

SFG2188 V14



FEDERAL REPUBLIC OF NIGERIA
COMMUNITY AND SOCIAL DEVELOPMENT
PROJECT (CSDP)



HEALTH CARE WASTE MANAGEMENT PLAN
(HCWMP)

For

***THE CONSTRUCTION OF A HEALTH CENTRE/MATERNITY CLINIC,
VIP TOILET AND PROVISION OF DRUGS AND EQUIPMENT***

AT

NTALI COMMUNITY IN GIREI LGA OF ADAMAWA STATE

DRAFT FINAL REPORT

May, 2016

Executive Summary

Ntali Community has identified the construction of a health centre/maternity clinic, VIP toilet and provision of drugs and equipment as a priority project in their community which they believe will help in the improvement of sanitation and hygiene and reduce the incidences of water borne diseases. The community seeks the assistance of CSDP to fund the project estimated at N3,972,300.

As part of the credit agreement with the World Bank, projects supported by Bank's funding are usually subjected to safeguard screening to determine the environmental and social risk before approval.

Although the micro-project of concern is at the implementation stage, the operational Policy (OP) 4.01 on Environmental Assessment is triggered given the potential environmental concerns around the handling of Health care waste resulting from project related activities such as the Vaccination and Routine Immunization that generate healthcare waste such as expired vaccines and sharps.

The environmental and social screening checklist analysis carried out by CSDP categorized the sub-project as "B". The volume of health care waste from wasted vaccine, immunization and other primary health treatments is small and because they are sterilized vaccines which do not present a public health or environmental risk. This implies that the magnitude and scope of the project is small and site specific which can be readily addressed by mitigation measures contained in this HCWMP.

The overall social impacts of the project are likely to be positive with main issue being utilization of services. No land requirements or restriction of access to sources of livelihoods or involuntary resettlement of any kind under the project.

This HCWMP identified healthcare waste sources, their bio-hazardous risks and classifications. Section 2.4 outlined the best practices of HCW management process that will be used to manage healthcare waste under the CSDP project. A summary template described as healthcare waste management plan (HCWMP) is presented in section 2.5. This HCWMP identified the activities that give rise to HCW, the impacts/hazards and mitigation measures. The overall cost of implementing the HCWMP including cost of mitigation, monitoring and training is N1, 908,000 equivalent of USD9540. The summary of the cost component is as follows:

| Item | Responsibility | Cost Estimate(N) | Cost Estimate in (USD) |
|------------------------------|----------------|------------------|------------------------|
| Mitigation | CDA, CPMC, | 860,000 | 4300 |
| Monitoring | CPMC, SA | 180,000 | 900 |
| Training & Capacity Building | Consultant | 550,000 | 2500 |
| Sub-Total | | 1,590,000 | 7950 |
| Management (10%) | SA | 159,000 | 795 |
| Contingency (10%) | | 159,000 | 795 |
| Total | | 1,908,000 | 9540 |

Table of Contents

| | |
|---|----|
| Executive Summary | 2 |
| LIST OF ABBREVIATIONS AND ACRONYMS | 4 |
| CHAPTER 1 INTRODUCTION | 5 |
| 1.1 Background | 5 |
| 1.2 CSDP Project Development Objectives and Components | 5 |
| 1.3 Environmental Classification and Rationale for Preparing a Health care Waste Management Plan | 5 |
| 1.4 Objectives of the HCWMP | 6 |
| CHAPTER 2: MICRO PROJECT DESCRIPTION AND HEALTHCARE WASTE MANAGEMENT PROCESS | 7 |
| 2.1 Micro Project Description | 7 |
| 2.2 Healthcare Waste Management Process for Micro/Primary Health Facilities | 7 |
| 2.3 Risks associated with health care waste | 8 |
| 2.4 The Healthcare Waste Management Process | 8 |
| 2.5 Summary of Healthcare Waste Management Plan | 10 |
| 2.6 Capacity Building Need and Targets | 12 |
| REFERENCES | 13 |
| APPENDIX 1: PRIMARY HEALTHCARE FACILITY HCWM ASSESSMENT CHECKLIST | 14 |
| APPENDIX 2: SAMPLE WASTE DEPOSIT RECORD | 17 |
| APPENDIX 3: SUGGESTED OPTIONS FOR TREATMENT OF “SHARPS” HCW FOR THE NIGERIA POLIO ERADICATION PROJECT | 18 |

