GUIDANCE ON CONDUCTING A BASELINE ASSESSMENT OF THE MODEL HEALTHCARE FACILITY

INTRODUCTION

Summary This guidance lists the data needed from the model healthcare facility before the introduction of best practices and techniques related to healthcare waste management (HCWM). It also describes the rationale and procedures to gather and analyze the baseline data.

Rationale The baseline assessment provides the model facility, national coordinator/technical consultant, National Project Steering Committee, and Global Project Team with information on the status of the model facility at the beginning of the project and provides written and photographic documentation. The data will be used for the following purposes:

- To establish an initial reference point for assessing and quantifying waste reduction, improvements in waste management practices and techniques, decreases in dioxin and mercury releases, training improvements, enhanced occupational safety, cost-effectiveness, and cost savings, if any;
- To develop performance indicators and compare with existing national or international indicators and averages;
- To describe current good practices and techniques and identify potential gaps;
- To help define goals and milestones in order to gauge progress and evaluate the success of the model facility component of the project.

ELEMENTS OF THE BASELINE ASSESSMENT

NOTES: The national coordinator/technical consultant should read this whole section first before beginning the baseline assessment. The baseline activities are estimated to take about one month. Preparations for some aspects of the baseline assessment, such as gathering waste generation data, should be started as soon as possible.

The  symbol is a reminder that photo-documentation is needed. Photos should be digital and taken with a resolution that is sufficient for presentations, reports, and publications. A minimum 800 x 600 pixels is recommended. The photos should be saved in jpeg (jpg) format and sent as separate files. Photos should be dated and labeled in relation to the baseline assessment section number. A brief description should also be provided. Photos will be selected for project reports, slide presentations,

tools and training material to illustrate conditions before and after intervention.

After reading these instructions, the national coordinator/technical consultant should create a work plan schedule to ensure that the baseline work can be completed on time. The schedule should take into consideration the nature of healthcare delivery, which can be unpredictable given patient needs and the availability of staff to assist with access to the facility and data gathering.

The baseline assessment is comprised of the following elements:

- Basic facility data
- Baseline rapid assessment
- Information on current waste management practices
- Waste generation data
- Information on current training practices
- Occupational safety data
- Cost data
- Dioxin inventory
- Mercury usage data.

1.0 Basic facility data

In the "basic facility data" part of the Baseline Data section, type in the data requested. Under "general description of the facility," mention any general information that relates to healthcare waste, such as if the facility is a small health station or a tertiary care medical center. Examples of "hospital services offered" are pediatrics, maternity, surgery, pharmacy, laboratory, radiology, emergency services, etc. The "types of hospitals" are private or public (government-run); and for-profit or non-profit. The "levels of hospitals" can be urban or rural; national/central, provincial, district, city, primary health station, etc. Attach copies of any existing hospital policies related to healthcare waste management.

2.0 Baseline rapid assessment

Use the Individualized Rapid Assessment Tool (I-RAT) to obtain a final score for the model facility. Follow the instructions found in the I-RAT.

3.0 Information on waste management practices

This section lists the baseline data needed on permits, HCWM organization, procurement, hospital supply inventory control, waste management equipment, placement of waste containers, storage areas, segregation practices, labeling, color-coding, signage and educational posters, collection and internal transport, external transport, treatment technology, final disposal, waste spill response, and chemical waste management. Keep in mind that the purpose of this data is to set an initial reference point for comparison at a later time. In some cases, data obtained using the I-RAT can be copied into this section.

For data that had not been previously obtained, show the list to the project liaison or facility representative and ask for recommendations on

which staff members can provide you with the information required. *As much as possible, request to see documents or equipment and to interview other staff in order to confirm or corroborate the data.*

4.0 Waste generation data

An important part of the baseline assessment is obtaining waste generation data. A two week waste assessment should be conducted as described in this section.

5.0 Information on training

The baseline assessment focuses on the following main issues: training policy, training content, training methodology, how many and types of personnel trained, and frequency of training.

6.0 Occupational safety data

The baseline assessment on occupational safety and health focuses on written programs, inspections and maintenance, recordkeeping, policy, training, systems and administrative practices, personal protective equipment, vaccinations, post-exposure prophylaxis procedures, blood-borne pathogen exposure and needle-stick injuries, nosocomial infections (hospital-acquired infections) and infection control.

7.0 Cost data

The national coordinator or technical consultant should work with the financial officer, treasurer, or accountant of the facility to track the costs associated with healthcare waste management for the next three years. During the baseline assessment period, obtain (1) capital and operating costs associated with treatment and disposal, including any on-site treatment system; (2) one-time costs for capital equipment purchased in the last year; and (3) a monthly breakdown of all recurrent (operating) costs for the last 12 months or the last fiscal year.

8.0 Dioxin estimation

A separate guidance will be provided for a reference-level estimate of dioxin and furan releases.

9.0 Mercury usage

The section on mercury usage focuses on annual past purchases of mercury thermometers and sphygmomanometers (blood pressure devices), spill clean-up and disposal procedures, and other sources of mercury. For facilities that still use mercury thermometers and sphygmomanometers, a one-month assessment of breakage and costs of mercury thermometers and sphygmomanometers is also required.

BASELINE DATA

1.0 Basic Facility Data

a. Facility name: _____

b. Name of key contacts

Key Contact	Name	Title
Administrator, Head, or Director		
Treasurer or Chief Financial Officer		
Chief Medical Officer		
Chief Nursing Officer		
Head of Infection Control		
Chief Facility Engineer or Facility Manager		
Environmental Services Manager		
Other Important Contacts		
Designated Contact for the UNDP Project		

c. Contact information of the facility and designated contact person:

Address	
Telephone	
Fax	
Website (if available)	
Email of Designated Contact	
Phone of Designated Contact	

d. General description of the facility

e. Number of beds: _____

f. Average occupancy rate: _____

g. Average outpatients per day: _____

h. Hospital services offered

i. List all departments of the facility

j. Type of hospital: _____

k. Level of hospital: _____

l. List current policies related to healthcare waste management

m. Take good photos of the hospital and obtain permission to publish the photos on the project website or in future project reports. Attach the photos and a scan of the signed permission. See Annex A for a copy of the permission form.

CHECKLIST OF ATTACHMENTS FOR SECTION 1:

- ☐ Signed permission to publish photographs (use Annex A form)
- ☐ Attachments of current policies related to healthcare waste
- ☐ List and brief description of photos

2.0 Baseline Rapid Assessment

Final score from the I-RAT: _____

Attach a copy of the completed I-RAT, copies of any facility policies, plans or training curriculum, and your evaluation of the tool.

