



Empowered lives.
Resilient nations.

Reducing UPOPs and Mercury Releases from
The Health Sector in Africa



Healthcare Waste Treatment Centre



- OPERATION & MONITORING GUIDELINE -

Date: 03.12.2016

Submitted by:
Jan-Gerd Kühling
Chief Technical Expert on Healthcare Waste Management

Table of Contents

1	Role of the Healthcare Waste Treatment Centre (HCW TC)	4
2	Management of HCW treatment centres.....	5
2.1	Operation of HCW treatment centres.....	5
2.2	Inspection, maintenance and servicing.....	5
2.3	Staff and occupational health & safety.....	6
3	Waste treatment practices at the HCW TC	10
3.1	Receiving of the waste.....	10
3.2	Asses the waste bags and containers	10
3.3	Measure the waste.....	10
3.4	Unload the container	11
3.5	Transport containers maintenance	11
3.6	Loading the autoclave.....	12
3.7	Decontamination	12
3.8	Unloading the autoclave	13
3.9	Process Documentation	13
3.10	Waste removal from the premises	14
3.11	Preventive maintenance	14
3.12	Validation and Testing Protocols.....	14
4	Testing and performance verification	15
4.1	Homologation Test (or Type testing).....	15
4.2	Commissioning Tests	15
4.3	Periodic Performance Tests	15
4.4	Unscheduled Tests.....	16
4.5	Regular performance verification (routine testing)	16
5	ANNEX	18
5.1	Annex A - Waste Refusal Notice	18
5.2	ANNEX B - Daily Waste Reception Log.....	19
5.3	ANNEX C - Daily Treatment Processes Log	20
5.4	ANNEX D - Monthly Waste Balance Sheet	21
5.5	ANNEX E - Annual Process Performance Sheet	22
5.6	ANNEX G Preventative Maintenance Plan	23
5.7	ANNEX I HCW TF Workflow	25

Abbreviations

GEF	Global Environment Facility
HCW	Healthcare Waste
HCWH	Health Care Without Harm
HCW TC	HCW Treatment Centre
HWM	Healthcare Waste Manager
HWO	Healthcare Waste Officer
HWT	Healthcare Waste Technician
IEC	Information, Education, Communication
MoH	Ministry of Health
WHO	World Health Organisation

Disclaimer: This project is funded by the Global Environment Facility (GEF) Trust Fund, which was established on the eve of the 1992 Rio Earth Summit, to help tackle our planet's most pressing environmental problems. It is implemented by the UNDP - United Nations Development Programme Istanbul Regional Hub (IRH) in partnership with WHO and the NGO Health Care Without Harm (HCWH). The views expressed in the document are those of the author and do not necessarily reflect the official opinion of the UNDP. Neither GEF, the UNDP nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

1 Role of the Healthcare Waste Treatment Centre (HCW TC)

The HCW Treatment Centre (HCW TC) will be the place designated for installation of the autoclave for the treatment of all of the infectious waste that is generated in the healthcare institution where it is installed and which is generated in the smaller healthcare facilities in the district. The personnel of the HCW TC perform the collection, transport, treatment and disposal of the infectious waste and the sharp waste.

The HCW TC will develop and organize the collection timetable of infectious waste. When it is operating as an central level treatment centre, it will liaise with other institutions and agree on a transport schedule for the delivery of the infectious waste from the generators to the treatment centre. The treatment will be performed at the HCW TC and all quantities received and processed as well as any accompanying documentation will be monitored and recorded.

The HCW TC personnel will be responsible for the assessment of the packing and labelling of the waste and where the waste is not properly packaged or labelled they will have the right to refuse the waste, whereupon they will produce a Waste Refusal Notice (ANNEX) and provide a copy to the waste producer.

