



Medical Laboratory Science Council of Nigeria

Guideline on Waste Management

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Policy Statement	As part of its statutorily responsibility, MLSCN provides these guidelines for the management of waste from medical laboratories to minimize the adverse effects of improper waste management.

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1.0 INTRODUCTION/BACKGROUND

Waste could be defined as any substance that constitute unwanted materials that needs to be disposed of or discarded as being broken, worn out, contaminated or otherwise spoilt. Contamination is the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Biomedical waste is any waste generated during the diagnosis, treatment, immunization of human beings or animals, research activities pertaining to or in the production of biological or in health camps. Biomedical waste is broadly classified as hazardous and non-hazardous. WHO estimates biohazardous waste to constitute about 20% of all the biomedical waste while 80% is considered to be non-hazardous. Hazardous waste is any waste, or combination of wastes, which because of its quantity, concentration, or physical characteristics may either cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating illness, pose a substantial presence or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Waste Management is the process associated with characterization, quantification, segregation, storage, transportation, treatment and disposal. This is in accordance with the best principles of public health, economics, engineering, conservation, aesthetics and other environmental considerations. In laboratories, decontamination of wastes and their ultimate disposal are closely interrelated. In terms of daily use, any contaminated material will require actual removal from the laboratory or destruction. Most glassware, instruments and laboratory clothing will be reused or recycled.

2.0 MISSION STATEMENT

Medical Laboratory Science Council of Nigeria as a regulatory agency that seeks to be world acclaimed, has the mandate to provide a clear direction on waste management to protect the medical laboratory professionals, the clients and the environment from possible outbreak of infectious disease and pollution.

The laboratory management shall:

- a) Take all necessary steps to ensure that the waste from medical laboratories is collected, transported, handled, stored, treated and disposed of without any adverse effect on health and the environment
- b) Ensure timely collection of waste from the health care facilities
- c) Provide training on waste management to all her workers

3.0 PURPOSE

To develop guidelines for effective and sustainable management of waste from medical laboratories.

4.0 SCOPE

This guideline shall apply to all medical laboratory facilities in Nigeria, private and public.

5.0 OBJECTIVES

- a)** To provide guidelines for the safe disposal of non-infectious, infectious waste and sharps.
- b)** To minimize waste generation and promote sorting at source, reuse, recycling and energy recovery.

6.0 RATIONALE

Pathogenic microorganisms that are present in biomedical waste can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and human immunodeficiency virus (HIV). In the course of work there could be occupational exposure to defined reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Proper waste management shall:

- a)** minimize the potential for spread of disease from a medical setting and can be injurious to humans or animals and is deleterious to the general public
- b)** reduce the overall amount of infections produced by medical waste
- c)** prevent the use of infectious agents as Biomedical weapons of Mass Destruction by terrorists

7.0 Definition of terms

- 7.1 Bio-hazardous waste:** This include infectious material, contaminated agar plates, live cultures, human cells and blood and disposables that have been in contact with biological materials of animal, human, plant or microbial origin
- 7.2 Blood-borne Pathogens** - pathogenic microorganisms that are present in blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
- 7.3 Medical Laboratory** - a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials
- 7.4 Contamination** - the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- 7.5 Contaminated Laundry** - laundry which has been soiled with blood or other potentially infectious materials or may contain sharps
- 7.6 Decontamination** - the use of physical or chemical means to remove, inactivate, or destroy pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.
- 7.7 Occupational Exposure** – contact with a potentially harmful physical, chemical or biological agent as a result of one’s work.
- 7.8 Parenteral** - piercing mucous membranes or the skin barrier through such events as needle-sticks, human bites, cuts, and abrasions.
- 7.9 Personal Protective Equipment** - specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

- 7.10 Regulated Waste** - liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
- 7.11 Segregation-** Separating incompatible hazardous biomedical wastes into different waste streams
- 7.12 Sharps** - any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.
- 7.13 Source Individual** -any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.
- 7.14 Sterilize** - the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.
- 7.15 Universal Precautions** - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.
- 7.16 Work Practice Controls** - controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

