	Document Title: SAFETY MANUAL	
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THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER,
ELDERLY AND CHILDREN (MoHCDGEC)




NATIONAL PUBLIC HEALTH LABORATORY (NPHL)

ISO: 15190

SAFETY MANUAL

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Emergency Contact

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Acknowledgement

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Foreword

Occupational exposure is a major health problem facing healthcare workers in developed and developing countries. Staffs have been being infected by blood borne pathogens e.g. HIV, HBV, and HCV following needle-stick injuries, and exposure to potentially infectious body fluids.


The purpose of this manual is to provide policies and procedures for the safe handling of infectious agents and potentially hazardous materials in order to protect laboratory workers, the workplace and surrounding environment from harm.

NPHL management is dedicated to ensure proper implementation through increased support and training of all staff on safety policies, guidelines and procedures, likewise, the combined efforts of every member of staff ultimately results in the prevention of incidents of occupational exposure and accidents in the NPHL.

Safety is an integral component of the quality assurance cycle and should therefore be borne in mind when laboratory workers engage in activities in the pre-analytical, analytical and post-analytical phases of laboratory testing.


NPHL's safety plan concentrates on the path of workflow to ensure that safety related requirements are met in order to create a safe working environment. The plan takes the approach of performing risk assessment of the various tasks involved in the path of work flow and risks to the environment in order to eliminate the hazards where possible.

NPHL's safety manual is based on ISO 15190 – *medical laboratories requirements for safety*.

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Abbreviations

CDC	Center for Diseases Control and Prevention
DNA	Deoxyribonucleic Acid
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human Immunodeficiency Virus
IATA	International Air Transport Association
ISO	International Organization of Standards
MSDS	Material Safety Data Sheet
NPHL	National Public Health Laboratory
NIMR	National Institute for Medical Researches
PEP	Post- Exposure Prophylaxis
PFE	Portable Fire Extinguishers
PIM	Potentially Infectious Material
PPE	Personal Protective Equipment
RNA	Ribonucleic Acid
SOP	Standard Operating Procedure
LDP	Laboratory Development Partners
CoAg	Cooperative Agreement
ORH	Ocean Road Hospital

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Introduction

This Safety Manual specifies requirements to establish and maintain a safe working environment in the NPHL. This section has been prepared to provide the laboratory personnel at NPHL with the information necessary to protect them and the surrounding environment from hazards associated with the use of biological materials. The SOPs which support it provide a means for evaluating the risks of work involving biological materials and introduce the proper handling practices which will minimize the risk of an occupational acquired infection.

History has shown that if not handled appropriately, infectious agents can be transmitted to laboratory employees, and to people outside of the laboratory.

Biohazard materials are those which are either known to cause, or that present a potential risk to the health of humans or animals. Such materials would include, but are not limited to: bacteria, fungi, viruses, parasites, rickettsia, toxins, and human blood.

With all such SOPs developed, it is the ultimate responsibility of all employees for


- Their own safety at work and,
- The safety of others who may be affected by it.
- The facility environment and the community at large

Every hazardous task requires a risk assessment, aiming at hazards elimination wherever possible, using the following orders of priority:

- a) Substitution,
- b) Containment, or
- c) Using safety equipment and personal protective measures.

NPHL has measures which aim to protect laboratory facilities and materials contained in from being intentionally compromised.

NPHL being the referral laboratory of the country runs its activities under the guidance of the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC).

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1. Scope


This safety manual outlines and communicates the NPHL safety program. It provides relevant guidance on safety issues and concerns to all members of staff and visitors who come to the laboratory.

Safety issues and concerns apply where 'laboratory use' of hazardous biological materials and hazardous chemicals means handling or use of such biological materials or hazardous chemicals in which all of the following conditions are met:

- The handling or use of biological materials or hazardous chemicals as occurs on a 'laboratory scale', that is, the work involves specimens or containers which can easily be manipulated by one person,
- Multiple procedures and multiple biological agents or hazardous chemicals are used, and
- Good laboratory practices and equipment are available and in common use to minimize the potential for employee exposures to such items.

At a minimum, this definition covers employees, students and visitors who use these items in daily activities, teaching, and research activities at NPHL.