2 Management of HCW treatment centres

2.1 Operation of HCW treatment centres

For the operation, the operator has to set up operating instruction in writing. The operator has to instruct the operating staff and has to hand over a copy of the instructions. The staff has to be periodically (at least once per year) re-instruct. The operating instructions should contain at least:

- aim of the instructions, cognisance's, responsibilities;
- application of the different treatment programs
- processing and treatment of the waste
- to be carried out inspections, controls, maintenance and tests
- how to remedy deficiencies and shortcomings
- behaviour and troubleshooting in case of extraordinary circumstances
- to marshal the equipment book
- kind and date of to be carried out briefings
- tasks of the operating staff

Only trained and instructed staff shall be allowed to operate the treatment plant. The first instruction shall be carried out at the plant through the manufacturer and shall include the operation of the plant, the mode of action, the relevant parameter for the treatment process and possible risks during operation. The staff must be able to recognize failures, to transfer the treatment plant after a failure in a safe status and to unload the treatment chamber in a safe way. The yearly instruction of the staff shall be carried out by the operator based on the operating instructions. The carrying out of the first and periodically instruction shall be certified in the equipment book.

Only the type of waste is allowed to be processed for which the treatment plant is tested. The processing of the waste must follow the way as described in the operating instruction. For the processing, the right program has to be chosen. For each batch, a full loading of the treatment chamber should be aimed to optimize the treatment result. The plant should be loaded in a way that the waste will not be in direct contact with the treatment chamber – a loading cart shall therefore be used. A record from each treatment batch has to be printed and to be kept for documentation.

2.2 Inspection, maintenance and servicing

For each treatment plant a equipment book has to be compiled and maintained. The equipment book has to be kept close to the treatment plant and must be available for the operation staff. During inspections and by demand from authorized persons, inspection of the book must be allowed. In the equipment book it has to be inscribed:

- Name of the operation staff
- Ascertained defaults and their elimination
- Carried out controls and test as well as the results
- Reports about maintenance and repairs (including carried out work and changed parts)

The equipment book has to be signed weekly by the operational staff and yearly by the responsible person of the treatment plant. In case of checks and controls by an authorized expert, a report about the carried out test has to be included in the book. Together with the book, following documents should be stored:

- Datasheet of the treatment plant
- Operating instructions and user manual
- Certificates about the periodic tests
- Reports about repairs and maintenance (if not included in the book)
- Treatment batch documentation (recorder print outs)
- Check list

The check list should contain instructions about to be carried out regularly controls, inspections and maintenance work.

Based on the check list, the treatment plant shall be regularly inspected. Different inspections shall be carried out on a daily, weekly, biannual and yearly basis. The biannual specialist-inspection should include the adjustment of the measurement and monitoring devices as well as I&C equipment. Also a test on effectiveness (microbiological test) has to be carried out by a technical expert. The yearly inspection should include a comprehensive inspection which should include, next to the activities of the biannual inspection, an appraisal of corrosion of the pressure vessel by an pressure vessel expert and an thermoelectrically test.

The daily maintenance shall include the check and if necessary the cleaning of the sieve of the steam pipeline. In case of an external steam supply, the functioning of the steam de-watering und condensate lead-away must be checked. Also, the door gaskets must be checked for fouling and damages. Filters (HEPA-filter, etc.) shall be maintained in accordance to the instructions given by the manufacturer.

For servicing and preventive maintenance of the treatment plant, only original spare-parts from the manufacturer or from the manufacturer approved equivalent spare-parts shall be used. Mounting shall be carried out by technical experts only. Servicing of limitation devices, correcting elements and security devices shall be done only by authorized personal from the manufacturing company or the service company thereof.

2.3 Staff and occupational health & safety

Every treatment centre should have at least two qualified autoclave operatives. Autoclave operatives must be trained initially by the manufacturer of the installed equipment and then in the modules developed by the Ministry of Health for Autoclave operators on the operation of a HCW TC.

All manufacturers of waste treatment technologies MUST have their training modules for operators approved by the MoH before delivery. The supplier must visit and examine the equipment, unless it is otherwise mentioned in the supply contract. The training must be performed by certified and experienced trainer, with at least 5 years of experience with the equipment that will be used for HCW treatment. It is envisaged that all training will be delivered by a central training team.