In the space below, cut and paste all of the questions to which the response was NO:

#	QUESTION

CHECKLIST OF ATTACHMENTS FOR SECTION 2:

- ☐ Copy of completed I-RAT
- ☐ Attachments to the I-RAT if not provided elsewhere
- ☐ Consultant's evaluation of the I-RAT tool and process

3.0 Information on Waste Management Practices

a. Permits

i. Is there a national or local permitting process dealing with healthcare waste management? _____ If YES, answer the questions below.

ii. If a permit is required for waste generation, treatment, or disposal, does the hospital have a valid waste generation permit and/or waste treatment and disposal permit? _____

iii. For how long are the permits valid? _____

iv. Do the permits cover all categories and types of waste currently generated and/or treated by the hospital? _____

v. Is the hospital obliged to prepare an annual report to a competent authority on waste categories and their amounts? _____

vi. If a shipment registry or manifest system is required, does the hospital register its shipments of waste to outside contractors for external disposal operations? _____

b. Healthcare Waste Management Organization

i. Does the hospital have a waste management committee? _____

ii. Is the healthcare waste management committee included in the overall organizational structure of the hospital? _____

iii. Is the healthcare waste management committee composed of representatives from different sections/departments? _____

iv. Does the healthcare waste management committee hold meetings regularly? _____

v. Does the healthcare waste management committee have programs/activities on proper healthcare waste disposal? _____

c. Procurement

i. Is there an existing supply and equipment procurement policy? _____ If YES, attach a copy if not already included.

ii. Does the hospital follow the principles of environmentally preferable purchasing (green purchasing)? _____ If YES, attach a copy of green purchasing policy if not already included.

iii. Who are the decision-makers regarding procurement of hospital products? _____ Is there a product evaluation committee? _____

iv. What is their basis for selecting products?
_____

v. Describe the process for procurement and receipt of products.
_____

vi. Give examples of green products used.

d. Hospital supply inventory control

i. Who is in charge of the hospital supply inventory?
_____

ii. Does the facility have a centralized distribution of its supply inventory? _____

iii. Are there inventory procedures for the distribution center and/or for all departments that maintain stocks? _____

iv. Are containers, shelves, and storage cabinets containing inventory stocks clearly labeled? _____

v. Does the facility keep track of its inventory? _____If YES, how frequently is this monitored? _____

vi. Does the facility keep accurate track of the expiration dates of pharmaceuticals, chemicals, and other degradable products in its inventory? _____

vii. Which method does the facility use to assess and control its inventory: (a) an informal visual system (i.e., looking at shelves to determine when stocks are low and orders must be placed); (b) a periodic system, wherein stocks are counted and recorded at regular intervals and compared with the minimum desired levels; (c) a perpetual monitoring system, wherein the inventory is monitored at all times generally using a computerized system; or (d) other method (please describe)? _____

viii. Has the facility conducted an assessment of its inventory system, including its inventory carrying cost and inventory turnover rate? _____ If YES, what is its inventory carrying cost and turnover rate? _____

ix. Does the facility apply concepts of inventory control, such as the ABC classification system, economic order quantity (EOQ) model, FIFO (First in, First out), "just-in-time" inventory control, modified stockless inventory, etc.? _____ If YES, please describe: _____

e. Waste management supplies and equipment

Take photos of each type of supply and equipment, label the photos, and attach them with this report. If necessary, add more rows in the table below for different kinds of containers, bags or items used.

Type of Supply and Equipment	**Description**	**Capacity [a]**	**Daily Quantity [b]**
Sharps containers (list different types used)			
Needle destroyers or needle cutters			
Plastic bags [c] for infectious waste (list different types and sizes used)			
Plastic bags [c] for pathological waste			
Plastic bags for general waste [d]			
Bins [e] or bag holders for infectious waste			
Bins [e] or bag holders for general waste			
Containers for chemical waste			
Carts to transport infectious waste [f]			
Carts to transport general waste [f]			
Large bins for collection [g]			
Recycling equipment [h]			

Transport vehicles [i] for infectious waste			

[a] Include the units such as liters, cubic meters, etc.; if capacity is not known, provide the dimensions in cm. [b] If the item is a disposable item, determine how many are used up in a typical day; if the item is a reusable item or permanent piece of equipment, determine how many are in use in the facility in a typical day. [c] For plastic bags, include the thickness of the plastic film, if known. [d] General waste refers to non-infectious, non-hazardous, non-risk municipal solid waste. [e] These bins refer to hard containers used to hold the plastic bags as they get filled up. [f] This refers to movement inside the facility. [g] These refer to skips, large bins, dumpsters, roll-off containers, or other large containers used to accumulate waste in the facility for collection and external transport. [h] These include bailers, compactors, can or glass crushers, and material separation buckets. [i] This refers to collection vehicles used to transport infectious waste to a treatment center outside the facility. Attach photos.

f. Placement of waste containers

For each infectious waste container including sharps containers, describe the location (e.g., second floor nurses' station of the maternity ward), state what other waste containers are beside it (e.g., none, sharps container #7, or general waste container), ask the staff how long it takes to fill up the container and how frequently it is removed (e.g., every two hours, or once a day). Add more rows as needed.

#	Location	List adjacent containers	Time to fill up	Frequency of collection
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

NOTE: As an alternative to the above table, the consultant can provide maps of each floor of the facility and mark on the map where the containers are located, the types of containers, the time to fill up and frequency of collection of each container. Attach an electronic scan of the maps.

g. Storage areas for infectious waste

Take a photo of each storage area and attach it to this report. Add more columns in the table below for more than two storage areas.

	Storage Area 1	Storage Area 2
Location:		
Is the storage area large enough for the amount of waste?		
Does the storage area have a warning sign?		
Does the storage area have an impermeable, hard-standing floor that is easy to clean and disinfect?		
Does the floor have a good drainage system?		
Does the storage area have a water supply for cleaning purposes?		
Is the storage area easily accessible to the staff who handle the waste?		
Can the storage area be locked to prevent access to unauthorized persons?		

If the storage area is the final storage point before the waste is transported outside the facility, is its location easily accessible to waste-collection vehicles?		
Is the storage area protected from the sun?		
Is the storage area inaccessible to animals, insects, birds, and rats? If not, add a note below with an explanation.		
Is there good lighting and ventilation? (Ventilation may be passive.) Add a note below if the room is air-conditioned and at what temperature the room is kept.		
Is the storage area near food preparation areas or stores selling fresh food?		
Does the storage area have a supply of cleaning equipment in case of a spill?		
Are personal protective equipment, containers, and plastic bags located conveniently close to the storage area?		
What is the longest length of time that infectious waste (excluding sharps) is stored in the storage area?		

Attach photos.

