cap of the vial.</td>
</tr>
<tr>
<td>6</td>
<td>Pull the plunger back slowly to fill the syringe. The plunger will automatically stop when the necessary dose of the vaccine has been drawn (0.1 or 0.5 ml). Do not draw air into the syringe. In case air should accidentally enter the syringe. Follow these steps to remove the air bubbles: (a) Remove the needle from the vial. Holding the syringe upright, tap the barrel to bring the bubbles towards the tip of the syringe. (b) Pull the plunger back to allow air to come in through the needle until it comes in contact with the air bubble in the syringe barrel. (c) Then carefully push the plunger to the dose mark (0.5 or 0.1 ml) thus expelling the air bubble</td>
</tr>
<tr>
<td>7</td>
<td>Clean appropriate injection site, if necessary with a wet swab and administer the vaccine</td>
</tr>
<tr>
<td>8</td>
<td>Push the plunger completely to deliver the dose till it gets locked.</td>
</tr>
<tr>
<td>9</td>
<td>Cut the hub of the syringe immediately after use with a hub-cutter that collects the sharps in a hard white translucent plastic container. Do not recap the needle. Then collect the cut syringes in a red plastic bag. The cut/destroyed syringes, barrels and needles must be disinfected at the designated place and properly disposed off.</td>
</tr>
</tbody>
</table>

I. Reporting System

The practice of record keeping shall be a step towards achieving the goal of institutionalizing the HCWM system internally wherein all necessary information shall be trapped at ward/unit level in the hospital. This shall be subsequently consolidated by the waste management in-charge to prepare the monthly report to be sent from the HCU at the provincial level. This practice of record keeping shall also enable the hospital authority to meet up the legal requirements as per the new policy. The tracing of different waste management activities shall also be possible if a proper system of record keeping remains in vogue.

The record to be kept shall be of distinctly two types- one for keeping all records related to HW to be generated within the HCU and the other to track performance of the scavenging contractor engaged for the non-clinical (Sanitary and scavenging) services in the hospitals (wherever applicable). Specific formats of registers have been developed for keeping both types of records which has been discussed below:

a. Record Keeping by Hospital Staff
Some records shall be maintained in specified registers to capture various information pertaining to the HCWM at various locations within the hospital by the hospital staff. The salient features about these registers and the responsibilities are given below:

i) Labelling of Bags

During collection of the bags from the bins, the bags shall be tied up at the neck and labeled indicating the date of collection and name of ward/unit. The responsibility of this lies with the attending nursing staff for each ward and assigned hospital staff for other units. The labels shall be signed by the concerned staff.

ii) Waste Collection Records

In order to institutionalize the HCWM system at the ward and unit level, a waste segregation register shall be maintained by the ward nurse or concerned hospital staff to record the number of bags being generated from the units. Attending ward sister or staff (for other units) shall enter the number of different colored bag in duplicate (carbon copy) in the specified format, sign and send it to the In-charge, WMC. The In-charge shall receive, countersign and keep the original for further entry and send back the duplicate copy to the ward/unit for their records.

b. Waste Management Record

A register shall be maintained by the In-charge, WMC of the hospital to collect daily record of aggregate number of colored bags collected from the wards and units. The WMC after receiving the copies of the waste segregation registers from all the units shall consolidate the records to calculate the total number of bags generated on that day.

This record shall be maintained on a daily basis and finally be consolidating at the end of the month to prepare the monthly waste management report.

c. Waste Treatment Records

The operator of the waste autoclave shall maintain records of the usage of the autoclave and submit the records to the WMC for consolidation. A register shall be maintained by the operator in which the following records shall be maintained. Daily record of boiler operation, treatment cycle details, usage of autoclavable bags, and number of bags containing infectious plastic waste.

J. Common Waste Treatment Facilities Centre (CWTFs)

A common healthcare waste treatment facility is a set up where healthcare waste, generated from a number of healthcare units, is imparted necessary treatment to reduce adverse effects that this waste may pose. The treated waste finally is sent for disposal in a landfill for recycling purposes. This as an option has already been legally introduced and successfully being operated in other country like India.

The coverage Area for One CWTF may be allowed to cater up to 4000 beds at the approved rate by the prescribed authority such as NEPA. However in an area where 4000 beds are not available within a radius of 100 km, another CWTF may be allowed to cater the healthcare units situated outside the said 100 km.

Pilot CWTF Projects in 6 major Towns i.e. Kabul, Mazar, Jalali, Heart, Kandhar, Ghazni) should be taken up preferably on a PPP basis and the outcome and the impact of the same post – implementation should be ascertained and corrective action if required should be taken for the subsequent projects.

The guidelines and standards to be followed up while setting up CWTFs have been provided at Annexure VIII.
Awareness and Training

b. Awareness

Every province should plan and undertake general awareness raising activities for IMEP, which should include all levels of healthcare facilities. All IMEP related awareness activities should be fully integrated with those being undertaken under the other national health programs. Professional bodies like health promotion department of MoPH can be involved in enhancing understanding and promoting good practices. At the health facilities, appropriately located display of IEC materials is most effective in ensuring that workers follow segregation, treatment and infection control practices.

Public Consultation is an important ingredient of any HCWM Plan. It is proposed to have extensive public consultations at various levels with different stakeholders in Afghanistan such as NGOs, Hospital, Administrators, Municipalities, Doctors and other medical staff, elected representatives, community, relevant government ministries and departments. before the proposed HCWM plan is taken up for implementation. It is also suggested that since the “ownership” by the various stakeholders is an important criteria for its success, the HCWM plan may be subjected to minor changes & modifications based on the feedback received during the Public consultations while meeting the overall Environmental compliance criteria and the world Bank Safeguards.

The capacity of the stakeholders to adopt the HCWM Plan would also be ascertained during the Public Consultations and the training programs would be worked out accordingly. The Public Consultation process would also help to create awareness among the stakeholders including the Public at large which could be further augmented during the HCWM implementation through the IEC material.

The proposed HCWM plan apart from being disseminated through the websites of MoPH and The World Bank, must also be shared with all the participating NGOs and the concerned PPDs, Municipalities, HCUs, NEPA etc. so that a direct feedback from various stakeholders could be received. Based on the feedback and the comments, the final HCWM Plan within the broad framework of the HCWM policy could be finalized before the Policy is taken up for framing the regulations.

The other relevant guidelines, policy changes etc. required for implementing the HCWM plan also be ascertained during the Public Consultation process.

c. Training

i) Capacity Building at Central and Provincial Levels

The reinforcement of the institutional capacity will be done at National and provincial levels through specific technical training to support the HFs in implementing the new HCWM policy.

The exposure to the new concepts such as CWTFs, Color- Coding, Sanitary Land filling, Deep Burial Pits, New equipment as Double Chamber, Incinerator, Autoclaves, and Shredders etc. need to be provided to the various stakeholders.

The PPHD will be responsible for training of its staff in HCWM plan implementation. There are two modules for training modules – (i) train-the-trainer and (ii) regular ongoing training within the health facilities. The implementing NGOs will undertake a needs identification to facilitate planning and allocation of budget for this activity. It is envisaged that all health facilities under intervention areas of the SEHAT project have officially recognized trained health personnel who will be responsible for health care waste management. Existing awareness and training materials can be used to further develop the skills for the sound management of health care wastes. These resources will be available at MoPH and NGOs.
a. **Training of The Trainers (TOT) Program**

An outline of train the trainers program should be in line with the following table (Table 19).

<table>
<thead>
<tr>
<th><strong>Table 19: Training of the Trainers (TOT) Program</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAY 1</strong></td>
</tr>
<tr>
<td>Inaugural</td>
</tr>
<tr>
<td>Session 1</td>
</tr>
<tr>
<td>Introduction to HCW &amp; HCWM</td>
</tr>
<tr>
<td>HCWM POLICY &amp; PLAN</td>
</tr>
<tr>
<td>Organizational structures</td>
</tr>
<tr>
<td>Session 2</td>
</tr>
<tr>
<td>Infection Prevention</td>
</tr>
<tr>
<td>Policy</td>
</tr>
<tr>
<td>PPE</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
</tr>
<tr>
<td>Session 3</td>
</tr>
<tr>
<td>Waste Collection &amp; Segregation</td>
</tr>
<tr>
<td>Color-Coding of Bins</td>
</tr>
<tr>
<td>Sharps Management</td>
</tr>
<tr>
<td>Location of Bins</td>
</tr>
<tr>
<td>Session 4</td>
</tr>
<tr>
<td>Waste Transportation &amp; Secondary</td>
</tr>
<tr>
<td>Storage</td>
</tr>
<tr>
<td>Color-Coding of Boxes, PP Containers, Trolleys, VATs</td>
</tr>
<tr>
<td>etc.</td>
</tr>
<tr>
<td><strong>DAY 2</strong></td>
</tr>
<tr>
<td>Opening Remarks</td>
</tr>
<tr>
<td>Session 1</td>
</tr>
<tr>
<td>Waste Treatment</td>
</tr>
<tr>
<td>Disinfection</td>
</tr>
<tr>
<td>Autoclaving /Hydroclaving</td>
</tr>
<tr>
<td>Session 2</td>
</tr>
<tr>
<td>Waste Disposal</td>
</tr>
<tr>
<td>Ash from Incinerators</td>
</tr>
<tr>
<td>Disinfected Sharps waste</td>
</tr>
<tr>
<td>Disinfected other Infection Waste</td>
</tr>
<tr>
<td>General Waste</td>
</tr>
<tr>
<td>Session 3</td>
</tr>
<tr>
<td>Technologies and Equipment</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
</tr>
<tr>
<td>Session 4</td>
</tr>
<tr>
<td>Training</td>
</tr>
<tr>
<td>Waste Management Committee</td>
</tr>
<tr>
<td>Implementation Schedule</td>
</tr>
<tr>
<td>Reporting systems</td>
</tr>
<tr>
<td>Monitoring &amp; Evaluation</td>
</tr>
<tr>
<td>Session 5</td>
</tr>
<tr>
<td>PPP</td>
</tr>
<tr>
<td>CWTF</td>
</tr>
<tr>
<td>Valedictory Session</td>
</tr>
<tr>
<td>Feedback</td>
</tr>
<tr>
<td>Action Plan</td>
</tr>
<tr>
<td>Vote of Thanks</td>
</tr>
</tbody>
</table>

b. **Regular On-Going Training Within The Health Facilities**

**Training of Healthcare Personnel**

The training needs to be imparted to all health-care professionals on waste management issues, not only to provide them with the core knowledge, skills and attitude to effectively work for the implementation of proper waste management but also to make them understand the importance of good waste management practices within and outside the health-care facility. The role of different health-care providers and common messages on proper waste management practices should be communicated to health care workers.