8.0 Classification of wastes

- i. Non-hazardous**
 - a. General waste**
 - b. Recycled and reusable waste**
- ii. Highly infectious waste**
- iii. Infectious waste**
- iv. Sharps**
- v. Pathological waste**
- vi. Cytotoxic waste**
- vii. Pharmaceutical Waste**
- viii. Chemical waste**
- ix. Radioactive waste**

8.1 Handling and disposal procedures for contaminated materials and wastes

- a) Non-contaminated (non-infectious) waste can be reused or recycled or disposed of as general, “household” waste
- b) Contaminated (infectious) “sharps” – hypodermic needles, scalpels, knives and broken glass should always be collected in puncture-proof containers fitted with covers and treated as infectious
- c) Contaminated material should be decontamination by autoclaving and thereafter washing and reuse or recycling or incinerated.

8.2 Regulated Waste -

Discarding, and Containment of Contaminated Sharps.

Contaminated sharps must be discarded immediately or as soon as feasible in closable, puncture resistant; leak-proof on sides and bottom; and labeled or color-coded containers.

Contaminated sharps containers must

- a) Be easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found (e.g., laundries);
- b) Be maintained upright throughout use;
- c) Replaced routinely and not be allowed to overfill.
- d) Be closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping

9.0 Types of Medical wastes

These include:

9.1 General (non-risk) waste

- a. This is also referred to as general or non-infectious waste. General healthcare waste, similar or identical to domestic waste, including materials such as packaging or unwanted paper that have not been contaminated with infectious or hazardous material. 75–90% of waste generated by healthcare facilities falls into this category. This waste is generally harmless and needs no special handling. General health-care waste should join the stream of domestic refuse for disposal. Examples include waste paper, wrappings, and food remains. Bags and containers for general healthcare waste are black.

9.2 Non – hazardous biomedical wastes

- b. These are wastes that have been used for medical care but virtually not contaminated with blood or body fluids of the patient. These include gloves, gauze dressings and swabs. They are usually placed in a blue biohazard bag in a blue container.

9.3 Hazardous biomedical waste

This infectious waste 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 cultures and stocks of infectious agents from laboratory work;
- b waste from surgery and autopsies on patients with infectious diseases (e.g. tissues, and materials or equipment that have been in contact with blood or other body fluids);
- c waste from infected patients in isolation wards (e.g. excreta, dressings from infected or surgical wounds, clothes heavily soiled with human blood or other body fluids);

- d waste that has been in contact with infected patients undergoing haemodialysis (e.g. dialysis equipment such as tubing and Filters, disposable towels, gowns, aprons, gloves, and laboratory coats);
- e infected animals from laboratories;
- f any other instruments or materials that have been in contact with infected persons or animals.
- g Cultures and stocks of highly infectious agents, waste from autopsies, animal bodies, and other waste items that have been inoculated, infected, or in contact with such agents are called highly infectious waste.

Other hazardous biomedical waste include

c. Pathological waste

Pathological waste includes body parts, animal carcasses and body fluids. Within this category, recognizable human or animal body parts are also called anatomical waste.

d. Pharmaceutical waste

Pharmaceutical waste includes expired, spilt, and contaminated pharmaceutical products e.g drugs, vaccines, and sera. It also includes discarded items used in the handling of pharmaceuticals, such as bottles or boxes with residues, and drug vials.

e. Chemical waste

Chemical waste consists of discarded solid, liquid, and gaseous chemicals. Examples in this category include; solvents, organic and inorganic chemicals. Wastes containing heavy metal content are a sub category of chemical waste and are usually highly toxic. Material Safety Data Sheet (MSDS) describes the hazards of a product and explains how a product can be safely handled, used, stored and disposed.

f. Cytotoxic waste

Cytotoxic: is the term used to describe materials that are destructive to cells. Cytotoxic drugs are pharmacological agents that inhibit the reproduction of cells, primarily used for the treatment of cancer. Cytotoxic waste includes any unwanted cytotoxic drug preparations; disposable laboratory consumables and sharps that may have been contaminated with cytotoxic material and the carcasses of animals treated with cytotoxic drugs and associated animal bedding.