If there is a special storage area for pathological waste, describe the storage area, equipment used for storage, storage temperature, and maximum length of storage time.

h. Segregation practices

The question that must be answered for the baseline is the following: On average, what percentage of bags, bins, or containers is poorly segregated? For the purpose of the baseline, the evaluation will be conducted for *three days*. Each waste bag, bin, or container, shortly before it is removed or combined with other waste and regardless of the level of fill, is counted as one statistical sample. Thus, the basis of a statistical sample is the waste bag, bin, or container at the time it is ready to be removed. If the waste from one bag holder is collected four times a day, that bag holder is the source of four statistical samples per day and every waste bag removed must be counted as one sample.

FIRST, familiarize yourself with the classification system used in the country or, if none exists, in Chapter 2 of the WHO reference document "Safe management of wastes from health-care activities" available at: http://www.who.int/water_sanitation_health/medicalwaste/wastemanag/en/index.html

SECOND, begin with a survey of all of the waste containers, recording their locations (see Section 3(f) above), noting what type of waste each container, bag, or bin is intended for, and finding out how often the waste is collected. Depending on the frequency of collection, calculate the variables below.

(i) For containers, bags, or bins collected only ONCE PER DAY:

GW = Sum of general (domestic) waste containers, bags, or bins collected once per day

IW = Sum of infectious waste containers, bags, or bins collected once per day
SW = Sum of sharps containers collected once per day

(ii) For containers, bags, or bins collected SEVERAL TIMES A DAY:
GWX = Sum of general waste collections in which each container is multiplied by the average number of times it is collected in one day
IWX = Sum of infectious waste collections in which each container is multiplied by the average number of times it is collected in one day
SWX = Sum of sharps waste collections in which each container is multiplied by the average number of times it is collected in one day

(iii) For containers, bags, or bins collected LESS OFTEN THAN DAILY:
GWY = Sum of general waste collections in which each container is divided by the average number of days between collections
IWY = Sum of infectious waste collections in which each container is divided by the average number of days between collections
SWY = Sum of sharps waste collections in which each container is divided by the average number of days between collections

To obtain the total statistical population N for each type of waste, use the equations in (1) below to calculate N_G, N_I and N_S, i.e., the total number of general, infectious and sharps waste containers, bags, or bins for 3 days.

Equation 1(a): $N_G = 3 (GW + GWX + GWY)$

Equation 1(b): $N_I = 3 (IW + IWX + IWY)$

Equation 1(c): $N_S = 3 (SW + SWX + SWY)$

Round off N_G, N_I and N_S to the nearest whole numbers if needed.

THIRD, calculate a statistically significant sample size for evaluation. During the three-day sampling period, it is not necessary to examine every bag, bin, or container if instead, a minimum number of samples n are selected *randomly* for inspection from the total population of *N* containers, bins, and bags for each type of waste. To determine the minimum number n of samples to inspect, use Method 1 if the total population N if less than 50, or use Method 2 if N is 50 or greater.

Method 1: For a small statistical population (between 10 and 50 total bags, containers, or bins) of a particular type of waste (general, infectious, or sharps), use a minimum number of 10 samples; that is, n=10 if 10<N<50. If N is 10 or less, use N; that is, n=N if N≤10.

Method 2: For a large statistical population (50 or more total bags, containers, or bins) of a particular type of waste (general, infectious, or

sharps), use a minimum number of samples based on equation (2) below*:

Equation 2:

$$n = \frac{N}{1 + (0.01)N}$$

For each type of waste, designate a number for every possible sample of the total population N for the three days. Random selection can be done by cutting *N* pieces of paper, marking them with the designated number, placing the papers in a box, mixing the papers thoroughly, and randomly pulling *n* pieces of paper from the box to get a random selection. You can also use the RAND and RANK functions in Excel to come up with a random selection.†

Note that samples should be inspected as the waste is ready to be removed. If a randomly selected bag, container, or bin is removed only every four days or more, set the three-day period such that the bag, container, or bin is removed sometime during the three days. If the bag, container, or bin is collected outside the three-day period, eliminate the bag, container, or bin during random selection. Once the samples are selected, develop a plan of inspection.

EXAMPLE

A hospital has 133 containers (70 for general waste, 43 for infectious waste, and 20 sharps containers). The inspector records their locations and finds out the following:
> Of the 70 general waste containers, 40 are removed once per day, 20 are emptied two times per day, 5 are emptied three times per day, 3 are emptied four times per day, and 2 are emptied once a week.
> Of the 43 infectious waste bag holders, 30 are collected once per day, 10 are collected two times per day, 2 are collected three times per day, and one is collected every three days.
> Of the 20 sharps containers, 8 are collected once per day, one is collected twice a day, 10 are collected an average of every two days, and one is collected every two weeks.

For general waste: GW = 40, GWX = (20 x 2) + (5 x 3) + (3 x 4) = 67, GWY = 2/7 = 0.29
Total population of general waste in three days: N_G = 3(40 + 67 + 0.29) = 321.84 (round off to 322)
Statistical sample size for three days using Equation 2: n_G = 76
For infectious waste: IW = 30, IWX = (10 x 2) + (2 x 3) = 26, IWY = 1/3 = 0.33
Total population of infectious waste in three days: N_I = 3(30 + 26 + 0.33) = 168.99 (round off to 169)
Statistical sample size for three days using Equation 2: n_I = 63
For sharps waste: SC = 8, SCX = (1 x 2) = 2, SCY = (10/2) + (1/14) = 5.07
Total population of sharps waste samples in three days: N_S = 3(8 + 2 + 5.07) = 45.21 (round off to 45)
Statistical sample size for three days: n_S = 10

Example of inspection plan for sharps waste:

* Based on the Cochran formula for estimating sample size of categorical data for a confidence limit of 95%, precision of ±10%, and a maximum variance estimate of 0.25.

† In Excel, input the numbers from 1 to *N* in the first *N* rows of column A to correspond to each statistical sample of the population *N*. In the first row of column B, enter the formula =RAND() and then copy and paste it down column B alongside each of the numbers in column A. Next, enter the formula =INDEX($A$2:A*N*,RANK(B2,$B$2:B*N*)) in the first row of column C, replacing *N* in the formula with the population size *N*. For example, if *N*=99, the formula is =INDEX($A$2:$A$99,RANK(B2,$B$2:$B$99)). Copy and paste the formula down column C for the first n rows, where n is the sample size computed by Method 1 or 2. Excel will return n randomly selected numbers from column A.