**Target Groups:**
- Health Care Facility managers and Administrative Staff responsible for implementing regulations on health care waste management
- Medical Doctors
- Nurses and Assistant Nurses
- Cleaners, Porters, Housekeeping Staff and Waste handlers
Contents of the Training Program for Healthcare Personnel

The training programs should contain broadly the following topics:

- Hazards of Health-care Waste
- Infection Control Measures
- Healthcare Waste Management and Handling Policy in the country
- Waste Management Steps; Waste Collection, Segregation, Transportation, Storage, Treatment and Disposal
- Liquid Waste Management
- Cleaning of Spills
- Principle of Waste Minimization
- Alternatives to hazardous chemicals
- Occupational Safety Issues

The information about the basic Health Care Waste Management system need also be included in the program.

Training Package for each Target Group

The development of a training package should be suitable for the various types of healthcare establishments including CHCs, PHCs etc. A classification of training package can be made as under:

For Personnel providing Health Care

- **For Waste Handlers:** Topics covered may include the best practices for waste management, health hazards, on site transportation, storage, safety practices and emergency response.
- **For Health Care Waste Management Operators:** Training course should include:
  i) Information on the risks associate with the handling of health care waste;
  ii) Procedures for dealing with spillage and other accidents
  iii) Correct use of Protective clothing
- **For Staff who transport the Waste:** The purpose of training to these group is to enable the staff to carry out all procedures for:
  i) Handling, Loading and unloading of waste bags and containers
  ii) Dealing with Spillage or accidents
  iii) The use of Personal Protective Equipment (PPE) and ;
  iv) Documentation and recording of health care waste, e.g. by means of consignment note system to allow waste to be traced from the point of collection to the final place of disposal.
- **For Treatment Plant Operators (TPOs):** Arrangement of Training for the prospective TPO should be made by healthcare establishments. The contents should be in line with the following:
  - General operation of the treatment facility
  - Health, Safety, and environmental implications of treatment operations;
  - Technical procedures for plant operation
  - Emergency response, in case of equipment failures and alarms for example;
  - Maintenance of the plant and record keeping;
  - Surveillance of the quality of emissions and discharges, according to the specifications

Training of health facility staff on HCWM is budgeted under component 1 of SEHAT for health workers. The NGO (18 provinces) will have provisions in their contracts to training the health facilities focal HCWM focal points. The MoPH-SM will train the
heath facility HCWM focal points in 4 provinces. The resources for the training of management level for the MoPH personal in the HCWM department as well as at the provincial level will come from the second component of SEHAT. During first life of this HCWM (first 6 months) the training materials will be developed, the trainers will be identified. Once the comprehensive HCWM is developed after the first 6 months, the actual trainings will start in a cascade manner. The trainers will be trained in Kabul both among MoPH and NGO staff. Then these trainers will conduct training for the provincial level HCMM focal points, who will in their turn train the HCWM focal points at health facility level.

The Ministry of Public Health with the help of World Bank will have a South to South Exchange visits and cooperation with the Health Ministry of India on the Health Care Waste Management system creation in the Afghanistan. This program, SAR Health Care Waste Management Knowledge Exchange (SSKE Visit), is funded by a trust fund and will help the MoPH in Afghanistan to improve HCWM practices in the country.

VII. Monitoring

a. Internal

As a part of SEHAT, quarterly progress monitoring would be done at all levels, i.e. provincial and health facilities. In turn, MoPH will have to submit quarterly progress monitoring reports to the multilateral departments. These quarterly progress reports should include a collation / aggregation of the data / information compiled in each health facility.

The review will cover the following:

- Status of HCWMP implementation, positive outcomes and how to improve poor performance
- Training implementation and its effectiveness
- Need for modifications to existing operational guidelines or introduction of new guidelines
- A set of monitoring indicators for implementation HCWM plan should be merged with the existing M&E system

Currently Environment Health Officers of Province monitor and evaluate the waste management practice at the Provincial level and at District level and at Local Level NGOs play crucial rule in waste management in Afghanistan. Figure 9 is illustration of Existing HCWM monitoring and Evaluation (M&E) framework in Afghanistan.

**Figure 4**: Existing HCWM- M&E Framework

Monitoring and evaluation of BPHS
In order to effectively monitor and evaluate BPHS, the ministry focuses on results defined by the Health and Nutrition Sector Strategy (HNSS) and Millennium Development Goals. National targets have been defined in the HNSS to be achieved by 2013. However, specific targets should be set at the provincial level based on the results of provincial household surveys.

Information and reports produced by the MoPH, other ministries, and agencies that are used to gather information on performance and implementation of BPHS include:

1. Health Management Information System (HMIS) providing information in facility-based estimates for select process indicators;
2. National Health Services Performance Assessment providing information on process and outcome indicators;
3. Census figures provided by the Central Statistics Office provide population estimates at village, district, province and national levels;
4. Household surveys such as the Afghanistan Health Survey (AHS), Multiple Indicator Cluster Surveys (MICS) and National Risk and Vulnerability Assessment (NRVA) providing information on selected primary health and nutrition indicators at population level;
5. Other special studies, like qualitative surveys, measurement of maternal mortality, etc.

b. External

Given the need to avoid self-evaluation by NGO, hospital managers, and MoPH program managers, that could result in conflicts of interest, independent, third party evaluation will be extensively used. This will allow the MoPH to hold NGO and hospital managers accountable for tangible results. It will also allow all stakeholders to have an independent assessment of progress in health service delivery.

The NGOs providing BPHS at the Provincial level should have an inbuilt system for monitoring the HCWM status in the HCUs. This should be made an integral part of the HMIS. The NGOs should also be responsible for monitoring & reporting on any major incidents such as Needle stick Injuries, Shutdown of the Incinerators/other HCWM equipment etc. through exception reports.

Monitoring will be undertaken by trained staff through 3rd party monitoring of facilities under the PPAs. Feedback on the performance of the waste management system will be provided at facility, provincial, and national levels. The results of this monitoring will be used in the formulation of the Action Plan for Management of Health Care Waste.

The project will support annual surveys of facilities delivering the BPHS to assess quality of care, availability of inputs, staffing, supervision and waste management. This effort will build on the successful experience with the “balanced scorecard” assessments that have provided annual data on more than 630 health facilities nation-wide and form a rich source of information on quality of care, availability of key inputs, and human resources.

The project will support annual hospital assessments in all public hospitals in the country. MoPH has made great strides in having a well-functioning HMIS that provides near real time data coming from the administrative recording and reporting system. Quarterly reports from the national HMIS will be used by the project to assess progress and identify critical issues.

<p>| Table 20: List of Indicator for monitoring of HCWM |</p>
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Baseline</th>
<th>Target</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of health facility in which safety boxes or closed containers are being used properly for disposal of used sharps</td>
<td>84.4</td>
<td>10 Point increase over baseline</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>Proportion of health facility in</td>
<td>68.6</td>
<td>10 Point</td>
<td>Third party</td>
</tr>
<tr>
<td></td>
<td>Proportion</td>
<td>Increase</td>
<td>HFA</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-------</td>
</tr>
<tr>
<td>which syringes are being disposed of WITHOUT being recapped</td>
<td>61.7</td>
<td>10 Point increase</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>Proportion of health facility with posted procedures for</td>
<td>65.6</td>
<td>15 Point increase</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>decontamination procedure steps</td>
<td></td>
<td>over baseline</td>
<td></td>
</tr>
<tr>
<td>Proportion of health facility with a basin with a water source</td>
<td>64.2</td>
<td>16 Point increase</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>and soap available in this room</td>
<td></td>
<td>over baseline</td>
<td></td>
</tr>
<tr>
<td>Proportion of health facility in which disinfectants are being</td>
<td>68</td>
<td>12 Point increase</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>used</td>
<td></td>
<td>over baseline</td>
<td></td>
</tr>
<tr>
<td>Proportion of health facility that disposable syringes are being</td>
<td>99.8</td>
<td>Maintain the baseline</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>for all injections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of health facility with evidence that the sterilizer</td>
<td>66.5</td>
<td>15 Point increase</td>
<td>Third party HFA</td>
</tr>
<tr>
<td>is being used regularly</td>
<td></td>
<td>over baseline</td>
<td></td>
</tr>
</tbody>
</table>

**Key components of the HCWM need to be monitored**

The Key components of the HCWM need to be monitored at regular intervals to ensure that the HCWM Plan is being implemented effectively. The factors which need to be constantly monitored at the HCU level are as follows:

- Formation of Waste Management Committee (WMC)
- Notification of the Focal Person for HCWM.
- Number of Training Programs organized on HCWM and the number of trainees
- Procurement & Consumables including PPE, Bins, Bags, Autoclaves, PP Containers Trolleys etc.
- Enclosed Secondary Storage space for HCW within the premises
- Effective implementation of the color-coding for HCWM.
- Reporting systems for HCWM and Exception Reports
- Proper Sharps Management
- If located in Rural/Remote Area, provision for Deep Burial Bits as per the specifications
- Immunization for Waste collectors.
- Compliance with the IP Protocol
- Segregation of General Waste from Biomedical Waste
- Segregation of different types of BMW e.g. Anatomical Waste, other Infections waste and sharps waste.
- Proper primary collection and transportation of segregated BMW in closed Bags to Secondary storage.
- Linkages with the CWTFs if treatment not being done insitu.
- If Incinerator is installed in the premises its location should be proper, the gaseous emissions must meet the ambient air standards, the ash must be disposed off properly
- The third party monitoring being proposed under the HCWM Plan could address these issues on a periodic basis. The ash from the incinerators should be disposed of in the landfill site. In the smaller towns, rural areas and remote places where incinerators are used the ash could be disposed of to the burial pit.
- Mechanism to have separated General Waste Collected by the Municipalities
If BMW is transported to a CWTF, it must be done in designated closed vehicles carrying Bio-hazardous symbol & duly approved by NEPA/MoPH.