Cytotoxic waste must be segregated from all other waste streams and packaged in purple cytotoxic waste bags or cytotoxic sharps containers displaying the telophase cytotoxic symbol and the words “CYTOTOXIC WASTE – INCINERATE AT 1100. CELSIUS”. The bags and sharps containers must then be placed into a Purple Cytotoxic Clinical Waste Bin.

g. Animal waste

Animal bedding, carcasses, and tissue should be placed in biohazard bags by the research staff. All animal bedding should be autoclaved before being placed in medical waste bins by animal care staff and disposed of by incineration. Bagged animal carcasses and tissue can be placed in storage freezers or removed by animal care or lab staff to the incineration facility.

Highly hazardous biomedical waste

- i. Sharps**
- ii. Highly infectious waste (unused or expired blood donation)**
- iii. Cultures and stocks**
- iv. Radioactive waste**

Highly hazardous healthcare wastes that should be given special attention, includes

- i. Sharps –**
Needles, syringes, razor and scalpel blades, capillary tubes, Pasteur pipettes, contaminated broken glass etc.
- ii. Highly infectious physiological fluids, pathological and anatomical waste, stools from cholera patients, and sputum and blood of patients with highly infectious diseases such as TB and HIV/AIDS.**

Large quantities of expired or unwanted pharmaceuticals and hazardous chemicals, and all radioactive or genotoxic wastes.
- iii. Cultures and stocks**

Inoculated or contaminated media, aspirates, liquid cultures, blood and body fluids etc.

- iv. **Radioactive waste** includes: solid, liquid, and gaseous materials contaminated with radionuclide. Radionuclides are by-products of nuclear reactions. The waste is mostly created during research, investigation and cancer treatment. Radioactive waste is highly hazardous waste.

Expected Results for Biological Waste Management Processes

Waste management process	Category of Biological Waste			
	Solid (non-sharp)	Sharps	Pathological	Liquid
Segregation	No sharps, liquids greater than 1 to 2 mLs, or pieces of tissue larger than 5 grams	Needles, syringes, razor and scalpel blades, capillary tubes, Pasteur pipettes, contaminated broken glass (uncontaminated broken glass can be boxed and disposed as regular trash, if regulations and policies allow) (pipette tips and disposable serological pipettes are sometimes contained in a cardboard box and treated with solid waste – this depends on local regulations and risk assessments)	Animal and human tissues greater than 5 grams; animal carcasses	Inoculated or contaminated media, aspirates, liquid cultures, blood and body fluids (significant amounts of blood can coagulate over time and during chemical treatment – it is sometimes desirable to dilute (~50%) the blood with water to prevent coagulation)
Collection	Leak-resistant, conveniently located, demarcated (red, biohazard symbol), closeable	Puncture-resistant, conveniently located, demarcated (red, biohazard symbol),	Leak-resistant, demarcated (red, biohazard symbol), wheeled (if weight of waste materials is	Non-breakable, lidded, demarcated (biohazard symbol). If autoclaving, autoclavable and

		lockable	large); double-bag for placement in freezer.	filled only to 50 or 60%. If chemically decontaminating, resistant to chemical being used.
Storage	Locked or supervised storage area, Demarcated (red or biohazard symbol) barrels or bins (similar to regular waste collection); stored without treatment at room temperature for several days, but not weeks (unless significantly saturated with biological materials in which case, refrigerated storage or immediate treatment is necessary)	Similar to solid waste.	Locked refrigeration (for no more than ~3days); freezer for extended periods of time. Refrigerator or freezer require labeling on the outside (biohazard symbol).	Liquid waste must be treated during generation (chemical treatment) and immediately upon filling the container to 50 or 60% of capacity – no extended storage is suitable.
Transport	Transport in covered containers similar to those used for storage is acceptable as long as the containers/carts are demarcated (red or biohazard symbol)	Similar to solid waste – sharps disposal containers may be collected in carts for transport. The contents of the sharps disposal containers may NOT be removed unless a detailed process describing re-use	Covered, demarcated containers suitable for the weight of the material may be used	Untreated liquid waste should be transported only short distances and in sealed nonbreakable containers with the assistance of a cart.