It is imperative that no unauthorised persons use or work with the equipment. The treatment centre supervisor must ensure that all operation, maintenance and service manuals for the equipment are always available at the treatment site.

Treatment centre operatives will be supported by a robust institutional organogram which clearly delineates person and person responsibilities. It is imperative that the treatment plant operatives have clear lines of communication in regard to maintenance and secondary consumable provision.

To facilitate this process the treatment centre will be managed by a Treatment Centre Supervisor and he will have designated liaison points at the Technical, Stores and Administration Departments as well as a designated point of contact on the Waste Management Team if not being a member thereof.

In addition the Treatment Supervisor will have a direct line of communication to the autoclave manufacturer.

Waste Treatment Centre Operatives must be suitably equipped with Personal Protective Equipment (PPE).

In both the management and treatment of potentially infectious and in the presence of machinery, operatives must be aware of the risk involved in such an environment. The main risks associated with this particular working environment and protected advices are outlined below:

Occupational Health and Safety Risks during operating autoclaves

INFECTIOUS MATERIAL

- The incoming infectious waste should arrive at the HCW TC properly packed and labelled.
- Always handle potentially infectious healthcare waste with care.
- Try to minimise your contact with it.
- Do not open the waste bags and pick up the waste.
- The pathogens can be airborne. It is strictly forbidden to move waste from one bag to other.
- Do not touch the waste without proper using of PPE.
- Always wash your hands after being in contact with infectious material.
- If a bag arrives at the facility and it has been burst in transit please ensure that you are wearing your PPE and place it immediately into another similar bag, secure it and then place it into the Autoclave for treatment.

IN CASE OF ACCIDENTS, PLEASE IMMEDIATELY REPORT IT TO THE DESIGNATED CONTACT POINT ON THE WASTE MANAGEMENT TEAM

SHARPS

One of the biggest threats when working with healthcare waste is sharp injuries. The injury can occur from needles, scalpels, broken bottles and laboratory glassware, lancets etc. These items should be packed in the appropriate sharp containers, but extra caution is always welcome. Please note that scratch can occur from hard plastics.

By cutting the skin, the body's defence membrane is damaged so the wound can act as door for infection. It is proven that in case of one sharp accident, the chances of contamination are very high.

IN CASE OF ACCIDENTS, PLEASE IMMEDIATELY REPORT IT TO THE INFECTION CONTROL TEAM

HOT SURFACES

The autoclave is working with saturated steam and the working temperature is over 121°C. Any contact of the chamber surface and pipelines can cause severe burns. Regular maintenance is very important in order to control and check of autoclaves seals. Damaged or ruptured seal can cause steam sudden steam leakage that can cause very serious burns.

IN CASE OF BURN, PLEASE IMMEDIATELY REPORT IT TO DESIGNATED MEDICAL OFFICER ON DUTY

ELECTRICAL SHOCK

Working environment, who have water and high voltage power supply, always must to be considered as dangerous. It is strictly forbidden for not authorized person to be closer to the power supply. It will be usual that the floor surface of the treatment area to be wet, so by that the possibilities of electrical shocks are just very possible. It is suggested that the operators should wear rubber boots.

IN CASE OF ELECTRICAL HAZARD, PLEASE IMMEDIATELY REPORT IT TO THE DESIGNATED CONTACT POINT AT THE TECHNICAL DEPARTMENT

SLIPPERY SURFACES

Due to the very important washing and disinfecting of the floors and walls of the infectious area, the possibility of injury exists from falling and or other injuries. The floor will have to have non slippery properties or the tiles will have to with relief surface. Falling can sometimes be more dangerous than it seems.