Non laboratory settings may be included under this at the option of individual sections within NPHL.

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2.0 Terms and definitions

2.1 Aerosol :

Suspension of particles dispersed in a gas or air, smoke, or fog.

2.2 Antisepsis:

Method/situation for avoiding infection in a wound or during clinical procedure by the use of a chemical agent such as an antiseptic

2.3 Antiseptic:

Chemical germicide formulated to be used on skin or tissue to prevent or stop infection

2.4 Biological agent:

Any microorganism, including those which have been genetically modified, cell cultures and human endo parasites, which may be able to provoke any infection, allergy or toxicity in human

2.5 Biological safety cabinet:

Ventilated enclosure or instrument, intended to offer protection to the user, products and the environment from the aerosols arising from handling of potentially hazardous biological agents, through air filtration and decontamination into environment with means for filtering air discharged into the environment

2.6 Biosafety:


The containment principles, technologies and practices that are implemented to prevent the unintentional exposure to biological agents and toxins or their accidental release

2.7 Biosecurity:

Institutional and personal security measures and accountability designed to prevent unauthorized access, loss, theft, misuse, diversion or intentional release of biological materials and toxins within laboratories.

2.8 Cleaning:

Process to remove any type of materials, whether visible or invisible which could be a source of contamination

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2.9 Clinical Laboratory:

Clinical diagnostic area for the examination of biological or chemical material for the purposes of providing information for the identification, prevention, prognosis, treatment and surveillance of diseases in assessment of the health and well-being of human beings or animals and which may provide a consultant advisory services covering all aspects of laboratory investigations including the interpretation of results and advice on further appropriate investigations

2.10 Decontamination:

Procedure used to eliminate or reduce microbial or toxic agents to a safe level from an object in order to prevent the transmission of infection or other adverse effects

2.11 Disinfectant:

Agent used to reduce the ability of an object to cause infection

2.12 Disinfection:

Process to reduce or contain the number of microorganisms, with the exception of bacterial spores; it does not necessarily kill or remove all organisms

2.13 DNA (Deoxyribose Nucleic Acid):


It is a long linear double stranded nucleic acid polymer resembling a ladder twisted into a spiral found in the nucleus of a cell and formed from nucleotides which consist of a **nucleotide base**, a **ribose** sugar, and a **phosphate** group. It is associated with the transmission of genetic information

2.14 Ergonomics:

Study of the efficiency of persons in their working environment

2.15 Engineering control:

A way used to remove a hazard or place a barrier(s) between the worker and the hazard such as restricting access, safety equipment, Personal Protective Equipment and laboratory facility design.

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2.16 Fume hood:

Cabinet or cover above a laboratory device for the extraction of air or fumes which prevents their general circulation

2.17 Hazard:

A substance which is a potential source of harm

2.18 Hazardous waste:

Hazardous waste is any waste that is potentially injurious causing harm to people or environment. It could be flammable, combustible, ignitable, corrosive, toxic, and reactive

2.19 Infection Control Plan:

Set of procedures to be used to limit spread of infection in either a hospital or a laboratory

2.20 ISO 15190:

International Organization for Standardization for Medical laboratories used as a requirement for safety

2.21 Material Safety Data Sheet (MSDS):

Technical bulletin which provides detailed information on a chemical or reagent ingredients, hazard and precautionary measures

2.22 Microorganism:


Microbiological entity, cellular or non-cellular, capable of replication or of transferring genetic material

2.23 Noise:

Unwanted sound in the form of acoustic energy which may adversely affect health

2.24 PPE:

Mechanical barriers such as gloves, respirators, laboratory clothing and goggles that provide protection of laboratory personnel from laboratory biological and chemical exposures

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2.25 PEP:

Is the immediate provision of medication following an exposure to potentially infectious biologic materials in order to minimize the risk of laboratory acquired infections particularly HIV, HBV and HCV.