The HCU building meets the construction guidelines of the MoPH.

The Sanitation & drinking water quality is of acceptable.

VIII. BUDGET

Phased Manufacturing Program

It is suggested that keeping in view the local domestic manufacturing capabilities, and the volumes of the different equipment & products required under the HCWMP, adaptability to different levels of technology etc. A time-bound Phased Manufacturing Program (PMP) is implemented in a manner that there is a definite trend towards indigenization in a phased manner.

A proposed PMP for the major equipment & consumables to be procured under the HCWMP is as follows (Table 21):

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Item</th>
<th>Indigenization/Local Procurement Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Safety Gears, Colored Bins &amp; Bags, Trolleys, Sharps Safety Boxes</td>
<td>5-6 Months</td>
</tr>
<tr>
<td>2.</td>
<td>Construction of Deep Burial Pits &amp; Secondary Storage/VATS at HCUs</td>
<td>6-8 months</td>
</tr>
<tr>
<td>3.</td>
<td>CWTF Construction &amp; operation</td>
<td>9-12 months</td>
</tr>
<tr>
<td>4.</td>
<td>Procurement of Incineration *, Autoclave * and Shredders *</td>
<td>18-24 months</td>
</tr>
</tbody>
</table>

*The important controls, sensors, thermostats & instrumentation may continue to be imported while the fabrication and final assembling may be indigenized within 2 years’ time frame.

Procurement Policy

A detailed Procurement Policy needs to be developed by the MoPH in consultations with the other stakeholders and in conformity with the proposed HCWM Policy framework. The CWTF model is proposed to be implemented on a PPP mode where Private Sector investment is envisaged. However, the initial projects are expected to be Pilot Projects where funding has to come from MoPH. The large & more expensive equipment could be procured at the Regional/Provincial level.

A viable Procurement Policy decentralized purchase of PPE, Bins, Bags, Trolleys etc. at the HCU level with clearly identified set of supplier, is required to be developed. The managing NGOs would have to be properly apprised about this policy. A listing of specifications of the major equipment including a list of the potential suppliers, both domestic & foreign, needs to be developed and shared with all stakeholders.

The Procurement Plan should be dovetailed with the implementation of the HCWM Plan to ensure that the equipment is in place when the proposed plan is being implemented at the ground level.

The procedures for procurement also need to be developed. A separate document on the Procurement Policies and Procedures to be used by all the stakeholders, need to be developed by the time the HCWM plan is implemented.

Financing

There is a need to work out and implement innovative models for financing the HCWM plan and operations in Afghanistan given the budgetary constraints of the Government. A PPP model with active participation of the Private Sector in HCWM would go a long way in implementing an effective HCWM Policy Framework and implementing projects at the ground level.

The concept of user fees needs to be incorporated in the PPP model to ensure sustainable operations for the Private to invest in these projects. The Capex and the Opex for the project
could be recouped through a user-fees mechanism in which the HCU can pay the operator on a per bed basis. The revenue generated from the User-Fees over a period of time (15 years) could offset the initial investment as well as the operating costs of the Private Operators while ensuring an adequate return. This approach may become even more relevant in the case of CWTFs where substantial investments and costs would be required as well as a high level of technical competence and expertise on part of the private operator.

The user fees are expected to offset the financial requirements to sustain the HCWM plan in the subsequent years.

A mode to develop a “User Fees” based on the “Polluter Pays” principle needs to be developed for the HCUs using the facilities of a CWTF for the treatment of HCW treatment & disposal. The daily user fees could be based on a fixed amount per bed basis and is likely to be in the range of 7-10 Afghanis.

The user fees would have to be paid by the HCU to the CWTF operator. A successful demonstration of this model should be provided to the important stakeholders who will undertake the exposure visits to the neighboring country.

COSTING

The costing of training and Capacity Building at various levels has been worked out as under:

1. Waste Management Committee
2. Doctors
3. Nurses and Para-Medical Staff.
4. Sanitation Workers
5. Administrators

The training cost likely to be occurred has been worked out at Table 22. These costs have been worked out on the basis of average number of participants, duration of training, training module etc.

For training and capacity building including IEC material requirement at various levels and orientation program and TOT (Training of Trainers) have been worked out for Five years. Figure 10 is illustration of fund requirements for training and capacity buildings at various levels.

The wages and salaries of the technical & maintenance staff as well as the costs for 3rd party M&E of HCWM plan implementation have not been covered in the financial estimates.

Figure 5: Year wise Investment Required
IEC Material

IEC material (POSTERS, DISPLAYS, STICKERS, BANNERS) play a major role in disseminating the information and creating awareness among the various stakeholders and the public at large.

The IEC material needs to be developed on the following subjects:
- Usage of PPE (Directed at the Nursing Staff, para-medical staff)
- Waste Segregation at source (For Nursing Staff and Para Medical staff)
- Safe Disposal of Sharps (For Nursing Staff and Para Medical Staff)
- Color-coding of different types of Wastes (For Doctors, Nurses, Para-Medical Staff, Sanitation workers and the Public)
- IEC Material for public focusing on usage of Black Bins for General Waste

The IEC Material should be in Dari and Pashto and must be prominently DISPLAYED at all relevant strategic points in the HCF.

The cost estimates of the designing & printing of the IEC material have been worked out & presented in Table 22.

INVESTMENT REQUIREMENT FOR TECHNOLOGY UPGRADEATION AND NEW PROCUREMENTS

Based on the estimate of Healthcare waste generation in the country, it broad requirement of technology and equipment for overall effective management of Health Care Waste in Afghanistan has been worked out.

The proposed 6 nos. each of the incinerators, autoclave, plastic shredders as part of the pilot projects for common waste treatment facilities in the six major provinces i.e. Kabul, Kandhar, Balkh, Jalalabad, Herat and Ghazni would be funded under the SEHAT project in Phase I.

The subsequent CWTFs are proposed to be implemented by the private agencies under the PPP mode based on the experience gained from the first six facilities. Therefore no separate funding for the facilities proposed under the PPP arrangement have been provided for.

The following table (Table 22) illustrates the investment requirements during the next five years.

<table>
<thead>
<tr>
<th>Name</th>
<th>Nos</th>
<th>Unit Price (USD$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incinerators (25kg/hr)</td>
<td>6</td>
<td>50000</td>
</tr>
<tr>
<td>Autoclaves/Microwave (15 kg/hr)</td>
<td>6</td>
<td>20000</td>
</tr>
<tr>
<td>Plastic Shredding (15kg/hr)</td>
<td>6</td>
<td>10000</td>
</tr>
<tr>
<td>Deep Burial Pits</td>
<td>25</td>
<td>500</td>
</tr>
<tr>
<td>Sanitary Landfilling *</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Puncture Proof Bag</td>
<td>200000</td>
<td>2</td>
</tr>
<tr>
<td>Bins</td>
<td>12000</td>
<td>10</td>
</tr>
<tr>
<td>Bags</td>
<td>200000</td>
<td>1</td>
</tr>
<tr>
<td>Trolleys</td>
<td>2000</td>
<td>50</td>
</tr>
<tr>
<td>Vehicles</td>
<td>20</td>
<td>15000</td>
</tr>
<tr>
<td>Building &amp; Construction</td>
<td>6</td>
<td>1500</td>
</tr>
</tbody>
</table>

TOTAL FINANCIAL REQUIREMENTS FOR IMPLEMENTING HCWM

Total Financial Requirements for implementing the HCWM plan in Afghanistan over the five year period could be summarized as under (Table 23).