Since the total population for sharps waste is 45, the inspector designates the 8 containers collected once a day for three days as 1, 2, 3, … 24. The two statistical samples per day for three days from the one container are designated 25, 26, …30. The 10 sharps containers that are collected every two days correspond to 5 statistical samples per day or 15 samples for three days. The inspector designates them as 31, 32, …45. The one container that is collected every two weeks is eliminated. A random selection of the 45 statistical samples gives: 25, 2, 18, 20, 35, 19, 39, 45, 42, and 4. The inspector checks the schedule for when samples 35, 39, 42 and 45 will be removed, and finds out that sample 35 will be collected on day 1, samples 39 and 42 on day 2, and sample 45 on day 3. For the first day, the inspector checks 2, 4, 25, and 35 just before they are removed. During the second day, the inspector checks samples 39 and 42. On the third day, the inspector checks 18, 19, 20, and 45.

FOURTH, conduct a visual inspection on the n randomly chosen samples for each type of waste (general, infectious, or sharps) during the three days. This may require accompanying the waste collector and inspecting each container, bag or bin before they are removed. A visual inspection means looking down into each randomly selected bag, bin, or container to determine if a wrong type of waste item has been placed in the bag, bin, or container. Even just one wrong item means that the whole bag, bin, or container is poorly segregated.

When conducting a visual inspection, do not open sealed containers, bags, or bins but simply look down into open bags, bins, or containers before they are sealed. Only consultants, inspectors, or hospital staff that are trained in infection control, occupational safety, and the use of personal protective equipment (PPE) may examine open containers using long tongs or sticks to move waste around and see further down into the container, bag, or bin, taking special care not to puncture the bag, break waste material, splatter blood, or release aerosols. The trained consultant, inspector or staff should use gloves, an apron cover to protect clothing, and a face mask. The tong or stick should be disinfected before touching general waste to avoid cross-contamination. After three days, you should have inspected a total of n_G general waste, n_I infectious waste, and n_S sharps waste containers, bags or bins.

FIFTH, record your evaluation. Take note of the type of waste item that was found inside the container, bag, or bin. Importantly, take photos of obvious examples of bad segregation and record which containers you had photographed. Below is an example of how to record your notes.

Day 2												
Waste #	Type of bag or bin	Good	Infectious in General waste	Sharps in General waste	Chemical in General waste	Sharps in Infectious waste	Chemical in Infectious waste	General in Infectious waste	General in Sharps waste	Infectious in sharps waste	Chemical in Sharps waste	Notes
13	IW	√										
7	IW							√				empty saline bottle
17	GW	√										
35	GW						√					broken * thermo-meter
7	SW								√			plastic wrap
Etc.												

* see photograph 7.

Distinction is made between improper (wrong) segregation and insufficient segregation. *Improper segregation* means that (1) sharps

waste (e.g., syringe, lancet, needle, etc.) or an infectious waste item (e.g., blood-soaked bandage, culture dish, pathological waste, etc.) is found in a general (domestic) waste bag, bin, or container; (2) sharps waste is found in an infectious waste bag, bin, or container; or (3) hazardous chemical waste (e.g., broken mercury thermometer, waste solvent) is found in a general, infectious or sharps waste container, bag, or bin. (Although hazardous chemical waste containers are not included in the evaluation, hazardous chemicals should not be found in the general, infectious or sharps waste containers; instead, they should be placed in special hazardous waste containers.) *Insufficient segregation* means that (1) general waste (clean packaging, paper, food, etc.) is found in an infectious or sharps waste container, bag, or bin; or (2) a non-sharp, infectious waste item is found in a sharps container. Improper segregation is more serious than insufficient segregation.

SIXTH, at the end of the three-day sampling period, analyze the data by adding the numbers of samples wherein infectious waste was found in general waste; sharps waste in general waste; chemicals waste in general waste; sharps waste in infectious waste; chemical waste in infectious waste; general waste in infectious waste; general waste in sharps waste; infectious waste in sharps waste; and chemical waste in sharps waste. Record the total numbers in the table below. Divide each number by the corresponding sampling size n to get a ratio for each type of poor segregation. Specifically, for general waste, divide each total number in rows 1 to 3 of the table below by n_G; divide each total number in rows 4 to 6 by n_I; and divide each total number in rows 7 to 9 by n_S.

Total population	
N_G:	
N_I:	
N_S:	

Sampling size used	
n_G:	
n_I:	
n_S:	

#	TYPE OF POOR SEGREGATION	TOTAL NUMBER	RATIO	OVERALL RATIO
1	Infectious in General waste			
2	Sharps in General waste			
3	Chemical in General waste			
4	Sharps in Infectious waste			
5	Chemical in Infectious waste			
6	General in Infectious waste			
7	General in Sharps waste			
8	Infectious in sharps waste			
9	Chemical in			

	Sharps waste			

In addition, calculate the overall ratios as follows: add the ratios in rows 1 to 3 to get the overall ratio for general waste; add the ratios in rows 4 to 6 to get the overall ratio for infectious waste; and add the ratios in rows 7 to 9 to get the overall ratio for sharps waste.

Finally, also calculate the ratio of improper (wrong) segregation. For infectious waste, add the ratios in rows 4 and 5 to get the ratio of improper segregation. The ratio of improper segregation for general waste is equal to the overall ratio for general waste. For sharps waste, the ratio of improper segregation is equal to the ratio of chemicals in sharps waste. Summarize the results in the table below:

TYPE OF WASTE	RATIO OF IMPROPER SEGREGATION
General waste	
Infectious waste	
Sharps waste	

Attach photos.

i. Labeling, color-coding, signage and educational posters

i. Are all bins labeled and/or or color-coded? _____

ii. Are all plastic bags color-coded? _____

iii. Is the color coding consistent with the national standard or hospital policy? _____

iv. Provide an explanation of the color-coding system.

v. Are there signs or posters describing the segregation procedure in all areas where multiple bins (general waste, infectious waste, etc.) are situated adjacent to each other? _____

vi. Are there educational posters promoting good healthcare waste management? _____

Take photos of signs or posters related to segregation and educational posters on healthcare waste management, and attach the photos to this report.

j. Collection and internal transport

i. Describe the collection and internal transport procedure, including the frequency of collection and the person(s) assigned to collect and transport the waste. _____

ii. Is the waste transported away from patient areas and other clean areas? _____

iii. How often are the waste transport carts cleaned? _____

iv. Describe how the waste transport carts are cleaned, including the cleaning solution used. _____

v. Take photos of the waste transporter in action. Obtain permission to take the photos and attach photos to this report.

vi. Do the waste collectors and transporters use personal protective equipment? _____ If YES, describe the personal protective equipment: _____

k. External transport

i. How frequently does the transport vehicle pick up the waste? _____

ii. Where does the transport vehicle take the waste? _____

iii. Is there a waste tracking or manifest system? _____ If YES, how long does the facility keep copies of the tracking or manifest documents? _____

iv. Who owns the transport vehicle? _____

v. If the transport vehicle is used to carry infectious waste, does it also carry general municipal waste? _____

vi. If the transport vehicle is used to carry infectious waste, is it a closed (covered) vehicle or is it an open (uncovered) vehicle? _____

vii. If the transport vehicle is used to carry infectious waste, does the vehicle display the international hazard symbol or a sign stating that it is carrying infectious waste and an emergency telephone number? _____

viii. If the transport vehicle is used to carry treated waste or general waste, or if the transport vehicle is used to carry infectious waste but is not owned by the facility, go to ix. If the transport vehicle is used to carry infectious waste and is owned by the facility, does it meet the following WHO recommended standards?