IN CASE OF FALLING, PLEASE IMMEDIATELY REPORT IT TO DESIGNATED MEDICAL OFFICER ON DUTY

ODOUR

The process of the healthcare waste sterilization does not create any hazardous emissions in the environment. However, due to the nature of the content of healthcare waste, its treatment by high temperature steam results in an odour being given off as the material is treated. This odour is only evident when the autoclave door is opened after treatment. In order to minimise the odour it is advisable to ensure that the steam contained within the autoclave is discharged manually to the sealed discharge point prior to opening the door **AND** that operators allow sufficient time for the treated material within the autoclave to cool prior to opening the autoclave door.

It is suggested that the room where the autoclave is located to have strong exhaust fans or AC, who will extract the odour from the room, if possible trough active carbon filter and dilute it

with big amounts of fresh air. It will also improve the situation if the room is well ventilated naturally.

3 Waste treatment practices at the HCW TC

The processing of waste through a HCW TC is relatively straight forward, however it is important to design into that system a concept of clean and dirty areas, to ensure that processed materials and clean bins are kept separate from unprocessed materials and dirty bins.

There are 12 key steps in the functioning of the HCW TC and these are outlined below:

3.1 Receiving of the waste

Check (visual) the condition of the transport packing.

3.2 Asses the waste bags and containers

Visual inspection is needed. Asses the following

- Segregation quality (visual inspection through plastic bags only)
- Bags quality
- Sharps containers quality
- Label Completion Accuracy
- Wheelie Bins (state of repair)

Look for forbidden substances:

- Chemicals and/or chemicals packing
- Toxic Materials
- Pharmaceuticals and their packing
- Pathological waste
- Oil, Pressurized containers, big amounts of liquid waste.

Report any irregularities to the designated representative on the waste management team.

NOTE: If the waste is not segregated or packed, it is operators right to refuse the income waste. It is necessary to fill up the Waste Refusal Notice, clearly indicating the reasons for refusing. Prior to the transport, the transporter will have to do the visual inspection on the point of collection. If everything is properly packed and labelled, proceed with step 3.3.

3.3 Measure the waste

Weigh the waste and record it, along with other relevant details, in the Daily Waste Reception Log. (See sample attached). Receive and sign all necessary transport documents. Weigh the waste as follows:

- Put the container on the ground scale,
- Record the weight,
- Deduct the weight of the empty container
- Register the weight in the Daily Waste Reception Log



Photo 3 & 4. On arrival at the treatment centre the waste should be checked, along with any labels or accompanying paperwork and then weighed.

3.4 Unload the container

Always be careful when unloading the container. By doing this you are in direct contact with infectious materials therefore when carrying out this task always wear protective clothes, gloves and facemask (there can be evaporations or bio-aerosols from the infectious substances). If waste from the container is too bulky and cannot fit in the autoclave, fill as much as you can and wait for the next batch.

NOTE:

- Do not force the waste inside the autoclave.
- Do not remove the waste from the transport container unless you can accommodate it in the autoclave.
- Do not tilt the transport container. Occasionally there can be liquids on the bottom of the container.

IF SPILLAGE OCCURS, STOP THE UNLOADING PROCESS, THEN DISINFECT AND WASH THE AREA OF SPILLAGE

3.5 Transport containers maintenance

- Take the unloaded transport container to the place for washing of the containers.
- Disinfect the transport container.
- Do not spill the contents (liquids) of the containers before disinfecting. Make sure that you leave enough time for the disinfectant to react with the surface. Please see disinfectants instructions for use.
- Wash and rinse the container after the disinfection.
- Leave the container to dry.
- Asses the condition of the container (wheels, lids, lock, look for cracks or damages).

- If the transport container needs to be repaired, please contact the technical department. After the washing, clean and disinfect the washing area.

IF THE TRANSPORT CONTAINER NEEDS TO BE REPAIRED, PLEASE CONTACT THE TECHNICAL DEPARTMENT

3.6 Loading the autoclave

- Before loading of the autoclave, check the conditions of the chamber ensure that there is no debris left over inside from a previous cycle.
- At no time should anyone have any part of their body above or inside the opening of the loading door.
- Place the waste containers and bags inside the loading container and put the container into the autoclave.
- Ensure that no part of the waste bags are sticking out of to the chamber, so that the door will close properly.
- Beware the chamber surfaces can be hot and cause serious burns.
- Close the autoclave door and prepare to start the cycle.