<table>
<thead>
<tr>
<th>Year</th>
<th>Training, Capacity Building and IEC (USD)</th>
<th>Investment Budget (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>990000</td>
<td>1631500</td>
</tr>
<tr>
<td>2nd Year</td>
<td>885000</td>
<td>2603000</td>
</tr>
<tr>
<td>3rd Year</td>
<td>615000</td>
<td>2523000</td>
</tr>
<tr>
<td>4th Year</td>
<td>635000</td>
<td>1814000</td>
</tr>
<tr>
<td>5th Year</td>
<td>595000</td>
<td>1325000</td>
</tr>
<tr>
<td>G. Total</td>
<td>3,720,000</td>
<td>9,896,500</td>
</tr>
</tbody>
</table>
### Table 22: Estimate of Financial Requirement for Training, Capacity Building and IEC (US Dollar)

<table>
<thead>
<tr>
<th>S.N</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
<th>4th Year</th>
<th>5th Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Program</td>
<td>Cost</td>
<td>Total</td>
<td>No. of Program</td>
<td>Cost</td>
</tr>
<tr>
<td>1</td>
<td>Orientation Program and training the trainers (incl. NGO)</td>
<td>4</td>
<td>20000</td>
<td>80000</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Provincial Level Training</td>
<td>70</td>
<td>5000</td>
<td>350000</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>District Level Training</td>
<td>100</td>
<td>2000</td>
<td>200000</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>MoPH Capacity Building</td>
<td>2</td>
<td>20000</td>
<td>40000</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>PHCs and HSCs HSCs</td>
<td>0</td>
<td>200</td>
<td>1000</td>
<td>200000</td>
</tr>
<tr>
<td>6</td>
<td>Training Manual</td>
<td>Lump sum</td>
<td>20000</td>
<td>20000</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Familiarization Site Visits</td>
<td>1</td>
<td>200000</td>
<td>200000</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>IEC</td>
<td>50000</td>
<td>2</td>
<td>100000</td>
<td>25000</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>990000</td>
<td>885000</td>
<td>615000</td>
<td>635000</td>
</tr>
</tbody>
</table>

**Note:** Four Orientations cum Train-the-trainer programs are planned in the initial phase. Similarly the Provincial level training programs (app. 2 per Provinces in the 1st year) have been planned coupled with Decentralized District level Training programs for the Smaller HCFs. Two programs to orient the various departments of the MoPH on the HCWM Concepts and Plan Implementation are also proposed. Familiarization visits for the major stakeholders for the existing facilities in the neighboring countries in the 1st, and 2nd year are also planned.

### Table 23: Estimate of Financial Requirement for Technology Up-gradation and new Procurement (US Dollar)

<table>
<thead>
<tr>
<th>S.</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
<th>4th Year</th>
<th>5th Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.s</td>
<td>Unit</td>
<td>No.s</td>
<td>Unit</td>
<td>Amoun</td>
</tr>
</tbody>
</table>

81
<table>
<thead>
<tr>
<th>N</th>
<th>Description</th>
<th>Price</th>
<th>Amount</th>
<th>Price</th>
<th>t</th>
<th>Price</th>
<th>t</th>
<th>Price</th>
<th>t</th>
<th>Price</th>
<th>t</th>
<th>Price</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Incinerators (25kg/hr)</td>
<td>6</td>
<td>50000</td>
<td>300000</td>
<td>12</td>
<td>50000</td>
<td>6</td>
<td>50000</td>
<td>6</td>
<td>50000</td>
<td>6</td>
<td>50000</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Autoclaves/Microwave (15 kg/hr)</td>
<td>6</td>
<td>20000</td>
<td>120000</td>
<td>12</td>
<td>20000</td>
<td>6</td>
<td>20000</td>
<td>6</td>
<td>20000</td>
<td>6</td>
<td>20000</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Plastic Shredding (15kg/hr)</td>
<td>6</td>
<td>10000</td>
<td>600000</td>
<td>19</td>
<td>10000</td>
<td>12</td>
<td>10000</td>
<td>12</td>
<td>10000</td>
<td>6</td>
<td>10000</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Deep Burial Pits</td>
<td>25</td>
<td>500</td>
<td>12500</td>
<td>50</td>
<td>500</td>
<td>50</td>
<td>500</td>
<td>50</td>
<td>500</td>
<td>50</td>
<td>500</td>
<td>25000</td>
</tr>
<tr>
<td>5</td>
<td>Sanitary Landfilling *</td>
<td>LS</td>
<td>10000</td>
<td>LS</td>
<td>10000</td>
<td>10000</td>
<td>0</td>
<td>10000</td>
<td>0</td>
<td>10000</td>
<td>0</td>
<td>10000</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Puncture Proof Bag</td>
<td>20000</td>
<td>0</td>
<td>2</td>
<td>40000</td>
<td>40000</td>
<td>0</td>
<td>2</td>
<td>80000</td>
<td>0</td>
<td>2</td>
<td>80000</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Bins</td>
<td>12000</td>
<td>10</td>
<td>12000</td>
<td>12000</td>
<td>12000</td>
<td>12000</td>
<td>12000</td>
<td>20000</td>
<td>10</td>
<td>20000</td>
<td>20000</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Bags</td>
<td>20000</td>
<td>0</td>
<td>1</td>
<td>20000</td>
<td>20000</td>
<td>0</td>
<td>1</td>
<td>20000</td>
<td>0</td>
<td>1</td>
<td>20000</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Trolleys</td>
<td>2000</td>
<td>50</td>
<td>10000</td>
<td>2000</td>
<td>10000</td>
<td>2000</td>
<td>50</td>
<td>10000</td>
<td>2000</td>
<td>50</td>
<td>10000</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Vehicles</td>
<td>20</td>
<td>15000</td>
<td>30000</td>
<td>20</td>
<td>15000</td>
<td>30000</td>
<td>20</td>
<td>15000</td>
<td>30000</td>
<td>20</td>
<td>15000</td>
<td>30000</td>
</tr>
<tr>
<td>11</td>
<td>Building &amp; Construction</td>
<td>6</td>
<td>1500</td>
<td>9000</td>
<td>12</td>
<td>1500</td>
<td>18000</td>
<td>12</td>
<td>1500</td>
<td>18000</td>
<td>6</td>
<td>1500</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>163150</strong></td>
<td><strong>2603000</strong></td>
<td><strong>2523000</strong></td>
<td><strong>1814000</strong></td>
<td><strong>1325000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** 6 Pilot Projects for CWTF (Comprising of Incinerator, Autoclave/Microwave and Plastic Shredders) are proposed to be implemented in the 1st year. The estimate, for the burial pits is based on the HCWM requirements of those HCFs which would not have access to the CWTFs. The estimate for Bins, Bass, Trolleys and Vehicles (for transport of HCW from HCFs to the CWTFs) is based on the broad requirements per facility.
Disclosure

This preliminary Health Care Waste Management Plan was developed by the MoPH on the basis of review of existing practices in the sector. Prior to approval of the SEHAT project by the World Bank, the preliminary HCWMP was disclosed on November 28, 2012 by MoPH in Afghanistan on the MoPH website, Libraries, HQ and provincial offices, MoPH implementing partners offices and by the WB Infoshop.

This comprehensive HCWMP is developed based on the recommendation of preliminary HCWMP which would be cleared by NEPA and The World Bank before the complete disclosure of the same is made on the relevant websites and public discussions with all stakeholders are completed.

The HCWMP after the Public Disclosure and approval of the stakeholders would be made operational.
ANNEXURE I: MAJOR SCOPE OF WORK
Annexure II

THE MAJOR SCOPE OF WORK FOR THE CONSULTANT

- **Task 1: Assessment of Existing Policies and Waste Management Practices**
  
  i) Assess the policy legal and administrative framework as well as the regulatory framework on health-care waste management and treatment in the country. This includes air emission standards, which are currently required by law for the next ten years.
  
  ii) Identify permit requirements including environmental building and the other procedures that healthcare waste management facilities would need to address and the time demands to obtain these permits. In this respect, identify the environmental impact requirements and public participation requirements.
  
  iii) Assess the health-care waste generation at randomly selected facilities. The details should include the minimum weight of total generated wastes at each health-care facility per week. Composition of the waste should be determined through segregation at the waste end point and the results should be extrapolated to cover the entire country.
  
  iv) Review and analyze existing health-care waste storage, collection and disposal system at the randomly selected facilities with due regard for level of separation, frequency of collection and environmental –through soil, surface and ground water and air resources- and health impacts for existing treatment.
  
  v) Assess the level of scavenging, if any, or recycling taking place inside health-care facilities, along transportation routes, and at final sites. Determine social issues in relation to scavenging taking place.

- **Task 2: Determination of Technology and Siting**
  
  a) **Determination of Technology**

  For the types and quantities of health-care waste generated in the study, assess the different types of technology and facility sizes available for treatment and destruction. The assessment shall compare alternatives on the basis of capital cost, operation cost, ease of operation, local availability of spare parts, local availability of operation skills, demonstrated reliability, durability and environmental impact. The technologies to be considered include; burial pits for safe land filling, incineration, sterilization (autoclave and microwave) and chemical disinfections. On the basis of this assessment, recommend a
process flow for economic and environmentally sound treatment and final disposal of health-care waste.

b) **Determination of Disposal Sites Analysis of the Site**

Analyze the above information to determine whether there is sufficient appropriate material on site for daily and final cover, and whether the soil, hydrological and geo-hydrological conditions would ensure adequate protection of any ground and surface water used for drinking and/or irrigation. If the sites prove to be unsuitable, inform the client stating the reasons.

c) **Financing**

Assess alternative approaches for financing the treatment and disposal activities. Assess public-private partnerships and cost recovery at the regional, municipal level based on the polluter pays principal, where each health facility pays according to the volume of waste generated. Assess private sector participation as service provider.

d) **Public Consultation**

Public consultation with beneficiary groups, institutions, NGOs and Community Based Organizations and other interested parties be held as part

- **Task 3: Training and Public Awareness**
  
  i. At the randomly selected facilities surveyed as part of Task 1, assess awareness of health workers of safety risks, correct procedures for collecting, handling and disposing of health-care wastes.
  
  ii. Review existing training and public awareness program on health-care waste management at hospitals and other health-care establishments and prepare training needs assessment.
  
  iii. Working in conjunction with relevant government institutions and municipal councils, prepare a costed training program targeting the general public, health-care workers, municipal workers, dump site managers, incinerator operators (if that is the choice of technology), nurses, scavengers/pickers, families and street children.
  
  iv. The design of the material required for the awareness/capacity building programs should be discussed with the relevant authorities and the general public to ensure that their concerns that are deemed appropriate are incorporated in the design of the program, sitting layouts, mitigation measures and community communication programs.
  
  v. It is understood that some of these training materials should be developed later on during the implementation of the project.
vi. Assess the institutional capacity of HCWM in the MOPH and make recommendations so that MOPH take care of the implementation of the HCWM appropriately.