1. The body of the vehicle is of a suitable size, with an internal body height of 2.2 meters. _____

2. There is 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. _____

3. There is a suitable system for securing the load during transport. _____

4. Empty plastic bags, suitable protective clothing, cleaning equipment, tools, and disinfectant, together with special kits for dealing with liquid spills, are carried in a separate compartment in the vehicle. _____

5. The internal finish of the vehicle allows it to be steam-cleaned, and the internal angles are rounded. _____

6. The vehicle is marked with the name and address of the facility. _____

7. The vehicle is kept locked at all times, except when loading and unloading. _____

8. Do the transport workers know what to do in case of a spill or traffic accident? _____

ix. Take photos of the transport vehicle and attach the photos to this report.

l. Waste Treatment technology (for facilities that have on-site treatment)

i. Describe the waste treatment technology used at the facility:
_____

ii. What is the throughput of the system, that is, the quantity of waste treated per hour or process cycle?

_____ kg/hour OR _____ liters/hour

OR _____ kg/cycle and _____ hours per cycle

iii. Describe the operating conditions of the treatment technology (such as temperature, pressure, chemical concentration, exposure time, etc., whichever applies):
_____

iv. Take photos of the treatment system and attach the photos to this report.

v. Request specific information about and operating procedures for the treatment technology, such as a manual or manufacturer's specification, and attach it to this report.

m. Final disposal

i. Where is the treated waste or ash deposited?

ii. Is the disposal site a sanitary landfill, engineered landfill, controlled dumpsite (no open access), or open dumpsite? _____

iii. If possible, obtain photos of the cell or trench wherein treated waste or ash is deposited.

n. Waste spill response

i. Are infectious waste spills reported? ___ If YES, how is the information reported? _____

ii. On average, how many infectious waste spills occur per month? _____

iii. Is there a written infectious waste spill response procedure or plan? _____ If YES, obtain a copy and attach it to this report.

iv. If YES, ask each of the waste workers who collect and transport the waste internally to describe the waste spill response procedure. What percentage of waste workers were able to describe the procedure or plan accurately? _____

v. If there is no written waste spill response procedure or plan, ask the waste workers to describe what they do in the event of a waste spill. Summarize the description below: _____

vi. What types of personal protective equipment are available in the event of a waste spill?
_____

vii. Is there a standard clean-up kit available for infectious waste spills?_____

viii. During the one-month baseline assessment period, ask the facility to document all cases of accidental spills of infectious waste. Input the data in a table similar to that shown below.

Date of spill	Location of spill	What was spilled	Approximate amount of waste spilled	Possible causes

Attach photos.

ix. If possible, take photographs of a waste spill and the response of the waste workers.

o. Chemical and radioactive waste management

i. Does the facility have a chemical waste management policy or plan? _____ If YES, obtain a copy and attach it to this report.

ii. Who is in charge of chemical waste management and disposal? _____

iii. Does the facility have a list of all its chemicals (disinfectants, laboratory reagents, cleaning solvents, developers and fixatives used for x-ray, degreasers, etc.) but *excluding* pharmaceuticals? _____ If YES, obtain a copy and attach it to this report.

iv. Does the facility have a policy and procedure on how to respond to different chemical spills?_____ If YES, attach a copy to this report.

v. Does the facility use cytotoxic (cytostatic) or chemotherapeutic agents? _____ If YES, does the facility have specific policies, procedures and training for the handling, storage, clean-up, and disposal of cytotoxic agents? ___ If YES, attach a copy to this report.

vi. Does the facility use radioactive materials? _____ If YES, does the facility have a procedure for the management of materials and wastes? ____ If yes, attach a copy to this report.

vii. Describe the containers, labels, tracking system, collection, transport, storage, and disposal of chemical, cytotoxic, or radioactive waste in the facility:

_____
_____

CHECKLIST OF ATTACHMENTS FOR SECTION 3: (attach all that apply)

- ☐ Facility procurement policy
- ☐ Facility policy on environmentally preferable purchasing (green purchasing)
- ☐ Treatment technology information and specifications
- ☐ Policy or procedure for infectious waste spills
- ☐ List of chemicals used in the facility
- ☐ Policy or procedure for chemical waste spills
- ☐ Policy or procedure for management of cytotoxic agents
- ☐ Policy or procedure for radioactive waste management
- ☐ List and brief description of photos

4.0 Waste generation data

i. List the types of waste generated in the facility using the national classification system or the WHO classification system in Chapter 2 of the WHO reference document “Safe management of wastes from health-care activities.”

_____

ii. Conduct a two week waste assessment (see instructions in Annex B). Take a few photos illustrating the procedure used. Input your data in an Excel spreadsheet for ease of computation. Attach a copy of the Excel spreadsheet.

iii. Using the data from the waste assessment in Annex B, calculate the listed values below. Note that total waste refers to all waste including general waste, infectious waste, chemical waste, etc.

- Average daily occupancy rate _____

- Average outpatients per day _____
- Average bulk density for all waste _____
- Average bulk density, broken down by type of waste _____
- Average total waste generation rate in kg per bed per day _____
- Average total waste generation rate in kg per occupied bed per day _____
- Average total waste generation rate in kg per total patient per day (where total patient is bedded patients plus outpatients) _____
- Average infectious waste (including sharps and pathological waste) generation rate in kg per bed per day _____
- Average infectious waste (including sharps) generation rate in kg per bed per day, broken down by department _____
- Average chemical, pharmaceutical and radioactive waste generation rate in kg per bed per day _____

CHECKLIST OF ATTACHMENTS FOR SECTION 4:

☐ Excel spreadsheet with one-month data

5.0 Information on training

i. Does the facility have a training policy on healthcare waste? _____ If YES, attach a copy unless the policy is part of another policy already attached.

ii. Who is responsible for training? _____

iii. Does the facility have a regular training curriculum on healthcare waste? _____ If YES, attach a copy of the training material used.

iv. If the facility conducts training on healthcare waste, describe the training as much as possible, including training topics, frequency of training, duration of training, target audiences, training method used, results of evaluations, and costs.