FORBIDDEN MATERIALS AND SUBSTANCES

NEVER put the following waste types or materials inside the autoclave:

Solvents
Volatile or corrosive chemicals (e.g. phenol, chloroform, bleach)
Radioactive materials
Toxic or irritant substances
Pharmaceutical waste
Waste that contains heavy metals
Cytotoxic materials

SOME MATERIALS CAN CAUSE SERIOUS MALFUNCTION OR DAMAGE OF THE EQUIPMENT OR CREATE SIGNIFICANT ENVIRONMENTAL IMPACT.

3.7 Decontamination

- Ensure the main power switch supplying the autoclave with 3 phase power is in the ON position.
- Follow the instruction for the autoclaving of the waste provided by the manufacturer

All processes must be recorded in the Daily Treatment Processes Log (**Annex**).

REMEMBER IF YOU HAVE NO PROCESS LOG RECORD THEN YOU DO NOT HAVE PROOF OF DECONTAMINATION

3.8 Unloading the autoclave

- Wait for the pressure gauge to drop to zero and the cycle to end remaining before opening the door.
- Vent the chamber manually if necessary to reduce odour.
- Ensure that the proper container is in place.
- Open the door cautiously and slowly.
- For gravity displacement autoclaves, allow all steam to escape before reaching inside.
- Remove autoclaved waste carefully.

NOTE: *Never leave items in an autoclave overnight.* Remove autoclaved waste immediately after the cycle is completed.

3.9 Process Documentation

a) If the autoclave do not have automatic documentation:

- If the chemical indicator from the test pack reads “acceptable”, tape the strip in the proper column at the Daily Treatment Processes Log. Place the autoclaved waste in a black plastic garbage bag, tie the bag and place in the municipal waste bin.
- If the load did not meet the appropriate operating conditions, the load will be autoclaved again. (*)

b) If the autoclave has automatic documentation:

- The operator will review the printed report and verify the appropriate operating conditions were met.
- If the load met the appropriate operating conditions, the operator fills the Daily Treatment Processes Log and staple the autoclaves print out and chemical indicators in corresponding column.
- If the load did not meet the appropriate operating conditions, the load will be autoclaved again.

(*) NOTE: *If it fails again in the same autoclave, report the malfunction to the responsible person and put a large “Out of Order” sign on the autoclave. The waste is still considered infectious at this point and must not enter the municipal waste stream until it has been successfully autoclaved.*

All processes are the basis for preparation of **Monthly Waste Balance Sheet (Annex)**

In addition it is recommended to prepare an annual waste balance sheet which more clearly equates the weight of waste processed to the number of cycles performed by the autoclave an example of such a recording form is attached at **Annex**.

3.10 Waste removal from the premises

All waste which has been successfully treated in the autoclave should be treated as municipal waste and placed in bags directly from the autoclave process.

The bags should then be placed in suitable storage receptacles, within the defined storage area, awaiting uplift for the municipal waste services and final disposal to landfill. Always be aware of possible sharps injuries.

3.11 Preventive maintenance

The equipment must be maintained regularly by the operators as well as by the authorized technician within agreed and scheduled maintenance periods as recommended by the manufacturer.

The preventive maintenance programme should extend through the life span of the equipment and ensuring proper functionality.

Maintenance performed in reference to the Maintenance Prevention Schedule list is presented in the table "Preventive Maintenance Plan".

The data on problems encountered during maintenance and the undertaken interventions, are presented in the table "Evidence of Autoclave Maintenance".

3.12 Validation and Testing Protocols

It is essential for any technical process to be validated and tested that there is a set of validation and testing protocols developed for the use of that technology. It is also important that a body or institute is given responsibility for this function.

4 Testing and performance verification

For an effective monitoring and verification of the performance, the carrying out of different types of tests is needed and described in the following. Test shall be performed as described in the relevant documents.