LIST OF ABBREVIATIONS AND ACRONYMS

| | | | |
|--------------------|---|-----------------------|--|
| <i>AF</i> | Additional Financing | <i>GO</i> | Gender Officer |
| <i>BH</i> | Boko Haram | <i>GRM</i> | Grievance Redress Mechanism |
| <i>CBO</i> | Community Based Organization | <i>IDA</i> | International Development Association |
| <i>CDA</i> | Community Development Association | <i>IDPs</i> | Internally Displaced Persons |
| <i>CDD</i> | Community Driven Development | <i>LGA</i> | Local Government Area |
| <i>CPMC</i> | Community Project Management Committee | <i>LGRC</i> | Local Government Review Committee |
| <i>CSDA</i> | Community and Social Development Agency | <i>M&E</i> | Monitoring & Evaluation |
| <i>CSDP</i> | Community and Social Development Project | <i>OO</i> | Operation Officer |
| <i>EA</i> | Environmental Assessment | <i>OP</i> | Operational Policy |
| <i>EIA</i> | Environmental Impact Assessment | <i>PO</i> | Project officer |
| <i>ESMF</i> | Environmental and Social Management Framework | <i>PRA</i> | Participatory Rural Appraisal |
| <i>ESMP</i> | Environmental and Social Management Plan | <i>RPBA</i> | Recovery and Peace Building Assessment |
| <i>ESSF</i> | Environmental and Social Screening Form | <i>SA</i> | State Agency |

CHAPTER 1: INTRODUCTION

1.1 Background

The Federal Government of Nigeria has received financing from the World Bank (WB) for implementing a 2-year World Bank Assisted Additional Financing (AF) of Community and Social Development Project (CSDP). The thrust of the Community and Social Development Project (CSDP) is to contribute to the realization of the Nigerian government's strategy for poverty reduction by improving the welfare and living conditions of many poor and vulnerable communities in most states of Nigeria. The project has the objective to increase access by the poor to improved social and natural resources infrastructure services in a sustainable manner throughout Nigeria. This will be achieved through the provision of grant support to benefiting Communities for the implementation of community-driven micro projects under approved Community Development Plan (CDP). To commence State-level implementation of the additional financing, the Project intends to use part of the proceeds for consultancy services for the review/upgrade of Environmental and Social Management Plan (ESMP) and prepare Abbreviated Resettlement Action Plan (ARAP) for the participating States in the North East Geopolitical Zone.

1.2 CSDP Project Development Objectives and Components

The initial consultation suggest that the Project Development Objective (PDO) for the CSDP AF will remain unchanged as the original PDO- "to sustainably increase access of poor people to social and natural resource infrastructure services", but the key performance indicators (KPIs) will be revised. The CSDP AF KPIs will put some emphasis on support to vulnerable and disenfranchised household and individuals expand scope of assistance to such households beyond public goods (schools, health center, water etc.). It will also include demand side support i.e. a safety net. The use of a community managed approach and emphasis on local government active partnership with community groups will be retained and strengthened during CSDP AF period. The new emphasis on safety net will result in an additional component, for 'vulnerable groups' transfers, to the original design. In essence, the additional financing will now have 4 components:

- *Component 1: Coordination and Program Support Component (Federal and State Level)*
- *Component 2: LGA/Sectoral Ministries Capacity and Partnership building Component*
- *Component 3: Community-Driven Investment Component*
- *Component 4: Vulnerable Groups livelihood investment grants/transfers component.*

1.3 Environmental Classification and Rationale for Preparing a Health care Waste Management Plan

As part of the credit agreement with the World Bank, projects supported by Bank's funding are usually subjected to safeguard screening to determine the environmental and social risk before approval.