		of containers is developed and approved by management and biosafety experts.		
Treatment	Autoclaving is the best option. Incineration may also be considered if proper temperatures are reached. Alternate methods may be used, but only after careful research	Autoclaving followed by shredding or incineration (at proper temps) are most common methods to achieve decontamination and also render the waste unrecognizable.	Incineration is most common methods. Some locations have tissue digestors. Burning is allowable based on risk assessment (will the pathogen be destroyed by lower temperatures).	Disposal via sanitary sewer may be allowed based on risk assessment and local regulations. Chemical decontamination is most common – 1 part household bleach to 9 parts waste. IF chemically compatible. Autoclaving is acceptable but hot liquids present a new hazard that must be addressed by procedures.
Disposal	Landfill treated materials or ash or in accordance with local requirements	Landfill shredded materials or ash from incinerator or in accordance with local requirements	Ash disposal in landfill. Burial of carcasses may be suitable based on risk assessment of pathogen (expectation for contamination of soil or water or release via scavengers or other vectors)	Disposal of treated materials in sanitary sewer. Check with local regulations regarding disposal of bleached waste

General Rules

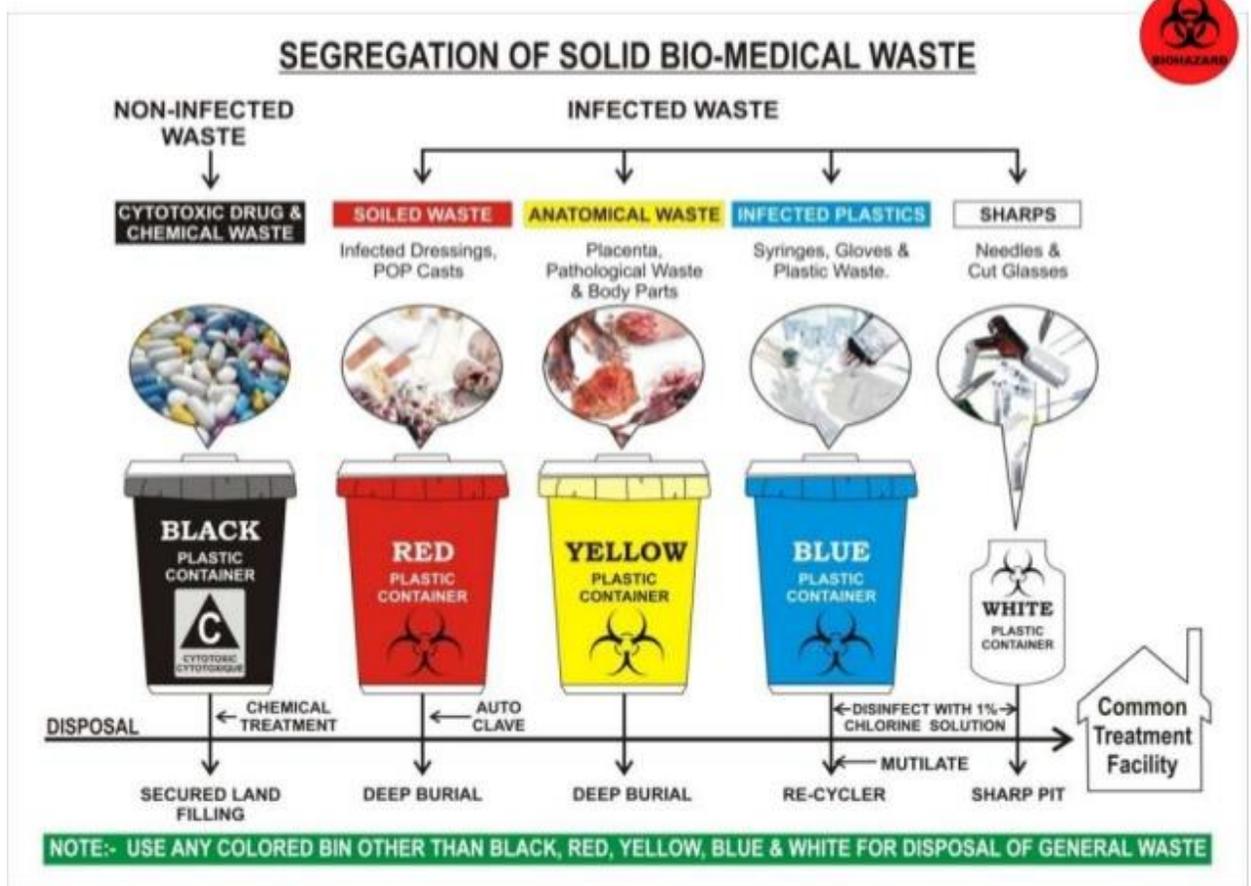
- a) Use disposable colour-coded bags for infectious waste disposal
- b) All sharps must be separated from regular waste streams to prevent unnecessary needle stick injuries and/or lacerations.