- **Task 4: Public Consultation and draft policy, Plan and Training Program**

The training and awareness building program and the waste management program shall be appropriately costed and the plan of action shall be presented in a national workshop. Following the stakeholder consultations, the consultant(s) shall revise the draft reports in accordance with the comments of the Government, WHO, The World Bank, and other relevant institutions in the donor community and other interested parties and submit the final report incorporating all changes and modifications as required. The Consultant is expected to provide the report with pictures and maps where necessary to the government and the Bank.
ANNEXURE II: COPY OF THE QUESTIONNAIRES USED
Annexure III

QUESTIONNAIRE FOR HEALTH FACILITIES

1. Name & Address of the Hospital/Healthcare center : 

2. Type of Healthcare Centre : 

3. Name & Designation of Responding Person : 

4. Population of City/Town : 

5. No. of Beds in Hospital – what is occupancy rate? How many OPD patients on an average? 

6. What kind of care is primarily provided – e.g. immunization, deliveries, HIV, TB, Minor Surgeries, OPD etc. 

7. Are you aware of the HCWM concept and the Policy? Is your facility in compliance? Have you received all the necessary clearances for implementing the policy? 

8. What steps have been undertaken to improve the HCW Management in your Healthcare facility l? How has HCW Management progressed over time with the implementation of the various Government's initiative in the Health Sector?
9. What is the quantity and mode of disposal of different types of wastes generated at your hospital?

<table>
<thead>
<tr>
<th>S No.</th>
<th>Nature of Waste</th>
<th>Quantity Generated Per Day</th>
<th>Method of Treatment/Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Outdated Drugs, Chemicals and disinfectants used in Labs &amp; for Decontamination of Needles etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Syringes, Conules, Catheters, (Infectious Plastics)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pathological and anatomical Waste, Infectious Waste, Infected Blood, Cytotoxic waste, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Glass Waste (both broken and non-broken)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Needles, Blades and Scalpels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Do you use reusable syringes? Do you have sterilization equipment in place?

11. What is the mode of collection and transportation of different types of waste generated at the Healthcare Unit?
12. Is there any color-coding used being for collection of different types of wastes? Please elaborate.

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Color of Container and markings</th>
<th>Type of container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Infectious Waste</td>
<td>Red</td>
<td>Strong Leak-proof plastic bag or container capable of being autoclaved</td>
</tr>
<tr>
<td>Other infection waste, pathological and anatomical waste</td>
<td>Yellow</td>
<td>Leak-proof plastic bag or container</td>
</tr>
<tr>
<td>Sharps</td>
<td>Yellow, marked “SHARPS”</td>
<td>Puncture-proof container</td>
</tr>
<tr>
<td>Chemical and Pharmaceutical waste</td>
<td>Brown</td>
<td>Plastic bag or container</td>
</tr>
<tr>
<td>Radioactive Waste</td>
<td>-</td>
<td>Lead box, labeled with the radioactive symbol</td>
</tr>
<tr>
<td>General Healthcare waste</td>
<td>Black</td>
<td>Plastic bag</td>
</tr>
</tbody>
</table>

13. Are these consumables expensive?

14. Are they provided under the project or do they acquire them using user fees?

15. How will this be sustained after project life?

16. Have you come up with any innovative ideas for collection?

17. Is there any wastage (e.g. small volumes in large bags etc.)?

18. Are you using chlorinated plastic bags? Or are they non-chlorinated and if so are the costs higher?

19. What is the durability of the bins provided under the project? Please elaborate.

20. Do you have in-house facilities for treatment of infectious wastes & other wastes? If yes, please give details.
21. In case you are using incinerator at your premises, please provide details on the equipment used & its technical features.

22. How is the residue from the incinerators disposed off?

23. Do you experience any difficulty in the operation and maintenance of the equipment installed at the hospital for HCW treatment (e.g. Autoclaves, incinerator, and Microwave equipment)? Please give complete details

24. What is the durability of the equipment provided under the project?

25. What is the better technology between hydroclaves, microwaves and autoclaves?

26. Do you have deep burial pits for final disposal?

27. Is there a recycling system in place for the plastics and glass?

28. How durable are the needle cutters/destroyers?

29. Are they being effectively used in all wards?

30. If No, are your using external facilities such as Common Waste Treatment Facilities (CWTFs) for treatment & disposal of waste?

31. How is the HCW transported to the CWTF?

32. What are charges per ton of HCW paid to CWTF?

33. What is the average quantity of HCW sent to CWTF for treatment? Please Elucidate.

34. What is the level of awareness and training provided to the different levels of staff for better HCW management in the hospital?

35. How often has training been provided? Is there ongoing refresher training?
<table>
<thead>
<tr>
<th>Level</th>
<th>General Ongoing Awareness</th>
<th>Refresher Training</th>
<th>About HCWM</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technician</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitary &amp; Lower Level Staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

36. Who monitors the effective implementation at each facility?

37. How often does the HCWM Team meet?

38. What do they discuss and evaluate?

39. Who is in charge of daily operations?

40. Did you experience any difficulty in obtaining clearances/assistance from the regulatory bodies? Please elaborate.

41. Did you receive adequate assistance from the Ministry of Public Health/Project Management Unit?

42. Have any guidelines/plans been provided to you by the Government?

43. What has been the attitude of the community /NGOs/people at large?

44. Have they contributed towards achieving better HCW Management at the Hospital?
45. Are you aware of the environmental and health implications of HCWM?

46. Which major difficulties/constraints have you faced in implementing better HCW Management Systems at the hospital?

47. Which are the critical issues (Both External & Internal)?


49. Which are the 3-4 major actions you have taken to improve the HCW management at the Facility?

50. Are any External Agencies such as Independent M&E organizations and/or NGOs who are working with you? Please provide details
### Standards/ Sub Standards

<table>
<thead>
<tr>
<th>Standard / Sub Standard #</th>
<th>Standards/ Sub Standards</th>
<th>0</th>
<th>1</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I: - Hospital has a HCW disposal committee or HCW disposal team incorporated as part of infection prevention ToR.</td>
<td>Total:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Committee consists of key members of hospital departments (Hospital director or deputy, in charge and head nurse, Gyn/Obs, surgery, internal medicine chiefs, OT nurse, and hospital admin)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>One person selected as focal point for HCW among committee members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Written and signed ToR exist for committee which explains the responsibilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Committee has regular meetings(weekly, bi-weekly, or monthly as per need) please refer to minutes of the meeting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Committee has work plan mentioning gaps, interventions, responsible person, and end date of action</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II: Committee members have received HCW disposal training</td>
<td>Total:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>HCW Disposal training conducted for members of the committee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>The training covers waste segregation, collection, storage, transportation, treatment, accident and spillage. The training consists of theory and practical stations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>There is an action plan development at the end of training (cascade of training and change of knowledge into practices)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard / Sub Standard</td>
<td>Standards/ Sub Standards</td>
<td>0</td>
<td>1</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>------------------</td>
</tr>
<tr>
<td>2.4</td>
<td>Trainings adapt and conduct for different level according to level of knowledge and understanding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>HCW disposal included in list of hospital conferences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III:-</td>
<td>There is designated place and equipment for HCW disposal in health facility</td>
<td></td>
<td></td>
<td>Total:</td>
</tr>
<tr>
<td>3.1</td>
<td>Personal Protection Equipment (PPE) exists adequately for OT, dressing room, delivery room, Lab, and other wards (caps, masks, safety eye glasses, aprons and boots)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Plastic bags with the same color coding as the bins exist in wards, OT, dressing room, delivery room, corridor and compound</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Safety box exists in delivery room, OT, nursing and midwives room (Not accessible to the patients and their companions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>There is special place for the temporary storage of HCW in the health facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>The storage area is surrounded by wall or wire with lockable door, is out of the reach of the children, animals and irresponsible persons with clear written and pictorial alert signs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV:-</td>
<td>HCW segregation exists in health facility</td>
<td></td>
<td></td>
<td>Total:</td>
</tr>
<tr>
<td>4.1</td>
<td>• Red bin with red plastic for anatomical and pathological bio HCW (dressing, placenta, part of body, lab waste)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Yellow bin and plastic for other infectious HCW (empty bottle of serum, syrup, vial, used syringe, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Black bin with black plastic for general waste (food, dust, recyclables)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Doctors, nurses and people who deal with HCW, segregate the HCW at the production site into hazardous and non-infectious</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Sharps (Needle, surgical blade, suture needle, broken ampules put into safety box.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4</td>
<td>Seal the plastic bag before transportation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>Plastics will transport to incinerator, land fill, burial and laundry room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V:-</td>
<td>HCW collection is available in the health facility</td>
<td></td>
<td></td>
<td>Total:</td>
</tr>
<tr>
<td>5.6</td>
<td>Bins will evacuate when 3/4th filled or at the end of the day, after each delivery or operation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard / Sub Standard</td>
<td>Standards/ Sub Standards</td>
<td>0</td>
<td>1</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>----------</td>
</tr>
<tr>
<td>5.2</td>
<td>The sealed waste plastic labeled with date of production, place and the contents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Change the plastic of bin after removal of waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td>Wash the bin after exchange of old plastic into new plastic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>The is pictorial guide close to each bin which help the patient and accompanies in segregation of HCW</td>
<td></td>
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</table>