Although the micro-project of concern is at the implementation stage, the operational Policy (OP) 4.01 on Environmental Assessment is triggered given the potential environmental concerns around the handling of Health care waste resulting from project related activities such as the Vaccination and Routine Immunization that generate healthcare waste such as expired vaccines and sharps.

The environmental and social screening checklist analysis carried out by CSDP categorized the sub-project as “B”. The volume of health care waste from wasted vaccine, immunization and other primary health treatments is small and because they are sterilized vaccines which do not present a public health or environmental risk. This implies that the magnitude and scope of the project is small and site specific which can be readily addressed by mitigation measures contained in this HCWMP.

The overall social impacts of the project are likely to be positive with main issue being utilization of services. No land requirements or restriction of access to sources of livelihoods or involuntary resettlement of any kind under the project.

1.4 Objectives of the HCWMP

The main objective of this HCWMP is to:

- Identify potential impacts that may occur during implementation stage of the healthcare facility
- Develop a micro healthcare waste management plan that is detailed and specific to provide direction on how to manage healthcare wastes
- Develop detailed specific mitigation measures with relevant costs implication that will need to be achieved during and after sub-project implementation;
- Specify responsibilities and institutional arrangement that will be put in place to ensure that the mitigation measures are implemented
- Tracking to ensure the effectiveness of the mitigation measures at meeting the discharge standards.
- Provide implementation and monitoring schedule

CHAPTER 2: MICRO PROJECT DESCRIPTION AND HEALTHCARE WASTE MANAGEMENT PROCESS

2.1 Micro Project Description

The micro-project is the construction of a health centre/maternity clinic, VIP toilet and provision of drugs and equipment at a cost of N3,972,300. Health care center is of great priority to the people of Ntali community even as the existing health care center in Ntali community is in a state of despair with no equipment, drugs, and medical personnel.

Ntali community is located in Girei LGA of Adamawa state and has a population of about 3,800 people. It has a unique culture which forbids women from consumption of chicken and goat meat. About 80% of the people are predominantly farmers. Common crops grown are Guinea corn, Maize, Rice, Groundnut, Cassava, Millet, and cowpea while the remaining 20% rear animals like cattle, Goats and Poultry.

2.2 Healthcare Waste Management Process for Micro/Primary Health Facilities

Healthcare Waste (HCW) is all waste generated by health-care establishments (human or veterinary), including research facilities and laboratories. It can include waste generated in the course of healthcare in homes. Table 2.1 below illustrates the major categories of medical wastes.

Table 2.1: Major Categories of Medical Waste

| Waste type | Description |
|--|--|
| 1. Infectious waste | Infectious wastes are susceptible to contain pathogens (or their toxins) in sufficient concentration to cause diseases to a potential host. Examples include discarded materials or equipment, used for the diagnosis, treatment and prevention of disease that has been in contact with body fluids (dressings, swabs, nappies, blood bags etc). It also includes liquid waste such as faeces, urine, blood or other body secretions. |
| 2. Pathological and anatomical waste | Pathological waste consists of organs, tissues, body parts or fluids such as blood. Anatomical waste consists in recognizable human body parts, whether they may be infected or not. |
| 3. Hazardous pharmaceutical waste | Pharmaceutical waste includes expired, unused and contaminated pharmaceutical products, drugs and vaccines. This category also includes discarded items used in the handling of pharmaceuticals like bottles, vials and connecting tubing. |
| 4. Hazardous chemical waste | This consists of discarded chemicals (solid, liquid or gaseous) that are generated during disinfecting procedures. They may be hazardous (toxic, corrosive, flammable or reactive) and must be used and disposed of according to the specification formulated on each container. |
| 5. Waste with a high content of heavy metals | Waste with high contents of heavy metals and derivatives are highly toxic (e.g. cadmium or mercury from thermometers or manometers). |
| 6. Pressurized containers | Pressurized containers consist of full or emptied containers or aerosol cans with pressurized liquids, gas or powdered materials |