_____
_____

v. Obtain data on how many people have been trained, if any, according to the target audience (e.g., health professionals, waste worker and cleaning staff, administrative and clerical staff, etc.)

Type of healthcare waste training	Target audience	Number of people trained	Total number of target audience	Percentage of target audience trained

vi. Are information materials on healthcare waste management given to the hospital staff? _____

CHECKLIST OF ATTACHMENTS FOR SECTION 5: (attach all that apply)
- ☐ Staff training policy
- ☐ Training curriculum on healthcare waste

6.0 Occupational safety data

i. Does the facility have a written program that includes policies, plans, or procedures for identifying, assessing, and reporting hazards?

ii. Does the facility have written infection control procedures or plans? _____ If YES, attach a copy of the procedures or plans.

iii. Has the facility conducted a blood-borne pathogen exposure or needle-stick injury surveillance in the last two years? _____ If YES, attach a copy of the surveillance report.

iv. If the hospital has not conducted a blood-borne pathogen exposure or needle-stick injury surveillance in the last two years, conduct a limited, one-month blood-borne pathogen exposure survey following the instructions in Annex C.

v. Does the facility monitor nosocomial (hospital-acquired) infections? _____ If YES, attach a copy of the latest report.

vi. Does the facility have a policy or plan to provide tetanus and hepatitis B vaccinations to health workers, waste collection and treatment personnel, and other workers who may come in contact with infectious waste? _____ If YES, attach a copy unless the policy or plan is part of another document already attached.

vii. If the facility provides tetanus and/or hepatitis vaccinations to workers who may come in contact with infectious waste, provide the data requested in the table below. Note that the total number of health workers should include health professionals, waste collection and treatment personnel, and cleaning staff.

	Type of vaccination*	
How many health workers vaccinated?		
Total number of health workers		
Percentage of health workers vaccinated		
How many waste workers vaccinated?		
Total number of waste workers		
Percentage of waste		

workers vaccinated		
Average cost of vaccination per worker		

*For Hepatitis B, provide data on each of the three doses required.

viii. Does the facility have a written program on the use of personal protective equipment by workers dealing with healthcare waste? _____ If YES, attach a copy unless the policy, plan, or procedure is part of another document already attached.

ix. Does the facility have a training program that includes prevention of exposure to blood-borne pathogens, post-exposure management, and use of personal protective equipment? _____ If YES, provide a description of the training, including topics, duration, frequency, categories of personnel who receive the training, and the number of staff trained.

x. List the types of personal protective equipment (PPE) available, how many are available, storage, their conditions, and when they are used by workers dealing with healthcare waste. Examples of PPE include gloves, face masks, face shields, respirators, aprons, boots, eye goggles, sleeve protectors, etc. Conditions can be described as excellent (clean, new, and functional), good (clean and functional), or poor (dirty or non-functional). Indicate in the table below what percentage is in excellent, good, or poor condition. Indicate which PPE are used for collecting and transporting waste. Add more rows in the table below as needed.

Type of PPE	Quantity	Condition	When is it used?

Attach photos.

xi. Take photos to show examples of excellent, good, and poor conditions if possible. Observe waste workers during the day and take photos of their use of PPE or lack of PPE. Attach labeled photos.

xii. Does the facility have a policy, plan, or procedure for post-exposure prophylaxis (PEP) dealing with exposures to blood, body fluids, and needle-stick injuries? _____ If YES, attach a copy unless the policy, plan, or procedure is part of another document already attached.

xiii. Describe the procedure (or attach a copy of the procedure) that workers follow in the event of (a) exposure to blood or body fluids, and (b) needle-stick injury.

_____
_____

CHECKLIST OF ATTACHMENTS FOR SECTION 6: (attach all that apply)

- ☐ Infection control procedures or plans
- ☐ Blood-borne pathogen exposure or needle-stick injury surveillance reports
- ☐ Nosocomial infection report
- ☐ Policy or plan on vaccinations for workers who may come in contact with infectious waste

- Program on the use of personal protective equipment for healthcare waste workers
- Description of the occupational safety training program
- Policy, plan or procedure for post-exposure prophylaxis
- List and brief description of photos

7.0 Cost data

i. The UNDP GEF project needs to track all costs related to healthcare waste management for the duration of the project. Work with the facility's financial officer or facility engineer to track healthcare waste management costs for the next three years. For the baseline assessment period, obtain initial data pertaining to the last 12 months or the last fiscal year.

ii. Does the facility track its budget for healthcare waste management? _____ If NO, go to (v) below.

iii. If the facility tracks its budget for healthcare waste management, (1) what is the annual budget allocation for healthcare waste management? _____ (2) what percentage of the total facility budget does this represent? _____

iv. If the facility tracks its budget for healthcare waste management, provide (1) capital and operating costs associated with treatment and disposal, including an on-site treatment system, if any; (2) one-time costs for capital equipment purchased in the last year; and (3) a monthly breakdown of all recurrent (operating) costs for the last 12 months or the last fiscal year. If records cannot be found, use best estimates. The cost items in the table below are provided as a guide.

v. If the facility does not track its healthcare waste management costs or if a monthly breakdown is not available, work with the facility's financial officer or facility engineer to (1) obtain capital and operating costs associated with treatment and disposal, including any on-site treatment system; and (2) as much as possible, obtain one-time costs for capital equipment purchased in the last year. If records cannot be found, use best estimates. In addition, track all recurrent costs associated with healthcare waste management for one month. The cost items in the table below are provided as a guide and should be modified as appropriate.

Capital Costs of Treatment and Disposal		
Capital Equipment	**Original purchase cost**	**Date of purchase**
Incinerator including any air pollution control		
Autoclave		
Advanced or integrated steam treatment system		
Microwave		
Chemical treatment unit		
Burial pits (construction cost)		
Shredder		

Other treatment technology (specify):		

Monthly Operating Costs of Treatment and Disposal				
	January	**February**	**March**	**etc.**
Monthly service fee if using off-site treatment				
Electricity used by treatment unit				
Fuel used by treatment unit				
Water used by treatment unit				
Sewage used by treatment unit (if applicable)				
Maintenance				
Repairs				
Spare parts				
Other consumable items				
Transport fees				
Landfill fees				
Wages of operators				
Other recurrent costs: (specify)				

One-Time Costs of Healthcare Waste Management (except treatment and disposal costs already provided in the tables above)		
Capital Equipment	**Original purchase cost**	**Date of purchase**
Bins		
Bag holders		
Needle destroyers or cutters		
Reusable sharps containers		
Waste carts		
Roll-off containers or skips		
Storage areas (construction cost)		
Reusable personal protective equipment		
Incubators for validation testing		
Monitoring devices for incinerator emission testing		
Equipment for managing chemical waste		
Bailers		
Other one-time costs: (specify)		

Monthly Operating Costs of Healthcare Waste Management (excluding treatment and disposal costs already provided in the tables above)				
	January	**February**	**March**	**etc.**
Disposable sharps containers				
Waste plastic bags				
Disinfectants				
Cleaning supplies				
Disposable personal protective equipment				
Spill kits				
Training				
Wages of waste workers, cleaners and waste management coordinator				
Other recurrent costs: (specify)				

8.0 Dioxin estimation

A separate guidance will be provided.