2.26 Risk:

Combination of the probability of occurrence of harm and the severity of that harm which may be caused by an object or practice

2.27 Risk assessment:

The process used to identify the hazardous characteristics of a known infectious or potentially infectious agent or material, the activities that can result in a person’s exposure to agent, the likelihood that exposure will cause a laboratory acquired infection and the probable consequences of such an infection

2.28 Safety Hood:

Protective gear at NPHL that is intended to reduce risk to a laboratory worker during chemical handling and or processing

2.29 Safety Policy:

Overall safety intentions and directions of NPHL formally expressed and authorized by the laboratory Director

2.30 Spill kit:


Set of equipment containing substances that are used for the removal of chemical or microbiological material from a laboratory surface or apparatus

2.31 Sterilization:

Validated process used to render a material free from microorganisms

2.32 Validation:

Act of confirming that a product, service or test method meets the requirements for which it was intended

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3.0 Safety Policy Statement

NPHL is committed to continual improvement of laboratory Biosafety and Biosecurity (Bio risk) processes and services to achieve the ongoing safety of laboratory staff, clients, visitors and the environment.

It is therefore our policy to:

- Protect staff, contractors, visitors, community and the environment from biological agents and toxins that are stored or handled within NPHL;
- Reduce the risk of unintentional release, or exposure to biological agents and toxins;
- Reduce the risk to an acceptable level of hazardous biological materials, including the need to conduct risk assessments and implement the required control measures;
- Complying with all national and international legal requirements applicable to the biological agents and toxins that will be handled or possessed at NPHL;
- Continually improve Biorisk management performance of NPHL staff through effective training and implementation of safety procedures in their work;
- Consistently comply with ISO 15190 to ensure that all employees are committed to implementing and monitoring an effective Biorisk management system.
- Effectively informing and communicating to all employees and relevant third parties of their individual obligations with regard to Biorisk to those groups;

NPHL is therefore committed to provide to its employees, equipment, and the surrounding environment a safe workplace free from, occupational exposure and other biological and chemical hazards and to provide fire prevention training, and guidance in development and maintenance of safe work practices. These policies are designed for the protection of all employees and visitors who visits the laboratory and are enforced at all times.

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4.0 Safety Objectives

4.1 The main objective

To provide a safe working environment for staff, visitors, the facility, surrounding and environment (community), while increasing awareness of the potential risks involved in working in the laboratory. It is the intent of the NPHL to provide a safe and healthy laboratory environment to all laboratory occupants through the establishment and maintenance of a Comprehensive Laboratory Safety Program.

4.2 Specific objectives include:

- Developing procedures for routine maintenance of NPHL facility and equipment.
- Developing and implementing guidelines on emergency preparedness, occupational health, chemical, fire and electrical safety
- Carrying out ongoing periodic risk assessments to minimize exposure of staff to hazards.
- Developing and utilizing a safety checklist for safety maintenance and inspection at defined intervals to ensure good housekeeping
- Develop and implement safety codes of practice based on the Biosafety level which the NPHL operates
- Training of laboratory personnel and other supporting staff on the safety program including safe working practices, emergency response system and Biosecurity measures.
- Developing of procedures for safe work processing including safe storage of dangerous goods, transportation of biological materials, safe disposal of hazardous waste and chemical hygiene.
- Instituting Biosecurity measures to prevent loss or malicious practices on biological samples and facility properties

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5.0 Management requirements

5.1 Management responsibilities

NPHL management is responsible for the safety of all laboratory personnel and visitors who come to the laboratory. However, the primary responsibility rests on the hands of laboratory Director and Safety Officer.

5.1.1 Laboratory Director


Director is the top NPHL management position who assumes ultimate responsibility for the institution. Responsibilities include:

- Ensure that roles, responsibilities and authorities related to Biosafety and Biosecurity management are defined, documented and communicated to those who manage, perform and verify work associated with the use of biological agents and toxins.
- Ensuring smooth operation of NPHL by providing resources to establish, implement, maintain and improve the Biosafety and Biosecurity management systems.