| | |
|------------------------------|--|
| 7. Sharps | Sharps are items that can cause cuts or puncture wounds (e.g. needle stick injuries). They are highly dangerous and potentially infectious waste. They must be segregated, packed and handled specifically within the HCF to ensure the safety of the medical and ancillary staff. |
| 8. Highly infectious waste | This includes microbial cultures and stocks of highly infectious agents from medical laboratories. They also include body fluids of patients with highly infectious diseases. |
| 9. Genotoxic/cytotoxic waste | Genotoxic waste includes all the drugs and equipment used for mixing and administration of cytotoxic drugs. Cytotoxic drugs or genotoxic drugs are drugs that have the ability to reduce the growth of certain living cells and are used in chemotherapy for cancer. |
| 10. Radioactive waste | Radioactive waste includes liquids, gas and solids contaminated with radio nuclides whose ionizing radiations have genotoxic effects. These include x- and g-rays as well as a- and b- particles. |

Source: Safe Management of Wastes from Health-Care Activities, WHO 1999

2.3 Risks associated with health care waste

Health care waste management is an integral part of hygiene and infection control within a health care facility and safe HCWM will help control infections and occupational hazards. All individuals and workers exposed to HCW are potentially at risk of being injured or infected.

The general public can be infected by HCW either directly or indirectly through several routes of contamination. Dumping HCW in open areas is a practice that can have major adverse effects on the population. Reuse of improperly disposed injection equipment is another route of infection by HCW. WHO estimates that over 20 million infections of hepatitis B, C and HIV occur yearly due to unsafe injection practices (reuse of syringes and needles in the absence of sterilization). Furthermore, there is a risk for public health as regards the sale of recovered drugs in the informal sector and the lack of controls.

The dumping of HCW in uncontrolled areas can have a direct environmental effect by contaminating soils and underground waters. During improper burning or incineration of HCW, air can also be polluted causing illnesses to the nearby populations. This has to be taken into consideration when choosing a treatment or a disposal method.

2.4 The Healthcare Waste Management Process

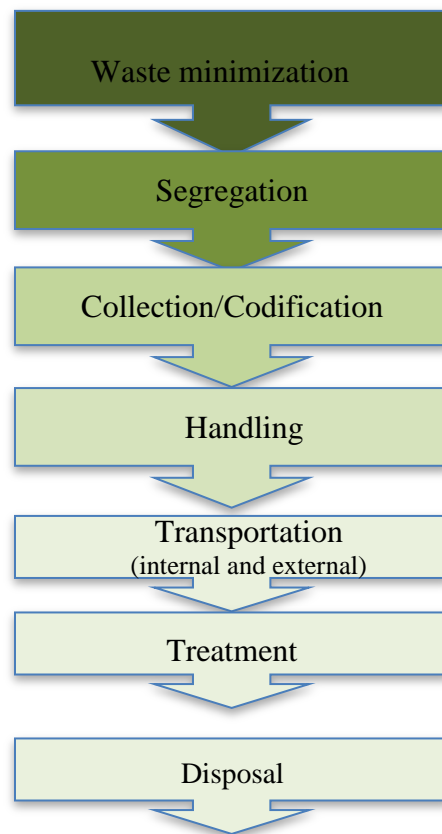
Below are some critical steps that must be considered when managing healthcare waste for this project.

Table 2.2: Steps in managing health care wastes

| Waste Management Component | Key Elements for Safe and Effective HCWM |
|----------------------------|---|
| Generation | <ul style="list-style-type: none"> • Identification & classification of HCW material • Segregation of HCW at source based on categories (general wastes, sharps, infectious wastes, highly infectious wastes, pharmaceuticals) • Cleaning & Disinfection of personnel and surfaces that have come in contact with hazardous HCW |

| | |
|------------------------|--|
| Collection | <ul style="list-style-type: none"> ● Handling and Storage based on Colour Coding |
| In-Facility Storage | <ul style="list-style-type: none"> ● Separate storage facility ● Appropriate storage temperature ● Waste not to be stored for more than 48 hours ● Documentation and Assessment of the waste quantity ● Packaging and Labelling ● Monitoring |
| Transport | <ul style="list-style-type: none"> ● Monitoring during Transportation ● Documentation |
| Off-Facility Storage | <ul style="list-style-type: none"> ● Separate Storage Facility ● Documentation and Assessment of waste quantity ● Monitoring |
| Treatment and Disposal | <ul style="list-style-type: none"> ● Appropriate treatment using appropriate and affordable technology option |