- c) All used “sharps” (i.e. hypodermic needles, lancets and broken glass) must be placed in a labelled, puncture resistant (i.e. made of rigid plastic) “sharps container” with a cover.
- d) Close the container and place it in an “infectious waste” container, before incineration when the container is three quarters full,
- e) Do not leave sharps and infectious waste containers in field collection sites or dispose of them in landfills.
- f) incinerate all infectious material; do not dispose of them in landfills
- g) Place decontaminated disposal supplies in infectious waste containers for incineration.
- h) Cover any spilled biological material with cloth soaked in 0.5% hypochlorite solution, and leave for 15 min before cleaning.
- i) Dispose of the contaminated cloth in the infectious waste container
- j) Always wear personal protective equipment (PPE) that is appropriate for the hazard involved in handling the waste. Wear safety glasses and a lab coat and the correct type of gloves to protect hands against contamination.
- k) The safety officer shall assume the responsibility for proper packaging and labelling.
- l) Only chemical waste packaged and labelled properly as described within this document will be removed from the lab for disposal.
- m) Waste volumes should be minimized whenever possible.
- n) Unknown substances and household hazardous waste will not be accepted.
- o) **NEVER USE RED AUTOCLAVE BAGS FOR AUTOCLAVABLE WASTE!**
- p) Do not fill autoclave bags beyond $\frac{3}{4}$ full.
- q) Add 250 milliliters of water to a standard-size orange biohazard bag before closing. This step is imperative to ensure the creation of steam within the bag.
- r) Use proportionately less water for smaller bags.
- s) Use a twist tie or piece of tape to loosely close the bag. Put an additional strip of autoclave tape on the side of the bag.

- t) Never place autoclave bags directly on the floor. Bags must be placed in a secondary container or tray for transport and autoclaving. Use the metal trays

12.0 Waste Receptacle and Color Codes

Waste		Receptacle		
Category	Description	Type	Colour	Characteristics
General	Similar to domestic or municipal waste	Plastic bag or container	Black	No special requirement
Non – hazardous		Container or plastic bag	Blue	Leak-proof
Hazardous	Non-sharp infectious waste and chemical residues	Container or plastic	Yellow	Leak proof
Highly hazardous	Highly infectious non-sharp waste	Container or plastic bag	Red or Yellow marked HIGHLY INFECTIOUS	Leak-proof suitable for autoclave
Sharps		Suitable box or cardboard box	Yellow, marked SHARPS	Puncture-proof Leak-proof



12.1 Decontamination

This is the process applied to render the object/material safe by reducing or removing the bio-burden. There are several methods that can be used for example:

- a Chemical
- b Physical - Heat, steam and pressure
- c Incineration
- d Other choices e.g. shredding

Steam autoclaving is the preferred method of all decontamination processes. Infectious waste should be autoclaved before leaving the lab

Personal decontamination after handling

Wash hands for 20-30 seconds after handling infectious materials or animals, removing gloves and before leaving laboratory