**IV:- HCW storage system is available in health facility**

| 6.1                     | HCW is transporting before 24 hours from storage area( HCW should store between 3-8⁰)    |   |   |          |
| 6.2                     | The land fill is cleaning regularly                                                    |   |   |          |
| 6.3                     | The container which has chemical waste should store in separate room                    |   |   |          |
| 6.4                     | The health facility is not receiving drug with less than six months shelf life          |   |   |          |
| 6.5                     | HCW management is open for 24 hours                                                     |   |   |          |

**VII:- the is proper transportation system for HCW**

| 7.1                     | The edge of HCW trolley and wheel barrow are blunt and will not produce injury during cleaning |   |   |          |
| 7.2                     | During HCW transportation the staff has personal protection equipment                    |   |   |          |
| 7.3                     | Trolley, wheel barrow and the car is used just for HCW transportation                    |   |   |          |
| 7.4                     | HCW transportation will conduct from land fill                                           |   |   |          |
| 7.5                     | HCW transportation should conducted by authorized team or company which has legal license |   |   |          |

**VIII:- There is proper HCW treatment system in health facility**

<p>| 8.1                     | Cannula, broken ampules, surgical blades and sharps put in safety box                   |   |   |          |
| 8.2                     | Used syringe, empty bottle of serum, and vials ‘bottle put in yellow bag and bin after decontamination with 0.5% chlorine for recycling or go for shredder |   |   |          |
| 8.3                     | Placenta, surgical pads, part of body, expire blood and lab waste is going along with other hazardous bio-HCW in red labeled plastic though wheel barrow or trolley into incinerator or land fill |   |   |          |
| 8.4                     | There is segregation system before treatment of waste                                    |   |   |          |
| 8.5                     | In land fill segregated waste are not mixing again                                       |   |   |          |</p>
<table>
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<tr>
<th>Standard / Sub Standard #</th>
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<tr>
<td>IX-A:- The ( Regional, Provincial or Tertiary) hospital has standards incinerator or IX -B</td>
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<tr>
<td>9.1</td>
<td>The capacity of incinerator is according number of beds or utilization of beds(0.3-0.5 Kg waste/ bed/day) and has scrubber</td>
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<tr>
<td>9.2</td>
<td>Incinerator has two chambers</td>
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<tr>
<td>9.3</td>
<td>Incinerator has thermometer in outside to show the temperature of inner side</td>
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<tr>
<td>9.4</td>
<td>Incinerator is working both in fuel and electricity</td>
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<tr>
<td>9.5</td>
<td>Incinerator has long chimney pipe ( around 40 feet)</td>
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<tr>
<td>IX- B:- The health facility has HCW burial system ( Remote clinics or low utilized health centers)</td>
<td>Total:</td>
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<tr>
<td>9.1</td>
<td>There is three well in health facility</td>
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<tr>
<td>9.2</td>
<td>First well for placenta, part of body, contaminated gauze pad or compress( Bio HCW)</td>
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<tr>
<td>9.3</td>
<td>Second well for sharps and safety box</td>
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<tr>
<td>9.4</td>
<td>Third well for food and general waste</td>
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<tr>
<td>9.5</td>
<td>The wells and land fill located in premises of health facility which is less risky for environment and water source</td>
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<tr>
<td>X-A:- The ( Regional, Provincial or Tertiary) hospitals’ incinerator working according to guideline or regulation</td>
<td>Total:</td>
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<tr>
<td>10.1</td>
<td>Incinerator surrounded with wall, wire and is inaccessible for children and animal. Top of incinerator covered to protect from sun, rain snow</td>
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<tr>
<td>10.2</td>
<td>Incinerator is installed in premises of hospital away from common road and food preparation area ( This area should select by team from representative of hospital, environmental health, municipal sanitation department and NEPA)</td>
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<tr>
<td>10.3</td>
<td>The is storage place close to incinerator for red plastic bin material</td>
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<tr>
<td>10.4</td>
<td>The temperature of first chamber is over 800 celsius and second chamber is over 1000⁰</td>
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<tr>
<td>10.5</td>
<td>The ash of incinerator is properly placed well or put in safe plastic bag separate from municipal general waste</td>
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<tr>
<td>X-B:-The HCW is treating in better way in remote, OPD clinics</td>
<td>Total:</td>
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<tr>
<td>10.1</td>
<td>People dealing with HCW has personal protection equipment</td>
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<tr>
<td>10.2</td>
<td>There is no access in wells except responsible people</td>
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<tr>
<td>10.3</td>
<td>The wells designed with written and pictorial alert sign</td>
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<tr>
<td>Standard / Sub Standard #</td>
<td>Standards/ Sub Standards</td>
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<tr>
<td>10.4</td>
<td>There is no sharps and waste around HCW</td>
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<tr>
<td>10.5</td>
<td>In case if the well fills, cover the surface with soil and dig a new well</td>
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<tr>
<td>XI-A: The (Regional, Provincial or Tertiary) hospital has complementary part of incinerator or The health facility has microwave and autoclave</td>
<td><strong>Total:</strong></td>
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<tr>
<td>11.1</td>
<td>The health facility has microwave and autoclave</td>
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<tr>
<td>11.2</td>
<td>Recycling material (Syringe, serum bottle and vial) first sterilize in autoclave</td>
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<tr>
<td>11.3</td>
<td>The recycling material goes to shredder after autoclave</td>
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<tr>
<td>11.4</td>
<td>The shredded material go either back to company or burial area</td>
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<tr>
<td>11.5</td>
<td>In case the shredded material goes to burial, it should put into yellow plastic</td>
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<tr>
<td>XI-B: The health facility treatment the HCW by using the other health facility equipment (Treatment Facility)</td>
<td><strong>Total:</strong></td>
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<tr>
<td>11.1</td>
<td>The hazardous HCW (Bio Medical) put in red plastic and send to closed health facility’s incinerator by per plastic or per bed / month charge</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11.2</td>
<td>The recyclable material (syringe, empty bottle of serum) after decontamination in 0.5% chlorine put in yellow plastic and send to autoclave and shredder by payment charge</td>
<td></td>
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<tr>
<td>11.3</td>
<td>The general waste put in black plastic and transport with help of municipal sanitation department to general waste land fill area</td>
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<tr>
<td>11.4</td>
<td>The vehicle for transportation of HCW is washable, wash the car after each transportation and cover the surface of HCW during transportation,</td>
<td></td>
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<tr>
<td>11.5</td>
<td>The vehicle for HCW transportation has special permission letter or license and clearly texted HCW transportation vehicle…..</td>
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<tr>
<td>XII: There is awareness program regarding HCW in health facility</td>
<td><strong>Total:</strong></td>
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<tr>
<td>12.1</td>
<td>HCW disposal is one topic of health education program</td>
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<tr>
<td>12.2</td>
<td>IEC material is available regarding HCW awareness and precaution for health provider and community</td>
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<tr>
<td>12.3</td>
<td>IEC material responding the need of community (Age, language and gender)</td>
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<td>12.4</td>
<td>Culture sensitivity respected in IEC material and key health massages</td>
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<tr>
<td>12.5</td>
<td>IEC material posted in area which community has more access</td>
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</table>

Please observe the XIII standards if there is accident or hospital spillage or increase infectious complication
XIII: in case of accidental injury or spillage the hospital takes precaution

<table>
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<tr>
<th>Number</th>
<th>Description</th>
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<tr>
<td>13.1</td>
<td>Evacuate and clean the area</td>
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<tr>
<td>13.2</td>
<td>Decreases the exposure of staff and increases immunization program</td>
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<tr>
<td>13.3</td>
<td>Place back the taken equipment</td>
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<tr>
<td>13.4</td>
<td>Provide orientation for staff regarding identification and treatment of hospital contamination</td>
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<tr>
<td>13.5</td>
<td>The responsible person should investigate the cause of accidental injury and spillage</td>
<td></td>
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</table>

Summary table of HCW disposal checklist

| Description                                                                 |        |
| Number of standards                                                        | 13     |
| Total of sub standards                                                      | 75     |
| Number of sub standards achieved one                                        |        |
| Percentage of achievement (Total of substandard score multiply to 100 divided to 75) |        |
| In order to prioritize in planning list the standards from low to high score |        |
ANNEXURE III: LIST OF CONTACTS
## ANNEXURE IV: LIST OF CONTACT