A schematic representation of the ideal situation is shown below.



Schematic representation of health care waste management

2.5 Summary of Healthcare Waste Management Plan

| ACTIVITY | IMPACT/HAZARD | MITIGATION MEASURES | COSTS | MONITORING MEASURE | COST | RESPONSIBILITY | |
|---|--|---|--------|--|--------|---|-------------|
| | | | | | | MITIGAT. | MONITOR. |
| <p>Ensure that special healthcare waste is segregated from other waste for disposal.</p> <p>Sub-activities i) Immediate “at source segregation of healthcare wastes (sharps, infectious wastes, highly infectious wastes, pharmaceutical wastes, e.t.c.</p> | <p>Needle-stick injuries from used needles and syringes; Unsafe disposal can spread some of the very same diseases that we are trying to prevent; Leaving used syringes and needles in the open puts the community at risk; Possible infection of personnel by infectious or highly infectious wastes,</p> | <p>-Puncture resistant safety boxes/Impermeable containers for the safe disposal of used syringes and needles and other contaminated sharps; -Immunization Post Exposure Prophylaxis; Procure appropriate PPE for specific health risks; -Create a waste management record for inventory of daily waste volumes and handling.</p> | 15,000 | <p>Facility inspection for at least once in a month</p> <p>Check the waste management record</p> | 30,000 | Nurses, immunization officers (IOs), programme officers (POs), Cleaners, scavengers | OO, EPA, WB |
| ii) Waste collection | Spillage or droppings due to breaking of waste collection bags/bins | Provision of high quality sharps boxes, waste bags and bins | 25,000 | Facility inspection for at least once in a month | 30,000 | Nurses, IOs Pos, Cleaners, scavengers | OO, EPA, WB |
| iii) Waste storage | Foul Odour, leaching | Vaccinators should place all used needles and syringes in a safety box immediately after administering the vaccine, without recapping them, tape the nearly (i.e. not more than 3/4) full box securely shut and store the box in a safe place until it can be properly disposed; Ensure containment is airtight and leakage proof; | - | | 30,000 | Nurses, IOs Pos, Cleaners, scavengers | OO, EPA, WB |

| | | | | | | | |
|--|--|---|-----------------|--|-----------------|------------------------------|----------------|
| | | Locate storage facility away from healthcare delivery areas within facilities | | | | | |
| Determination and procurement of appropriate treatment technology(s) | | | | | | | CSDP |
| Sub-activities i) Selection of type of incinerator facility to be installed. | No negative impact | No mitigation required | | | | | |
| ii) Construction of hard-standing and incinerator house | loss of vegetation and fauna | Minimize site clearance Plant trees/grasses in the affected area | 50,000 | | 30,000 | CPMC, CSDP, Contractor | CSDP, EPA , |
| iv) Healthcare waste treatment | Collapse of incinerator during off-loading, Musculoskeletal disorders of heavy duty personnel | Develop and implement safe-work procedures; provide haulage and heavy duty equipment for installation of incinerator; implement training and Standard Operating Procedures for Incinerator installation | 20,000 | | 30,000 | CPMC Contractor | CSDP, EPA , |
| | Emissions releases | Install emissions control systems; procure incinerators with emissions control systems. | 750,000 | | 30,000 | CPMC, Contractor | CSDP, EPA , |
| Total | | | N860,000 | | N180,000 | | |

2.6 Capacity Building Need and Targets

Correct attitudes for effective health care waste management result from knowledge and awareness regarding the potential risk of health-care and administrative procedures for handling the waste. Each category of personnel (immunization officers, nurses, ward attendants, cleaners, waste transporters, scavengers, etc.) needs to be trained. For the training to be successful and to lead to the desired objective, participants must become aware of the risks linked to medical waste management.