5.1.2 Safety officer

NPHL has a Safety Officer, with experience in the field of laboratory safety. Is the person responsible for the enforcement of safety guidelines of NPHL staff. Responsibilities including:

- Ongoing development of environmental and safety guidelines, as well as routine inspection of NPHL to ensure that procedures and regulations are strictly followed.
- Assisting all NPHL sections in understanding job hazards and safety precautions
- Undertaking a significant role in making sure that all employees at NPHL remain safe from potentially hazardous conditions.
- Provide advice, information and instruction on NPHL Biorisk issues
- Report and investigate incidents, injuries and hazards to the Laboratory Manager
- Review and analyze injury and incident reports and data
- Develop NPHL prevention strategies for injuries and incidents
- Conduct Safety audits within NPHL working areas
- Help promote Safety awareness in NPHL

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5.1.3 Safety committee

Safety committee comprise of nine NPHL employees. Responsibilities include:


- Act as an advisory body on all safety issues and concerns in the NPHL;
- Enable NPHL to effectively identify, monitor and control the laboratory Biosafety and Biosecurity aspects of its activities,
- Identify hazards or threats at the work place and obtain information about them in order to solve them or prevent their recurrences
- Recommend corrective actions on identified hazards or threats
- Assist in resolving hazardous work refusal cases at the NPHL
- Participate in accident investigations and workplace safety audits and inspections
- Make recommendations to the management regarding actions required to resolve health and safety concerns
- Review and analyze injury and incident reports and data
- The safety committee conducts its meetings once annually or when need arises.

5.1.4 Maintenance staff

- They are responsible for general cleanliness of the NPHL and premises by ensuring that parameter testing rooms, corridors, toilets and walls of all sections are clean.
- Maintain premises free of unneeded and unnecessary combustible materials. Surplus or properly discard unused items being stockpiled or hoarded

5.2 Management of staff health

NPHL staffs are trained on potential risks related/associated with working within the facility. All NPHL personnel are strongly recommended to have immunizations to prevent infections associated with organisms to which they are likely to be exposed e.g.; HBV, HCV

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5.2.1 Worker health program

The NPHL staff has access to appropriate occupational health expertise rendered at the Muhimbili National Hospital

The occupational health professionals are medical doctors with understanding of the biological agents and toxins that are handled within the NPHL facility.

The occupational health professionals' roles include:

- Providing input into risk assessment from a worker health perspective;
- Advising on first aid /emergency treatment measures and follow-up;
- Liaising with external healthcare providers;
- Coordinating medical examinations, surveillance and vaccination programmes
- Advising on appropriate PPE when required;
- Roles and responsibilities of the occupational health professional is determined in light of requirements set out in this Safety Manual

5.2.2 Vaccination

NPHL management provides all staff employed in the facility with HBV vaccination after reading, understanding and signing consent form (NPHL/M/FM114).


Should the staff decline to be vaccinated and if in future wish to be vaccinated that particular staff shall receive the vaccine series at own cost.

Reasonable measures are taken to ensure that the vaccinations have been given and current certificates are valid. This may include submission of original certificates from a recognized medical institution. Vaccination is seen as a risk mitigation strategy and is to be provided together with ensuring staff adherence to Good Laboratory Practices.

Records of immunization are documented and kept in NPHL staff personnel files.

5.2.3 Post Exposure Prophylaxis

NPHL management ensures that laboratory workers' health, and that of other personnel whose health could be directly impacted by exposure to biological agents and toxins, is managed

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effectively through prevention and protection measures from any risk. The following types of exposures are considered for post exposure prophylaxis:

- Prick or cut by a sharp previously put in use by a different user e.g. needle or scalpel
- Splash of body fluids entering the body through broken skin or cuts

Supporting Documents

NPHL/SP/56 - Post Exposure Prophylaxis Procedure

NPHL/M/FM067-Work Related Injury log

NPHL/M/FM069 Vaccination Consent Form

6.0 Designing for safety


6.1 General design requirements

NPHL has an ample working space for the safe conduct of laboratory activities, cleaning and maintenance of equipment, and disposal of generated waste. Also, it has designated methods for containment of biological, chemical and physical hazards appropriately based on the level of assessed risks in laboratory work areas. There are a safe environment in associated office areas and separate public space and surroundings enough to limit risks. Adequate storage space is provided to hold secure storage of samples, reagents, records, chemicals and laboratory waste prior to disposal.

Corridors and passages designed for the exits are clear of obstructions and have appropriate signage with running tap water and soap in each laboratory testing room.