9.0 Mercury usage

i. If the facility no longer uses mercury devices, obtain estimates of how many mercury thermometers and sphygmomanometers were purchased in an average year in the past, report the figures, and skip the rest of this section.

ii. If the facility still uses mercury thermometers and sphygmomanometers, obtain the information below:

   a. Number of mercury thermometers purchased annually for the last three to five years: _____ Provide a breakdown by the type of thermometer (e.g., patient thermometer or laboratory thermometer) if available.

   b. Are there mercury spill clean-up and disposal policies and procedures in place? _____ If YES, please provide a brief description and a list of available equipment used for mercury spill clean-up.

   c. Number of blood pressure devices (sphygmomanometers) purchased annually for the last three to five years: _____

d. If sphygmomanometers are repaired and recycled, estimate the amount (grams) of mercury used for refilling sphygmomanometers in a year: _____

e. Does the facility have the following mercury-containing materials, chemicals, or devices? (Note: this is not a comprehensive list.)

- Dental amalgam _____
- Gastrointestinal tubes (e.g., Cantor tubes, esophageal dilators, Miller-Abbott tubes) _____
- Thimerosal _____
- Merbromin _____
- Phenylmercuric acetate preservative _____
- Phenylmercuric nitrate preservative _____
- Fixatives (B5, Zenkers) _____
- Mercury-containing stains _____
- Mercury-containing electrical switches, tilt switches, box switches, etc. _____
- Thermostat probes _____
- Reed relays, displacement relays _____
- Barometers _____
- Mercury-containing batteries _____
- Fluorescent tubes _____
- UV-germicidal lamps _____
- Others (specify):

f. Does the facility have a mercury spill clean-up procedure? _____ If YES, describe the mercury spill clean-up procedure or attach a copy.

g. Take photos of the mercury spill clean-up kit, if any, and photos of any discarded mercury thermometers.

iii. Conduct a one-month assessment of the breakage of mercury devices in the facility to obtain the following:

a. The number of thermometers broken during the month. (Document the number of thermometers broken, type or brand, causes of breakage, method of disposal, and cost.)

Thermometers					
Date	Number Broken	Type or Brand	Cause of breakage	Method of disposal	Cost of replacement

b. Sphygmomanometer breakage and repair during the month. (Document the number of broken sphygmomanometer, estimate the amount of mercury lost, causes of breakage, repair or disposal procedure, and repair or replacement cost.)

Sphygmomanometers

Date	Number broken	Estimated amount of mercury lost (grams)	Cause of breakage	Description of repair or method of disposal	Cost of repair or replacement

c. Costs of replacing mercury thermometers and sphygmomanometers (unit prices, numbers purchased per month). Add more rows if multiple types of thermometers and sphygmomanometers are used.

Summary of Costs			
	Unit Price	Number purchased per month	Total cost per month
Thermometers			
Sphygmomanometers			

Jorge Emmanuel
August 2011

ANNEX A

Permission to publish photographs

Project title: Demonstrating and Promoting Best Techniques and Practices for Reducing Health-Care Waste to Avoid Environmental Releases of Dioxins and Mercury

Publisher: United Nations Development Programme

Hospital: _____

- I authorize the United Nations Development Programme, or its representative, to publish photographs of the hospital on the project website.
- I authorize the United Nations Development Programme, or its representative, to publish these photographs in print documents, CD-ROMs, videos, websites, or other medium for purposes related to this project.
- I understand that any photographs published will remain on the project website at the discretion of the publishers.
- I understand that the hospital will be identified in the photographs at the discretion of the publishers.

Name of hospital representative: _____

Signature of hospital representative: _____

Date: _____

ANNEX B
Guidelines on Measuring Waste Generation Rates

I. Equipment Needed

Basic equipment:

- Proper bins and bags for segregation
- Weighing scale with an accuracy of 10% of full scale or better (minimum weight scale of about 100 grams)
- Measuring tape and/or measuring stick (ruler)
- Journal or notebook for documentation
- Computer and Excel software if available
- Personal protective equipment (see section III below).
- Digital camera
- Hand sanitizer or soap and water for hand washing

II. Procedure For Measuring Waste Quantities

1. Confirm the data on the number of beds.
2. Meet ahead of time with the waste collector and hospital staff to arrange how and when waste containers will be measured and removed. It may be possible to accompany the waste collector to inspect containers before he/she removes them. The researcher should look at the contents before the containers are closed and make notes regarding how full the container or bag is. However, if the containers cannot be measured at the point of generation because of medical or surgical procedures taking place in the room, a storage area nearby could be used to conduct the measurements and the level of fill should just be estimated. An arrangement should be made to keep waste from different departments separate until the containers are measured.
3. Before the start of the measurement period, distribute the bins and bags to each hospital department and remind the hospital staff about the need for proper segregation. Review the different classifications of waste and the corresponding containers.
4. Note down the occupancy rates or outpatients per day during each day of the assessment period.
5. Measure the quantities (both volume and mass) of health-care waste generated by each department in the hospital. The quantities of waste should be measured daily for the duration of the assessment period (see below).

Firstly, waste should be categorized according to the national classification standards. If no national standards exist, use the following:

- General waste: Waste that does not pose a biological, chemical, radioactive, or physical hazard
- Sharps waste: Items that could cause cuts or puncture wounds, including needles, syringes, hypodermic needles, scalpel and other blades, knives, infusion sets, saws, broken glass, and pipettes, whether or not they are infected.
- Infectious waste: Waste that is suspected to contain pathogens (bacteria, viruses, parasites, or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts. This category includes: (a) waste contaminated with blood or other body fluids; (b) cultures and stocks of infectious agents from laboratory work; and (c) waste from infected patients in isolation wards. Examples include: dressings, bandages, swabs, gloves, and other material contaminated with blood or other body fluids; cultures and stocks of highly infectious agents; and clothes heavily soiled with human blood.
- Pathological waste: waste consisting of tissues, organs, body parts, and other waste from surgery and autopsies on patients with infectious diseases, and infected animal carcasses. It could also include human fetuses and placenta.