Training and Schedule for Staff and Support Staff of Health Care Facilities

| Capacity Needs | Content | Target Participant | Duration | Resource Person | Estimated Cost (USD) |
|---|---|--|----------|-------------------------------------|----------------------|
| Basic knowledge about medical waste | Waste categories; Hazardous potential of certain waste categories Health risk for health care personnel | Immunization Officers (SIO); Program officers, Immunization Officers & Scavengers | 8 hours | Medical waste management consultant | 200,000 |
| Proper behaviour of waste generators | Environmentally sound handling of residues; Waste avoidance and reduction possibilities; Identification & separation of waste categories; Knowledge about appropriate waste containers | State Immunization Officers (SIO); Program officers, Immunization Officers & Scavengers | 7 hours | Medical waste management consultant | 175,000 |
| Proper handling of health care waste | Safe collection, storage & disposal of wastes; Handling of infectious laundry & outdated drugs; Maintenance of septic tanks and other sewage treatment facilities; Maintenance and operation of incinerator; Maintenance and operation of waste pits and landfill site. | State Immunization Officers (SIO); Program officers, Immunization Officers & Scavengers | 7 hours | Medical waste management consultant | 175,000 |
| Total | | | | | 550,000 |

Note: The cost of training is inclusive of module or training material development and after training report writing for submission to CSDP, but does not include cost of mass production.

REFERENCES

- Environmental and Social Management Plan Framework for CSDP-AF (2014)
- ESMP for the Construction of Alternative Bridge No 2 at Emene, Enugu (2012); RSDT Federal Ministry of Works, Nigeria
- Federal Ministry of Agriculture and Water Resources (2003): Third National Fadama Development Project (Fadama III), Rural Infrastructure, Manual No. 4, August
- IFC General Environmental Health and Safety Guidelines: Occupational Health and Safety
- Lochner, P. (2005): *Guideline for Environmental Management Plans. CSIR Report No ENV-S-C 2005-053 H.* Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- Ministry Of Agriculture And Animal Resources (Minagri) (2010): Environmental Management Plan (EMP) For Nyanza 23 Sub Project , Land Husbandry, Water Harvesting And Hillside Irrigation Project (LWH) Prepared by Green and Clean Solution Ltd
- Project Appraisal Document (PAD) for CSDP-AF
- Pollution Prevention and Abatement Handbook (World Bank Group) 1998
- Resettlement Policy Framework for CSDP-AF, (2014)
- Revised Nigeria Healthcare Waste Management Plan (NHCWMP) for REDISSE Project, (2016)

APPENDIX 1: PRIMARY HEALTHCARE FACILITY HCWM ASSESSMENT CHECKLIST

The information for the checklist is adapted from the WHO Rapid Assessment Toolkit.

General facility information

Healthcare facility (HCF)

- How many beds do you have in total?
- How many outpatients come each day on average?

Staff

- Is there a staff responsible for HCWM, identified and operational?

HCWM regulations (code of conduct; management plan, policy...)

- National HCWM regulations (HCF) are available and enforced (YES/NO)
- National HCWM regulations (does their application cause any problems?) (YES/NO)
- Internal guidelines and SOP are available and used (YES/NO)

Policy and budget

- Budget allocation for HCWM is available and used (YES/NO)
- Budget allocation for HCWM (budget per bed and year) (YES/NO)
- Annual report of activities (can you obtain a copy of your annual report(s) regarding HCWM?) (YES/NO)

Wastewater

- Waste water drains to what (is the waste water system connected?) (YES/NO)
- Sewer connection (where does the sewerage system lead to)