12.2 Storage

Biomedical waste must be kept in dry safety boxes or closable containers and stored in a safe place or secure location. Safety boxes should be stores for not more than one week

The following are recommended storage areas and its equipment:

- a The floor should be hard-standing with good drainage and be easy to clean and disinfect.
- b There should be water supply for cleaning purposes.
- c Should be protected from the sun.
- d The area should be clearly demarcated & warning trespassers
- e The storage area should afford easy access for staff in charge of handling the waste.
- f It should be possible to lock the store to prevent access by unauthorized persons.
- g Easy access for waste-collection vehicles is essential.
- h Supply of clean equipment, protective clothing, and waste bags or containers should be located conveniently close to the storage areas
- i Supply of clean equipment, protective clothing, and waste bags or containers should be located conveniently close to the storage areas
- j The storage area should be inaccessible to insects and rodents.
- k There should be good lighting and at least passive ventilation.
- l The storage area should not be located close to patient areas, or to fresh food stores or food preparation areas

12.3 Collection

- a Waste should be collected daily
- b Specific routes should be planned

- c Bags should be labeled
- d Bags or containers should be replaced immediately
- e Supply of fresh collection bags or containers should be readily available
- f SOPs for the handling of accidents and spillages must be readily available
- g Spill kits should be available

12.4 Transportation of waste

Movement of waste from one place to another (either on-site or off-site)

- a Keep boxes upright and avoid direct contact of safety boxes with other waste or medical supplies in the same vehicle.
- b Keep safety boxes dry.
- c Be sure you are aware of the transport schedule.
- d Use designated trolley or wheel barrel
- e After transport, clean vehicle surfaces.

12.5 Biological waste treatment

There are different methods of treatment of biohazard materials which include:

- a Autoclaving
- b Chemical Inactivation/Disinfection
- c Incineration

12.6 Chemical Waste Treatment / Disposal

- a. According to Safety Data Sheet (SDS)
- b. According to Manufacturer's instruction

- c. Dilution of chemical wastes to harmless concentration
- d. Possible neutralization of chemical waste if product of neutralization is harmless before disposal.

12.7 Waste disposal

12.7.1 Sanitary landfill

- a Properly constructed and operated land fill sites for municipal solid waste including healthcare wastes.
- b Treated healthcare waste can be safely disposed off in sanitary landfill site

12.7.2 Safe burial practices:

- a Every time waste is added to the pit, cover it with a layer of soil.
- b When the level of waste reaches to within 30-50 cm of the surface, fill the pit with soil.
- c The filled pit should be marked with a peg or some other mechanism.
- d Dig another pit

13.0 Waste management

13.1 Hazardous Waste Management

- a Place used “sharps” (i.e. hypodermic needles, lancets and broken glass) in a labelled, puncture resistant (i.e. made of rigid plastic) “sharps container” with a cover.
- b When the container is three quarters full, close it and place it in an “infectious waste” container, before incineration.
- c Do not leave sharps and infectious waste containers in field collection sites or dispose of them in landfills.
- d Infectious waste must be incinerated. Before incineration (which must be done regularly to prevent accumulation of the infectious waste) the waste must be stored

at a secure location preventing access by anyone but the person assigned for the processing of the waste.

- e Place all biohazardous waste other than sharps in specially designated “infectious waste containers”, separately from non-infectious waste.
- f Use rigid plastic or metal containers with covers, ideally with a colour code that differentiates them from non-infectious waste containers