4.1 Homologation Test (or Type testing)

The purpose of the homologation test or type testing is to determine what operating data are to be used in the operation of a specific type of treatment system. It also serves to determine exactly what kind of waste can be treated by the process in question, what loading and/or packaging regulations have to be followed, and where critical levels for measurements to be carried out in the future lie. Another purpose of homologation testing is to check conformance with general requirements, particularly with regard to malfunctions and the innocuousness of waste water and exhaust air. Homologation test shall be performed by the manufacturers. After the successful completion of such a test an application can be made to be recognized as approved treatment technology.

The scope of test shall include the microbiological test (with biological indicators) as well as all relevant physical test (such as temperature distribution and pressure, air removal, etc.). The test shall be carried out in empty, under partial and under full load. Tests shall be repeated no less than twice. Tests of processes not belonging to the fractionated-vacuum category shall be repeated four times. Homologation test records shall show what exposure time has been determined experimentally. Furthermore, such reports shall contain descriptions of critical locations and critical batches.

4.2 Commissioning Tests

The inspection and testing of treatment plants on site serves the purpose of demonstrating that a particular treatment plant is capable of conforming to the relevant general requirements, provided there is no deviation from the operating instructions. The operating data determined in the course of homologating testing shall be applied to the operation of the unit on site, which necessitates proper loading and a proper supply of expendables. This test may be commissioned either by the manufacturer or the supplier of the unit.

For the test, as a minimum one test involving a test batch of lumens shall be conducted. The test shall involve no less than five test carriers fitted with bio-indicators. The batch in the treatment chamber shall be one of the critical batches identified in the homologation test or, alternatively, a full load. Furthermore, these test shall involve measurement of all physical parameters.

4.3 Periodic Performance Tests

Periodic performance tests shall be conducted on site at intervals of no less than six months. Their purpose is to demonstrate that the treatment performance of the treatment plant is good and that it causes no infection hazard, provided there is no deviation from the operating instructions and a proper supply of expendables is at hand. Test involving biological indicators shall be conducted as for a commissioning test. In addition, once per year the physical parameters should be measured.

4.4 *Unscheduled Tests*

Unscheduled Tests shall be conducted whenever there has been a change in the type, quantity, or packaging of the waste material being treated, whenever there is cause to suspect that the efficiency of the treatment plant has been impaired, or whenever repairs have been affected by which said efficiency might have been impaired. In that case, same test as used for the commissioning test shall be conducted.

All test being carried out shall be documented. At a minimum, test records shall show the following:

- Type, brand, manufacturing date and location of the tested treatment plant
- type of test conducted,
- a description of procedure involved
- type and weight of the load together with a description of the containers used
- Location of the biological indicators and thermoelements
- Process parameters measurement

The results of the test, inclusive of the biological indicator resistance test, shall be kept for at least 5 years. Reports shall show the makes of biological indicators use as well as their batch numbers, expiration dates and, if necessary, package types.

4.5 *Regular performance verification (routine testing)*

During normal operation, a regular verification of the performance has to be carried out and the following tests have to be performed:

Chemical test (Temperature indicator)

This test is intended to confirm that there has been full penetration of the steam in the load during each cycle and it also shows that the load was exposed on the sterilization parameters – temperature and time.

Frequency of testing: at least one chemical indicator shall be used for each batch

Air leakage test – Vacuum test

The air leakage test is used to demonstrate that the quantity of air leakage into the sterilizer chamber during the periods of vacuum does not exceed a level which will inhibit the penetration of steam into the sterilizer load and will not be a potential risk to the re-contamination of the sterilizer load during drying.

NOTE New generation autoclaves should have this process as a standard built in test process

Frequency of testing: daily in the morning, prior the start of operation

Bowie and Dick test

This test was conceived as a test for successful air removal for sterilizers so called high vacuum porous load sterilizers. A successful Bowie and Dick test indicates rapid and even penetration of steam into the test pack. Retention of air within the pack due to:

- an inefficient air removal stage,
- the presence of an air leak during the air removal stage,

- the presence of non-condensable gases in the steam supply, are circumstances which can lead to failure of the test.