- Pharmaceutical wastes are expired, unused, spilt, and contaminated pharmaceutical products, drugs, vaccines, and sera that can no longer be used. This also includes cytotoxic or cytostatic (chemotherapeutic or antineoplastic) drugs.
- Chemical wastes are wastes containing corrosive, toxic, reactive, or flammable chemicals, such as laboratory reagents; film developers; disinfectants that are expired or no longer needed; solvents; waste with high content of heavy metals including batteries and broken thermometers and blood-pressure gauges.
- Radioactive waste: waste containing radioactive substances, such as unused liquids from radiotherapy or laboratory research.

As much as possible, the researcher should look at the contents before the containers are closed and make notes regarding how full the container or bag is. Ideally, waste bags should only be 3/4th full to prevent spillage. The researcher should note if the bags are ½ full, ¾ full, overfilled, etc.

The weight (in kilograms) of each waste container or bag should be recorded. At the start of the day and several times during the day, the zero (tare) of the weighing scale should be checked and adjusted. Each bag should then be weighed and the weight recorded.

In addition to weight, the bulk density of the waste should also be calculated. This should be done by taking one random sample per day of each category of waste and recording the weights and volumes. The best way to measure bulk density is to calculate the volume of the waste based on its actual fill level while the plastic bag is still inside a hard container, then weigh the plastic bag after it has been closed, and calculate the bulk density as the weight divided by the volume based on the percent fill level in the hard container. Bulk density should be reported in kg per liter.

If a hard rectangular container such as a cardboard box or rectangular plastic bin is used, the dimensions (length, width, and actual height of the waste in centimeters) should be recorded. If a cylindrical container such as a metal or plastic can is used, the diameter and actual height of the waste in centimeters should be recorded. If the container has an unusual shape, the bag should be closed and transferred to a rectangular or cylindrical hard container so that its volume could be estimated. At the end of the day, the volumes in liters should then be calculated and recorded along with the weights in kilograms, and the bulk density calculated.

The volumes can be calculated using the equations below assuming the measured dimensions are all in centimeters:

- Rectangular or cubic container:
  Volume in liters = length x width x height (in cm) x 0.001
- Cylindrical container:
  Volume in liters = diameter x diameter x height (in cm) x 0.00078
- Full spherical container:
  Volume in liters = [circumference (in cm)] $^3 \div$ 59,000

III. Occupational Safety Considerations

When documenting segregation, data should be obtained visually (look inside open containers without touching the contents). The contents of infectious or hazardous waste containers or bags should not be handled, removed or transferred. Once the infectious or hazardous waste containers or bags have been closed, they should not be re-opened.

The waste collector should be adequately protected at all times using personal protective equipment (PPE). When closing, lifting, or transporting infectious or hazardous waste containers or bags, the person should use heavy duty gloves and an apron. A face mask should be used if

there is any danger of infectious aerosols or blood splashes. PPE, weighing scales, measuring sticks, etc. should be washed regularly or decontaminated with 5% sodium hypochlorite solution or other effective disinfectant after any spills or if signs of contamination are detected.

The waste collector should practice basic hygiene procedures such as washing hands. The researcher should wash his/her hands or use a hand sanitizer regularly, including after accidentally touching infectious waste containers, before taking breaks, before lunch and at the end of the day.

Sample Documentation Form

General Data:

- Date _____
- Department _____
- Number of Occupied Beds or Outpatients on this day _____
- Person Conducting the Waste Measurement _____

Type of waste*	How full**	Weight (kg)	Dimensions (cm) ***	Volume (liter)	Bulk density of representative samples ****

* Use the national classification standard. If no national standard exists, use the following terms: general (non-risk, non-infection) waste, sharps waste, infectious waste, pathological waste, chemical waste, pharmaceutical waste, or radioactive waste.
** For example: ¼ full, ½ full, ¾ full, overfilled, etc.
*** Dimensions for rectangular objects – length x width x height; dimensions for cylindrical objects – diameter x height; dimensions for spherical objects – circumference. NOTE: dimensions are not needed if the volume is known.
**** Bulk density = weight ÷ volume (measure one random sample of each classification of waste per day)

ANNEX C
Guidelines on a Limited Blood-borne Pathogen Exposure Survey

The goal of this preliminary blood-borne pathogen exposure survey is to obtain a baseline data to determine if improvements in healthcare waste management can result in enhanced occupational safety, or if there is sufficient data to be able to demonstrate this. For the purpose of this survey, blood-borne pathogen exposure includes both needle-stick injuries (NSI) and blood splatter related to waste spills. (NOTE: This is not intended to be a comprehensive, systematic and long-term injury surveillance program.)

TARGETS: Health workers, waste collection and treatment personnel, and other workers that may come in contact with infectious waste

OBJECTIVE: To obtain baseline data on incidences, injury characteristics, circumstances leading to injury, and costs associated with blood-borne pathogen exposures from healthcare waste

PROCEDURE:

1. Obtain the cooperation of major stakeholders including the hospital administration, infection control or occupational safety officers, and relevant department heads. Explain the limited objective and goal of the survey.

2. Develop a plan and procedure for data gathering with the major stakeholders. Among the barriers to non-reporting are the fear of punishment or retribution, lack of awareness of the seriousness of blood-borne pathogen exposures, and a lack of confidentiality. These issues should be addressed in developing the detailed plan. Even though the survey is focused on injuries related to healthcare waste, it may be useful to have a reporting system that covers all needle-stick injuries and blood splashes to help the facility design and apply appropriate preventive interventions.

3. Prior to the survey, obtain and report data on the types of syringes used in the facility: e.g., glass syringes, disposable syringes, auto-disable syringes, retractable syringes, etc.

4. For a period of one month, obtain the data requested in the form below related to blood-borne pathogen exposure.

Blood-borne Pathogen Exposure Survey Form	
Date of injury or exposure	
Time of injury or exposure	
Location (department) where incident took place	
Job category of injured or exposed person	
Type of injury or exposure	
Location in the body of the injury or exposure	
Depth of the injury	
PPE worn by the worker at the time of injury or exposure	
If injury was to the hand: types and number of gloves used	
Type of device that caused the injury, including manufacturer and model number if available	
Purpose of the device that caused the injury	

Was the device contaminated with blood?	
Was the source patient known?	
Status of the patient if known	
Was the injured worker the original user of the device?	
Describe the circumstances leading to the injury	
Question to the worker: how could the injury have been prevented?	
When was post-exposure prophylaxis started?	
Cost associated with the injury or exposure	