.....
- Tick the kind of waste that is/are generated in the healthcare facility? [1] general, [2] recyclables, [3] radioactive, [4] infectious, [5] sharps; [6] chemicals (liquid and solid); [7] pharmaceutical waste; [8] anatomic waste;
 - quantity produced/day (estimated, in kg)
 - quantity prod/day (in kg or number of sharps boxes)
 - quantity produced/day (estimated, in kg)
 - quantity produced/day (estimated, in kg)
 - quantity produced/day (estimated, in kg)
 - quantity produced/day (estimated, in kg)
 - quantity produced/day (estimated, in litres)
 - quantity produced/day (estimated, in kg)
- Into which categories are HCW separated? [0] no segregation, [1] general, [2] recyclables, [3] radioactive, [4] infectious, [5] sharps; [6] chemicals (liquid and solid); [7] pharmaceutical waste; [8] anatomic
- Proper segregation of waste is: [0] non-existent; [1] bad (low); [2] insufficient; [3] satisfactory; [4] good; [5] excellent (high)
- Safe handling of waste is: [0] non-existent; [1] bad (low); [2] insufficient; [3] satisfactory; [4] good; [5] excellent (high)
- What kind of specific containers do you use? [0] no specific container; [1] plastic; [2] metallic; [3] cardboard; [4] bag; [5] box; [6] other
- What kind of specific containers do you use? [0] no specific container; [1] puncture-proofed single use; [2] puncture-proofed multiple use, [3] not puncture-proof single use; [4] not puncture-proof multiple use
- For what reasons are there shortages, if any? [0] no shortages; [1] budget; [2] logistical; [3] other (specify)
- Do you have a specific colour coding system? (YES/NO)
- Infectious waste containers are lidded? Yes/No
- Sufficient equipment for proper chum is available and properly used? [0] not available; [1] partly available; [2] widely available; [3] available and properly used
- Do you have a specific area for HCW? (YES/NO)

- Is the area only accessible for authorised pers.
- Are different kinds of waste stored in separated storage areas? (YES/NO)
- Is hazardous and non-hazardous waste collected and transported separately? Yes/No
- What kind of means do you use? [0] open device; [1] closed device; [2] other (specify)
- Do you think current practices offer enough security?
- Is there any transport documents used?
 - [0] none; [1] transport form; [2] other (specify)
- Who generally transports the HCW?
 - [0] the HCF; [1] municipal service; [2] private company (name ?)
- Which kind of system is used?
 - [0] none; [1] open fire; [2] incinerator; [3] chem. disinf.; [4] other
- What is the current capacity of the system(s)?
 - in kg/day and how often treatment is done per week
- Any operation problems; if so for what reasons?
 - [0] none; [1] money; [2] maintenance; [3] spare-parts; [4] other
- What do you do when it doesn't function?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- How is the quality of treatment technology?
 - [0] non-existent; [1] bad (low); [2] insufficient; [3] satisfactory; [4] good; [5] excellent (high)
- How is the maintenance status of the technology?
 - [0] non-existent; [1] bad (low); [2] insufficient; [3] satisfactory; [4] good; [5] excellent (high)
- Is it treated onsite or offsite?
 - [0] no treatment; [1] on-site; [2] off-site (which treatment technology is used)
- Is it on or off-site?
 - [0] on-site; [1] off-site
- Which kind of disposal site is used for the HCW?
 - [0] none, [1] open dump; [2] sanitary landfill; [3] small burial pit; [4] other
- Is the area secured?
 - [0] at the chef [1] off site: open dump; [2] off site: sanitary landfill; [3] other
- Where is it disposed of?

STAFF

- Hepatitis B and tetanus Do you vaccinate your personnel against them? [0] none; [1] only tetanus; [2] only HBV; [3] both

HCW GENERATION

- Number of injections performed How many are done in average per day?