13.2 Disposal of sharps

- a Sharps shall not be mixed with papers or non-sharps infectious waste.
- b Place any sharps (sharps, needles, scapel blades and small pieces of broken glass) in sharps containers (plastic or cardboards. The sharps container should be located adjacent to the work area and used exclusively for the disposal of sharps.
- c Sharps contaminated with a pathogenic material must be placed into sharps containers. Sharps boxes for contaminated items must be rigid, leak and puncture resistant
- d Broken glass scattered on the floor shall be picked with aid of special forceps or swept into a special receptacle and then emptied into the sharps container. Use proper sharps receptacle to dispose of any item items that could readily penetrate the skin.
- e A properly labeled sharps container shall be put in place and used exclusively for the disposal of sharps.
- f Sharps containers when $\frac{3}{4}$ -full shall be autoclaved and then sent for incineration.
- g Never try to re-cap or bend the needle of syringes that are potentially contaminated. Used disposable needles must not be bent, sheared, broken, recapped, removed from disposable syringes or otherwise manipulated by hand before disposal.
- h Report all needle stick injuries.
- i Do not handle sharp objects (e.g., broken glass) with bare hands. Use tongs, dustpans or similar equipment instead.

- j Substitute plastic ware for glassware whenever possible. Use needle syringes only where absolutely necessary. If a needle syringe is absolutely necessary to the procedure, use syringes that automatically re-sheath the needle.
- k Routinely inspect glassware and remove from service items that are damaged, cracked or chipped.
- l Ensure that all sharps containers can be sealed prior to disposal. Care must be taken to avoid leakage further down the trash stream.
- m Disinfected sharps must still be placed in a puncture resistant container, and then placed in BioHazard Burn Box.
- n Any employee who consistently violates or disregards these instructions shall be held responsible.

13.3 Infectious wastes

These are wastes suspected to be contaminated with pathogenic organisms. Examples include; cultures, surgical waste and infected laboratory animals

- a Items used inside the laboratory area shall be regarded as being infectious.
- b Infectious waste shall not be stored or stacked in corridors or stairwells.
- c Papers (waste or data files/books used in the laboratory area) shall be incubated in a hot air oven at 65°C for 30 minutes before they are taken out to the clean areas.
- d Used tubes, plastic Pasteur pipettes, pipette tips, gloves, cotton, paper towels, specimen containers and cultures for discard shall be sealed in double biohazard bags.
- e All infectious waste shall be placed in designated red, rigid bags placed in step-on lidded waste bins that are clearly labeled with the biohazard symbol.
- f When the bags are three-quarter full, they will be sealed off with tape.
- g Sealed bags shall be carefully taken to the autoclave room and autoclaved.
- h All bags labeled “Biohazard” shall be autoclaved even if clean.
- i Autoclaving shall be done as per instrument guidelines