<table>
<thead>
<tr>
<th>S. N</th>
<th>Organization</th>
<th>Address</th>
<th>Contact Person</th>
<th>Designation</th>
<th>Phone 1</th>
<th>Phone 2</th>
<th>Email 1</th>
<th>Email 2</th>
<th>website</th>
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<tbody>
<tr>
<td>1</td>
<td>Kabul Municipality</td>
<td></td>
<td>Mr. Nessar Ahmad HabibiGhori</td>
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<td><a href="mailto:nhabibi24@gmail.com">nhabibi24@gmail.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Islamic Republic of Afghanistan, National Environmental Protection Agency</td>
<td></td>
<td>Zabihullah Habib Afrooz</td>
<td>Director of Policy &amp; Legislation</td>
<td></td>
<td></td>
<td><a href="mailto:zabihabib@yahoo.com">zabihabib@yahoo.com</a></td>
<td><a href="mailto:zabi.afrooz@nepa.gov.af">zabi.afrooz@nepa.gov.af</a></td>
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<tr>
<td>3</td>
<td>Islamic Republic of Afghanistan, Ministry of Public Health</td>
<td></td>
<td>Mr. Mashal, Mohammad Taufiq MD</td>
<td>General Director of Preventive Medicine</td>
<td>93 0 708 284 144</td>
<td>202 301 359</td>
<td><a href="mailto:mtmashal@yahoo.com">mtmashal@yahoo.com</a></td>
<td><a href="mailto:mtmashal.hlth@tmd.ac.jp">mtmashal.hlth@tmd.ac.jp</a></td>
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<tr>
<td>4</td>
<td>Islamic Republic of Afghanistan, Ministry of Public Health</td>
<td></td>
<td>Mr. Amanullah Hussaini</td>
<td>Environmental Health Director</td>
<td>93 0 700 294 312</td>
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<td><a href="mailto:mnilh_hussaini@yahoo.com">mnilh_hussaini@yahoo.com</a></td>
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<tr>
<td>5</td>
<td>The World Bank</td>
<td></td>
<td>Mr. Mohammad Arif Rasuli</td>
<td>Senior Environmental Specialist (South East Asia)</td>
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<td></td>
<td><a href="http://www.worldbank.org/af">www.worldbank.org/af</a></td>
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<td>6</td>
<td>The World Bank</td>
<td></td>
<td>Dr. G. Sayed</td>
<td>Senior Health Specialist Afghanistan Country Office, South Asia region</td>
<td>93 701 133342 (office)</td>
<td>93 700 042585</td>
<td><a href="mailto:gsayed@worldbank.org">gsayed@worldbank.org</a></td>
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<tr>
<td>7</td>
<td>The World Bank,</td>
<td>Mr. Mohammad Tawab Hashemi</td>
<td>Extended Term Consultants (South Asia Region)</td>
<td>930 799 791 128, <a href="mailto:mhashemi@worldbank.org">mhashemi@worldbank.org</a>, <a href="http://www.worldbank.org/af">www.worldbank.org/af</a></td>
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<td>8</td>
<td>EPOS</td>
<td>Parwiz Sardar Mohammad</td>
<td>Technical Advisor to G.D of Preventive Medicine (MoPH)</td>
<td>93 079 9311532, <a href="mailto:doctor_parwiz@yahoo.com">doctor_parwiz@yahoo.com</a></td>
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<td>Islamic Republic of Afghanistan, Ministry of Public Health, GCMU</td>
<td>Dr. Mohammad Hassan</td>
<td>Grant Consultant</td>
<td>93 773 342 830, 93 0 700 259 636, <a href="mailto:hassan.gcmu@moph.gov.af">hassan.gcmu@moph.gov.af</a>, <a href="mailto:edrishassan05@yahoo.com">edrishassan05@yahoo.com</a></td>
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<td>Islamic Republic of Afghanistan, Ministry of Public Health, GCMU</td>
<td>Dr. Mohammad Saeed MD, EMBA</td>
<td>PGC Grant Consultant</td>
<td>93 0 700083428, <a href="mailto:hefd.saeed@gmail.com">hefd.saeed@gmail.com</a>, <a href="mailto:dr.mohammad.saeed@gmail.com">dr.mohammad.saeed@gmail.com</a></td>
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<td>11</td>
<td>Islamic Republic of Afghanistan, Ministry of Public Health, GCMU</td>
<td>Dr. Abdul Malik &quot;Malik&quot;</td>
<td>Head of Department Radiation Protection and Nuclear Medicine</td>
<td>93 0 700205675, <a href="mailto:mirmalik2001@yahoo.com">mirmalik2001@yahoo.com</a>, <a href="mailto:Abdul.Malik.Dr@gmail.com">Abdul.Malik.Dr@gmail.com</a></td>
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<td>12</td>
<td>Islamic Republic of Afghanistan, Ministry of Public Health, GCMU</td>
<td>Shala Salim/MD/DPH</td>
<td>Communication Officer</td>
<td>93 0 79 0075068, <a href="mailto:shahla.gcmu@moph.gov.af">shahla.gcmu@moph.gov.af</a>, <a href="mailto:infogcmu@gmail.com">infogcmu@gmail.com</a></td>
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<tr>
<td>13</td>
<td>Islamic Republic of Afghanistan, Ministry of Public Health, GCMU</td>
<td>Eng. Gh. Mohammad Salem</td>
<td>Administrative Manager</td>
<td>93 0 799 772 766, <a href="mailto:ghm_salem@yahoo.com">ghm_salem@yahoo.com</a></td>
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</tbody>
</table>
| 15  | Islamic Republic of Afghanistan, Ministry of Public Health, GCMU                       | Dr. Zahidullah Rasooli MD                 | Project Manager to Support the Public Health Sector | 93 0 787 298 233 | rasooli.gcmu@moph.gov.af  
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| 17  | Construction Department, Ministry of Public Health                                    | Eng. Kamal                                |                                          | Project Manager                       | 78300580 |
|     |                                                                                       |                                           |                                          |                                      |
| 18  | Indira Gandhi Hospital, Kabul                                                        | Dr. Yusuf Zai                             |                                          | Director                             |                                      |
|     |                                                                                       |                                           |                                          |                                      |
| 19  | Grant Contracts & Management Unit, MoPH, Afghanistan                                | Ghulam. Sarwar Hemati, Managing Director, EMBA |                                      |                                      | 93 0 799 318 328  
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<p>|     |                                                                                       |                                           |                                          |                                      | 1                             | <a href="mailto:smohammadalam@yahoo.com">smohammadalam@yahoo.com</a> |</p>
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<th>Name of Position/Location</th>
<th>Full Name</th>
<th>Contact Information</th>
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<tr>
<td>24</td>
<td>EPOS MoPH, G. Massoud Square, Wazir Akbar Khan Mena, Kabul, Afghanistan</td>
<td>Dr. Hidayatullah</td>
<td>Technical Advisor to G.D of Curative Medicine (MoPH) +93 0 799 127 717 <a href="mailto:hidayatalnoor@yahoo.com">hidayatalnoor@yahoo.com</a></td>
</tr>
<tr>
<td>25</td>
<td>Directorate of Environmental Health Department Balkh OPH</td>
<td>Dr. Ab. Khalil Merhabi</td>
<td>0777511313-0700511313 <a href="mailto:khalil.mehrabi@yahoo.com">khalil.mehrabi@yahoo.com</a></td>
</tr>
<tr>
<td>26</td>
<td>GCMU, Kabul, Afghanistan</td>
<td>Masoud Ahmad (Yawar), MD</td>
<td>Grant Consultant 9.30701E+11 <a href="mailto:drmasoahmad@yahoo.com">drmasoahmad@yahoo.com</a> <a href="mailto:massoud.gcmu@moph.gov.af">massoud.gcmu@moph.gov.af</a></td>
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<tr>
<td>27</td>
<td>Ministry of Public Health, Islamic Republic of Afghanistan</td>
<td>Dr. Fazal Muhammad &quot;Ibrahimi&quot;</td>
<td>Advisor to Minister, General Director of Khair Khana 102 Beds Hospital 202401352 706088572</td>
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<tr>
<td>28</td>
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ANNEXURE IV: GUIDELINES FOR SETTING UP WASTE MANAGEMENT COMMITTEE
Annexure V

Setting up of Waste Management Committee at the Facility Level

Under the Infection Control Policy, for the purpose of the implementation of HCW management Plan at Facility Level, each and every health care facilities irrespective of their size setting up of the Healthcare Waste Management Committee needs to be made mandatory and a written commitment (for instance through Affidavit) needs to be furnished by the top Management/Authority of the Health Care facilities to the Environmental Health Directorate (EHD).

The management needs to reveal names of the members of the committee and their respective roles. It would be the responsibility of the committee to monitor and supervise the best practices of Health care Waste Management at HCFs Level.

The Healthcare Waste Management Committee should include:

1. Heads of the Hospital
2. Waste Management Officer
3. Heads of the Hospital Departments
4. Nursing Superintendent
5. Doctor/Nurse from Infection Control Committee
6. Sanitary Supervisor
7. Store-in Charge and
8 Other Housekeeping Staff

The HCWM Committee will also inform Environmental Health Directorate (EHD) about the selection of treatment technology. For selection of Treatment Technology the assessment and projection of wastes to be produced at HCFs level needs to be done.

An effective waste management plan includes the following:
- Strategy to implement 3R Application (Reduction at Source, Re-Use & Recycling)
- Segregation
- Composting

Basic Steps in development of a Waste Minimization Program include:

a) **Planning & Organization**: Getting top management to be committed to waste minimization and setting up of goals and task force by involving crucial personnel from key departments
b) **Assessment**: Assessment of wastes flow, waste generation rates by using an audit tool which helps in prioritizing the waste stream based on quantity, toxicity, environmental impact, potential liability and cost and other associated factors and selection of technology.

c) **Feasibility Analysis**: Evaluation of technical and economic viability technology etc.

d) **Implementation**: Getting approval of top management about the technology or new procedures to minimize the waste, launch of educational and communication programs to reach out the entire staff and patients or visitors who are directly involved with the waste production.

e) **Period Inspection**: Regular monitoring and evaluation helps in identification of new issues, staff efficiency and education level etc., requirement of further reinforcement etc.

The Major Functions of HCWMC

- Prepare HCWM Plan, as per the guidelines and Policy laid down by the Implementing Agency or Authority (i.e. NEPA), of its waste with the goal of protecting health and the environment.
- Implement HCWM Plan, review and update the policy, guidelines on an annual basis.
- Ensure adequate financial and human resources for implementation of the Health care waste management Plan.
ANNEXURE V: GUIDELINES FOR CONSTRUCTION SHARP AND BURIAL PITS
Annexure VI

Guidelines for construction Sharp and burial Pits

Design Aspects of Sharps Disposal Pit

Since sharps are usually the main cause of concern, and make up only a small quantity of the total health care waste, they may be appropriately disposed of on-site. The remaining waste may be sent to the municipal (or common) disposal site. A system that may be used in small health care centers is described below.