HCW SEGREGATION & HANDLING

- Needle stick injuries How many cases reported in the past 12 months (average)?
- Type of syringes used What type of syringes do you use? [0] Disposable; [1] sterilisable; [2] auto-disable; [3] safety syringe

- Protective equipment Sufficient personal protective equipment for the handling of waste is available

PERSONAL OPINION

- Personal opinion What kind of short-comings, weak points regarding HCWM in your country can you point out
- Personal opinion Do you think sufficient funds are allocated to HCWM?
- Personal opinion Do you think HCWM is safely managed?
- Personal opinion Do you think HCWM is environmental friendly managed?

STAFF

| | |
|------------------------------|--|
| Medical staff training | Is training of med. Staff available regarding HCWM? |
| Training responsible of HCWM | What kind of training has this person followed? |
| Staff for HCW awareness | Awareness of risks of person(s) handling HCW? |
| Medical staff training | Is the participation in the trainings documented? |
| Staff training on monitoring | Staff is trained on monitoring and supervising of chum |

HCWM REGULATIONS (CODE OF CONDUCT; MANAGEMENT PLAN, MONITORING...)

| | |
|---------------------------------|--|
| National monitoring regulations | Are monitoring regulations available? |
| Monitoring regulations | Is a monitoring system stipulated and established? |

APPENDIX 3: SUGGESTED OPTIONS FOR TREATMENT OF “SHARPS” HCW FOR THE NIGERIA POLIO ERADICATION PROJECT

Disinfection of syringes with bleach

Household bleach can be used to disinfect sharps and other wastes at an appropriate concentration (0.5% chlorine solution). Disinfection is aimed at reducing the pathogenicity of infectious health-care wastes. Disinfecting procedures must be followed carefully to be effective. Disinfection only serves to reduce the risk from accidental exposure to sharps prior to treatment or disposal and can serve as a pre-treatment prior to employing subsequent treatment technologies, e.g. sending to a centralized incinerator or burial in pits.

Needle remover

The used needle is inserted into a device, which cuts or pulls the needle off from the syringe. Various designs available are shown in the figure below. The devices are inexpensive and can be made locally. Removal of needles from used syringes with needle removers can render them unfit for reuse and safe for disposal after disinfection. Subsequently the plastic syringes can be disinfected and sent to a centralized incinerator for further actions.



Encapsulation

Encapsulation involves filling containers with waste, adding an immobilizing material (plastic foam, bituminous sand, cement mortar, or clay) and sealing the containers. After the medium has dried, the containers are sealed and disposed of in a landfill. The main advantage of the process is that it is

very effective in reducing the risk of scavengers gaining access to the hazardous health-care waste. Encapsulation of sharps however, be envisaged in temporary settings, such as camps, or mass campaign, and provided that raw materials are available. Encapsulation of used sharps is generally not practiced and not a long-term solution. The sharps can then be incinerated at the centralized pit.

Procedure for “Sharps” Disposal

The recommended methods of managing HCW in primary and secondary health facilities have been presented in the main body of this report.

The following technology options are recommended for the disposal of “Sharps”:

Use of Centralized Incineration

Incineration presents a good option for good disposal and destruction of sharps-wastes. However, concerns such as availability of technical knowhow, maintenance, environmental pollution, etc should be considered. Incineration has the potential for toxic emissions, particularly if the waste stream is not regulated, as is usually the case if the equipment is not properly operated and maintained, and if the emissions management system is inadequate. Large-scale incinerators tend to pollute less than small-scale incinerators because the combustion temperature is higher and combustion efficiency (gas residence time) is better.

Rather than having an incinerator in several facilities, a centralized, large-scale health care waste incineration plant should be located in a tertiary or secondary healthcare facility in a region. Sharps wastes from healthcare facilities in the region are then transported to the incinerator site for incineration. The sharps should be transported in sharps boxes.

2. Pit Burial for Sharps

Pits for sharps can be constructed in the facilities. The sides of the pits should be covered with a low permeability material, and fenced. The pit should be sealed with cement once it is three-quarters full or at least the last 50cm should be filled with compacted soil and the area identified with a red coloured flag. This approach is simple and adequate for health facilities that generate small amount of waste.

3. Cemented sharp pit

Pit-well covered with a narrow access for sharps should be filled with cement once full.