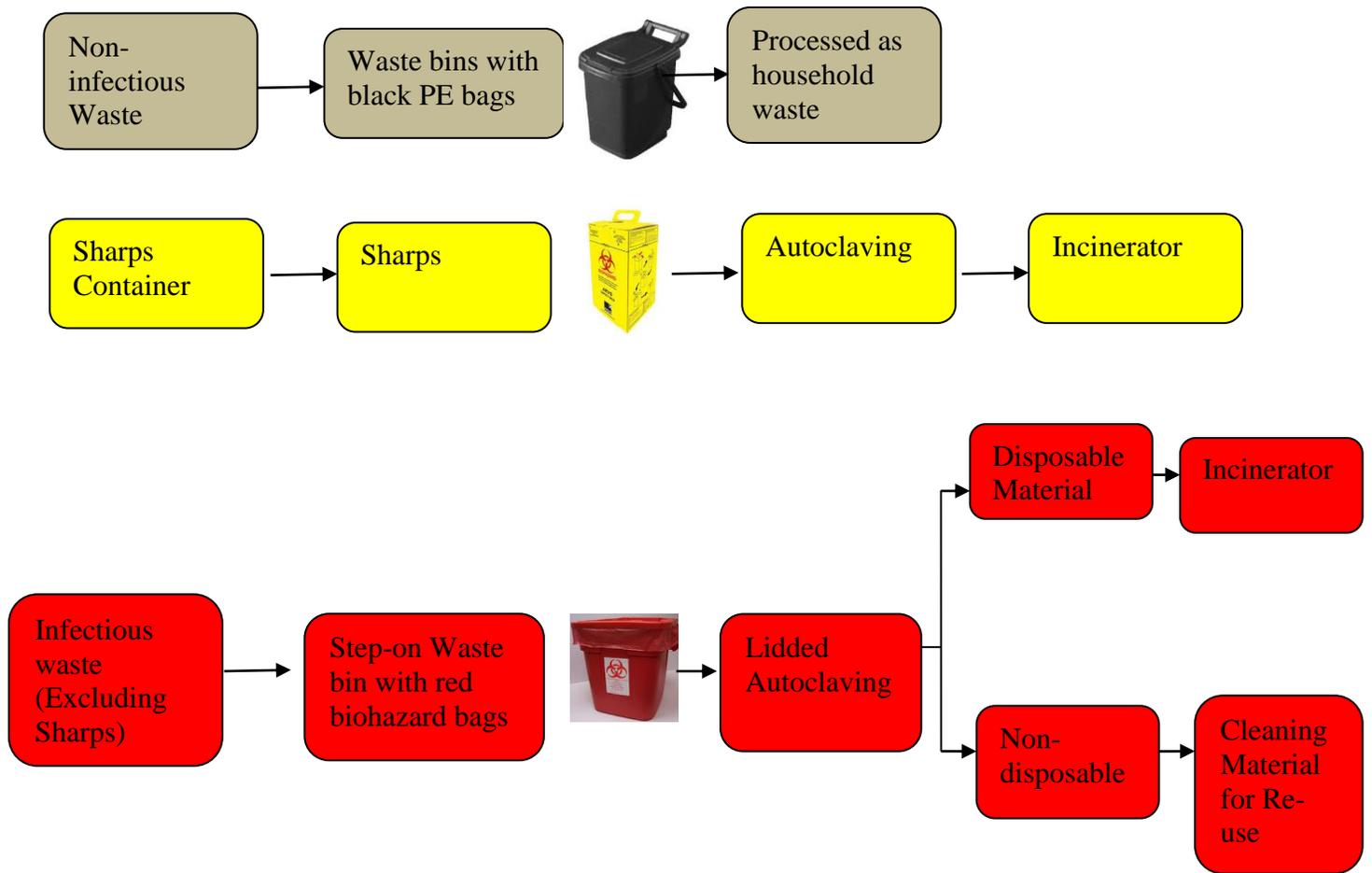
13.4 Non-infectious waste disposal

- a These include papers, packaging boxes, plastic bags and hand paper towels used outside the laboratory area.
- b These items shall be disposed-off in black or white polythene bags inserted in 10L plastic buckets without a lid.
- c These items shall not require autoclaving before disposal.
- d After the day's work the support staff shall remove filled bags and replace them with new ones ready for the following day work.

14 Developing a Laboratory Waste Management Plan

- a Designate a responsible person
- b Conduct Waste Management survey and invite suggestions.
- c Recommend improvements and prepare a set of arrangements for their implementation.
- d Draft the Laboratory Waste Management plan.
- e Approval and implementation.
- f Review the Laboratory Waste Management plan.

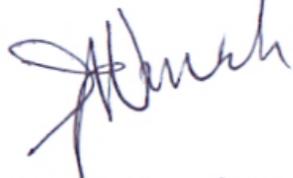
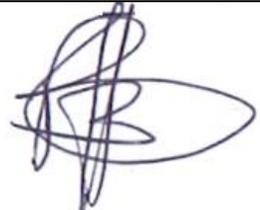
Annex D: Waste Segregation Chart

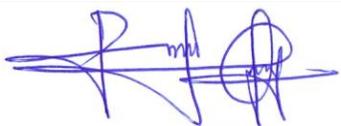
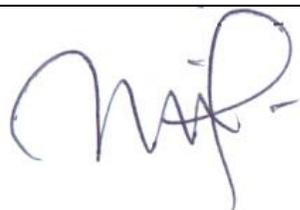
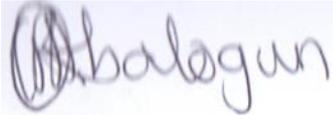


References

- i. Global BioRisk Management Curriculum (GBRMC) Library, Sandia National Laboratories
- ii. WHO Guidelines on Waste Management

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