The result of the test can also be affected by other factors which inhibit steam penetration. A failure of the test is therefore not conclusive proof that a fault is due to air retention, air leakage or non-condensable gases and other causes of failure may need to be eliminated.

Frequency of testing: once per week

Microbiological test

This test, biological indicators, is intended to show that when connected services comply with the requirements specified in this standard and the times, temperatures and pressures which control the sterilization cycle are set at the levels at which compliance with the requirements for the small load, thermometric test has been demonstrated, recovery of test organisms from the biological indicator placed in the test load cannot be obtained after the completion of a sterilization cycle.

Frequency of testing: once per month

Thermometric testing

The thermometric testing shall be carried out to demonstrate that in all places of the waste load the necessary temperature for the safe decontamination is reached. The routine thermometric testing shall be part of the periodic performance test.

Frequency of testing: every six month by an independent institution

5 ANNEX

5.1 Annex A - Waste Refusal Notice

<p>Date & Place:</p> <p>Waste Producer Name:</p> <p>Address of the Generator:</p>
--

<p>Waste Carrier Name (if different than above):</p> <p>Address of the Carrier:</p> <p>Vehicle type used:</p> <p>Vehicle Registration Number:</p>

Remarks:

.....

.....

.....

.....

The above stated notice serves warning that the waste to which it refers was not fit for treatment by the autoclave treatment technology for the reasons stated above. Please ensure that future waste deliveries comply with the packaging and labelling requirements of the treatment centre and that any wastes presented for treatment are of a type suitable for autoclave technology. Due to the above stated reasons the waste cannot be accepted at the treatment centre.

Signed:

Treatment Centre Supervisor

5.2 ANNEX B - Daily Waste Reception Log

Name: _____ Post: _____ Date: _____

Date	Number of Containers	Type of the Container	Type of waste	Origin of Waste	Weight of Waste (KG)
1	2	3	4	5	6

DIRECTIONS FOR THE COMPLETION OF THE WASTE RECEPTION LOG

This waste reception log is used to enter the name of the legal entity or person, the waste owner, the date of acceptance of the waste material

Column 1, is used to enter the date on which the waste was received for treatment

Column 2, is used to record the number of containers received whether that be bags or sharps boxes

Column 3, is used to record the type of containers received whether that be bags or sharps boxes

Column 4, is used to record the waste type

Column 5, is used to enter the origin of the waste in terms of either department or institution

Column 6, quantity of waste in kg's is entered.

5.3 ANNEX C - Daily Treatment Processes Log

Names of the operator:

Date:

Data is entered in regard to the waste treated at the HCW TC according to the information

Batch number (load)	LOAD DATA	Treatment Process information		Quantity of Treated waste	Treatment validation Chemical indicator strip and operator signature
		Temp. (°C)	Time (min)	Kg	
1	2	3		4	5

Remarks:

given in Daily Waste Reception Log, specifically:

Column 1: number of Treatment Cycle/Batch No.

Column 2: number of the bags that are labelled during the registration of the waste bags that are delivered in the transport container

Column 3: temperature and time of the sterilization

Column 4: data about the treatment quantity during one cycle

Column 5: place for chemical indicator that will be removed from the load after the treatment process, as visual proof that the waste has been exposed to the treatment parameters.

5.4 ANNEX D - Monthly Waste Balance Sheet

Received vs Treated Waste

DATE	Received waste Weight (kg)	Treated Waste Weight (kg)	Balance of waste Weight (kg)
1	2	3	5

Column 1: Date

Column 2: Received Waste Weight

Column 3: Treated Waste Weight

Column 4: Balance of Waste Weight

5.5 ANNEX E - Annual Process Performance Sheet

Month	Waste Processed in Month by Weight	No of Process Cycles in Month	Waste Processed by Weight per Cycle
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Annual Totals			

5.6 ANNEX G Preventative Maintenance Plan

Healthcare Waste Treatment Point - Maintenance Schedule

Note: Daily maintenance services are included in the Work Schedule!