A circular or rectangular pit is dug and lined with brick, masonry or concrete rings. The pit is covered with a heavy concrete slab that is with an internal diameter of about 200mm. Needles and scalpel blades (without the syringe body or drip tubing) are dropped into the pit through the steel pipe. When the pit is full it can be sealed permanently after another has been prepared. Advantages of such pits are that these discourage recycling of sharps by scavengers due to their inaccessibility. The height of the pipe discourages children from dropping soil or stones into the pit filling it up prematurely.

The Specification for a Waste Burial Pit

The specification for a waste burial pit is provided below.

1. A pit or trench should be dug about 2 meters deep. It should be half-filled with waste, and then covered with lime up to 50 cm of the surface, before filling the rest of the pit with soil.
2. Animals should not have any access to the waste burial sites. Covers of galvanized iron/wire meshes may be used to protect the area from trespassing.
3. On each occasion, when wastes are added to the pit, a layer of 10 cm of soil shall be added to cover the wastes.
4. Waste disposal into the pits should be performed under close and dedicated supervision.
5. The deep burial site should be relatively impermeable and no shallow well should be close to the site.
6. The pits should be distant from habitation, and sited so as to ensure that no contamination occurs of any surface water or ground water. The area should not be prone to flooding or erosion.
7. The location of the deep burial site should be authorized by the prescribed authority.
8. The institution should maintain a record of the kind of waste sent for deep burial.
A permanent Record of the size and location of all burial pits needs to be strictly maintained and displayed at strategic place with due precautions to prevent construction workers, builders and other from digging in those areas in the future.

Figure 5.3: Layout Specifications for Burial Pit
(Source “Implementation Experience in India & Tool-Kit for Managers, The World Bank)
ANNEXURE VI: COMPARATIVE EVALUATION OF DIFFERENT TECHNOLOGY
Annexure VII

The Incinerators are being increasingly moved away from the Hospitals & HCFs, the world over due to a host of factors including high capex&opex, space requirements, lack of technology back-up support & technical personnel etc. apart from the environment issues. The Burial Pits for the HCFs in remote locations as well as those which are not linked to CWTFs remain viable disposal option.

In absence of CWTF pit technology based disposal system can be adopted. The specification for a waste burial pit have been provided in HCWM Plan at Chapter 5 in detail.

Evaluation of Technologies

It is pertinent to evaluate the advantage and disadvantage of available technology (ies) for effective HCWM purpose. A comparative evaluation of the technological options for HCWM has been detailed below.

Advantage & Disadvantages of different Treatment methods

<table>
<thead>
<tr>
<th>Treatment method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary kiln Incineration</td>
<td>Adequate for all infectious waste, Most chemical waste and pharmaceutical waste. Significant reduction of weight and volume of waste.</td>
<td>High investment and operating costs. Concern about air emissions.</td>
</tr>
<tr>
<td>Controlled air Incineration</td>
<td>Very high disinfection efficiency. Adequate for all infectious waste and Most pharmaceutical and chemical waste.</td>
<td>Incomplete destruction of cytotoxic. Relatively high investment and operating costs. Concern about air emissions.</td>
</tr>
<tr>
<td>Multiple hearth Incineration</td>
<td>Good disinfection efficiency. Significant reduction of weight and volume of waste. The residues may be disposed of in landfills. No need for highly trained operators. Relatively low investment and operating costs.</td>
<td>Significant emissions of atmospheric pollutants. Need for periodic removal of slag and soot. Inefficiency in destroying thermally resistant chemicals, and drugs such as cytotoxic.</td>
</tr>
<tr>
<td>Chemical Disinfection</td>
<td>Highly efficient disinfection under good operating conditions.</td>
<td>Requires highly qualified technicians for operation of the process.</td>
</tr>
<tr>
<td>Method</td>
<td>Advantages</td>
<td>Disadvantages</td>
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<tr>
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<tr>
<td>Some chemical disinfectants are relatively inexpensive. Reduction in waste volume.</td>
<td>Uses hazardous substances that require Comprehensive safety measures and safe disposal. Inadequate for pharmaceutical, chemical and some types of infectious waste.</td>
<td></td>
</tr>
<tr>
<td>Wet thermal Treatment</td>
<td>Environmentally sound. Drastic reduction in waste volume. Relatively low investment and operating costs</td>
<td>Shredders are subject to frequent breakdowns and poor functioning. Operation requires qualified technicians. Inadequate for anatomical, pharmaceutical, and chemical waste and waste that is not readily steam-permeable.</td>
</tr>
<tr>
<td>Microwave Irradiation</td>
<td>Good disinfection efficiency under appropriate operating conditions. Drastic reduction in waste volume. Environmentally sound.</td>
<td>Relatively high investment and operating costs. Potential operation and maintenance problems.</td>
</tr>
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</table>
ANNEXURE VII : GUIDELINES FOR SETTING UP OF CWTFs
Annexure VIII

Setting up of Common healthcare Waste Treatment Facility

A Common healthcare Waste Treatment Facility (CWTF) shall have following treatment facilities.

i) **Incineration:** It is a controlled process where waste is completely oxidized and harmful microorganisms present in it are destroyed/denatured under high temperature.

ii) **Autoclaving/Microwaving/Hydroclaving:** Autoclaving is a low-heat thermal process where steam is brought into direct contact with waste in a controlled manner and for sufficient duration to disinfect the wastes. For ease and safety in operation, the system should be horizontal type and exclusively designed for the treatment of health care waste. For optimum results, prevacuum based system be preferred against the gravity type system. It shall have tamper-proof control panel with efficient display and recording devices for critical parameters such as time, temperature, pressure, date and batch number etc.

In microwaving, microbial inactivation occurs as a result of the thermal effect of electromagnetic radiation spectrum lying between the frequencies 300 and 300,000 MHz. Microwave heating is an inter-molecular heating process. The heating occurs inside the waste material in the presence of steam. Hydroclaving is similar to that of autoclaving except that the waste is subjected to indirect heating by applying steam in the outer jacket. The waste is continuously tumbled in the chamber during the process. Though chemical disinfection is also an option for the treatment of certain categories of bio-medical waste but looking at the volume of waste to be disinfected at the CBWTF and the pollution load associated with the use of disinfectants, the use of chemical disinfection for the treatment of bio-medical waste at CBWTF is not recommended.

iii) **Shredder:** Shredding is a process by which waste are de-shaped or cut into smaller pieces so as to make the wastes unrecognizable. It helps in prevention of reuse of bio -medical waste and also acts as identifier that the waste has been disinfected and is safe to dispose of.

A shredder to be used for shredding bio-medical waste shall confirm to the following minimum requirements.

1. The shredder for bio-medical waste shall be of robust design with minimum maintenance requirement
2. The shredder should be properly designed and covered to avoid spillage and dust generation. It should be designed such that it has minimum manual handling.
3. The hopper and cutting chamber of the shredder should be so designed to accommodate the waste bag full of bio-medical waste.
The shredder blade should be highly resistant and should be able to shred waste sharps, syringes, scalpels, glass vials, blades, plastics, catheters, broken ampoules, intravenous sets/bottles, blood bags, gloves, bandages etc. It should be able to handle/shred wet waste, especially after microwave/autoclave/hydroclave.

The shredder blade shall be of non-corrosive and hardened steel.

The shredder should be so designed and mounted so as not to generate high noise & vibration.

If hopper lid or door of collection box is opened, the shredder should stop automatically for safety of operator.

In case of shock-loading (non-shred-able material in the hopper), there should be a mechanism to automatically stop the shredder to avoid any emergency/accident.

In case of overload or jamming, the shredder should have mechanism of reverse motion of shaft to avoid any emergency/accident.

The motor shall be connected to the shredder shaft through a gear mechanism, to ensure low rpm and safety.

The unit shall be suitably designed for operator safety, mechanical as well as electrical.

The shredder should have low rotational speed (maximum 50 rpm). This will ensure better gripping and cutting of the bio-medical waste.

The discharge height (from discharge point to ground level) shall be sufficient (minimum 3 feet) to accommodate the containers for collection of shredded material. This would avoid spillage of shredded material.

The minimum capacity of the motor attached with the shredder shall be 3 kW for 50 kg/hr, 5 kW for 100 kg/hr & 7.5 kW for 200 kg/hr and shall be three phase induction motor. This will ensure efficient cutting of the health care wastes. Other specifications have been provided at Annexure 5.1.

iv) Sharp pit/Encapsulation: A sharp pit or a facility for sharp encapsulate on shall be provided for treated sharps. An option may also be worked out for recovery of metal from sharps in a factory.

v) Vehicle/Container Washing Facility: Every time a vehicle is unloaded, the vehicle and empty waste containers shall be washed properly and disinfected. It can be carried out in an open area but on an impermeable surface and liquid effluent so generated shall be collected and treated in an effluent treatment plant. The impermeable area shall be of appropriate size so as to avoid spillage of liquid during washing.

vi) Effluent Treatment Plant: A suitable Effluent Treatment Plant shall be installed to ensure that liquid effluent generated during the process of washing containers, vehicles, floors etc. is disposed after treatment. The treated effluent shall comply with the stipulated regulatory requirements.

Infrastructure Set up

The following infrastructure needs to be set up for CWTF

i) Treatment Equipment Room
ii) Main Waste Storage Room
iii) Treated Waste Storage Room
iv) Administrative Room
v) Generator Set
vi) Site Security
vii) Parking
viii) Sign Board
ix) Green Belt
x) Washing Room

Besides above following important provision should be made in CWTF
  o A Telephone
  o First Aid Box
  o Proper Lighting
  o Proper Fire Fighting Facilities
  o Measures to control pests and insects at the site
  o Safety gears for the waste handlers
  o Record Keeping
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