Task:	Responsible:	Month Week	January				February				March				April				May				June				July				August				September				October				November				December			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Healthcare waste function area																																																		
Frequency:																																																		
1. Healthcare Waste treatment point																																																		
Inspect electricity system		1/2 Yearly																																																
Check lights and plugs		Monthly																																																
Inspect water supply and sewage		1/2 Yearly																																																
Control taps (leaking)		Monthly																																																
Clean sinks with plunger		Monthly																																																
Inspect Windows, floor and doors		Yearly																																																
Inspect coating of wall and ceiling		Yearly																																																
Inspect roof		Yearly																																																
Check hinges and lock of storage		Quarterly																																																
Inspect storage areas		Yearly																																																
Inspect storage area, doors		Yearly																																																
Write Maintenance report		Yearly																																																
2. Utilities inspection																																																		
Drain the air compressor / line		Quarterly																																																
Check compressor oil level		Quarterly																																																
Change the water filter		Yearly																																																
Clean the ventilation system		Yearly																																																
Write Maintenance report		Yearly																																																
3. Waste Management Area																																																		
Inspect general cleanness		Monthly																																																
Logistic system																																																		
Inspect segregation points (poster, etc.)		Monthly																																																
Check bins		Quarterly																																																
Lubricate wheels of trolley		Quarterly																																																
Inspect trolley		Yearly																																																
Control wall mounted bag holders		Quarterly																																																
Inspect scale's precision		Monthly																																																
Write Maintenance report		Yearly																																																

GEF HCW-Africa: Operation & Maintenance HCW-TC

Healthcare Waste Treatment Equipment - Maintenance Schedule

Note: Daily maintenance services are included in the Work Schedule!

Task:	Responses	Month Week	January				February				March				April				May				June				July				August				September				October				November				December			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Healthcare waste Treatment Equipment																																																		
		Frequency:																																																
Drain the steam generator		Weekly																																																
Check door safety mechanism		Weekly																																																
Inspect door gasket		Weekly																																																
Inspect air filter locking		Weekly																																																
Check time of use of the air filter		Weekly																																																
Check time of use of the HEPA filter		Weekly																																																
Drain the air compressor or line		Weekly																																																
Check printer pens and paper		Weekly																																																
Check the salt level in the water softener		Weekly																																																
Check the water lines for leakages		Weekly																																																
Drain the steam generator		Monthly																																																
Check door safety mechanism		Monthly																																																
Inspect door gasket		Monthly																																																
Inspect air filter locking		Monthly																																																
Check time of use of the air filter		Monthly																																																
Check time of use of the HEPA filter		Monthly																																																
Drain the air compressor or line		Monthly																																																
Check printer pens and paper		Monthly																																																
Check the salt level in the water softener		Monthly																																																
Check the steam lines for leakages		Monthly																																																
Check the water lines for leakages		Monthly																																																
Inspect the water level probes		Monthly																																																
Check the heaters		Monthly																																																
Change the water filter		Monthly																																																
Inspect and check the safety valves		Quarterly																																																
Inspect the pressure switch		Quarterly																																																
Check the water level switch		Quarterly																																																
Drain the water level glass		Quarterly																																																
Check the temperature switch		Quarterly																																																
Check the safety switch		Quarterly																																																
Clean up the strainers		Quarterly																																																
Clean the steam traps		Quarterly																																																
Check the installations sealings		Quarterly																																																
Carry out the monthly activities		Quarterly																																																
Perform regular quarterly activities		Half year																																																
Independent temperature and pressure test		Half year																																																
Door service		Half year																																																
Check printer pens		Half year																																																
Check the condition of the PT 100 probe		Half year																																																
Clean the vacuum pump inlets		Half year																																																
Perform water flow test (heat exchanger)		Half year																																																

5.7 ANNEX I HCW TF Workflow