Hand washing sinks are separated from sinks used for disposal of liquid waste with appropriate signage displayed and are located near to the exit. Each area of the laboratory has an individual circulating air system which is separated between contaminated areas.

NPHL follows structure architectural safety standards of laboratory whenever there is proposed structural change. Appropriate permission for proposed changes is given by the Director or designated to Safety Officer

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6.2 Physical conditions

6.2.1 Lighting

The laboratory has natural designed and artificial illuminations which are adequate to optimal for safe working.

6.2.2 Temperature

NPHL management ensures that ambient temperature in the laboratory is controlled to a level that is optimal and provide comfortable work environment which does not interfere with test substances or analytes being carried out in the laboratory. Personal protective equipment including thermal protective gloves is provided to allow personnel safety and comfort.

6.2.3 Ventilation


NPHL is using Biosafety cabinets and safety hood to maximize the effectiveness of chemical and/or biohazardous substance exposure control systems by ensuring proper safeguarding of health, and safety of laboratory personnel.

6.2.4 Noise

NPHL facility design minimizes excessive noise levels through the use of engineering controls and work practices as well as ensuring that appropriate equipment are located at appropriate workspaces.

6.2.5 Ergonomic factors

NPHL designed relevant working activities to laboratory staff to minimize the risk of becoming deaf, developing fatigue, spondylitis, becoming blind and encountering occupational accidents so that working at optimum efficiency is achieved. However, if there are problems laboratory staff is advised to consult a laboratory-designated medical officer.


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6.2.6 Design for working with viable pathogens

NPHL facility is designed to handle moderate or high-risk organisms or specimens whose potential infectiousness is unknown.

6.2.7 Door signs

All entrances and exits to work areas are marked as to the hazard being handled within. The internationally accepted hazard indicators (biohazard, fire) are clearly marked.

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7.0 Documentation, records and inspection

7.1 Documentation

NPHL documents are identified, controlled and reviewed as per the procedure number NPHL/SP/02. All staffs are trained on the Safety Manual, procedures and related documents. They must read, understand and sign before implementing them.

7.1.1 Safety Manual


A safety Manual is readily available in work areas and is followed by all employees at NPHL. The safety manual addresses the instructions pertaining to safe handling of biological materials, emergency preparedness and Biosecurity.

7.1.2 Procedures

NPHL performs its technical procedures using approved standard operating procedures to minimize the risk of contracting laboratory acquired infections.

Safety officer is responsible for reinforcement of the following procedures:

- a) NPHL/SP/28-Procedure for First Aid
- b) NPHL/SP/29-Procedure for Handling Chemical Spills
- c) NPHL/SP/30-Procedure for Laboratory Waste Management
- d) NPHL/SP/31- Procedure for Entering and Leaving the Laboratory
- e) NPHL/SP/32- Procedure for Hand Washing
- f) NPHL/SP/33-Procedure for Biological Spill Decontamination
- g) NPHL/SP/34-Procedure for BSC Operation
- h) NPHL/SP/35- Procedure for Cleaning and disposing Mercury Spills
- i) NPHL/SP/36-Procedure for Safe storage of Chemicals
- j) NPHL/SP/37-Procedure for Transportation of biological Materials
- k) NPHL/SP/55-Procedures for conducting a Risk Assessment
- l) NPHL/SP/56 -Procedure for Post Exposure Prophylaxis

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m) NPHL/SP/58 – Equipment decontamination procedure

n) NPHL/SP/59 – Procedure for Safety Practices

7.2 Records

Safety officer keeps all safety records for a specified period according to the procedure NPHL/SP/02-Procedure for document control and NPHL/ID/001-Document and record retention period.

7.2.1 Occupational illness, injury, and adverse incident records

All NPHL staff report immediately in case of any occupational illnesses, injuries, adverse incidents or laboratory accidents to their section heads or safety officer. A written record of such accidents, incidents and corrective actions should be maintained in a Work-related injury form (NPHL/M/FM067). All the records and reports are kept confidential.

7.2.2 Risk assessment records

Safety committee carries out risk assessments by using the safety checklist. The records are kept and reviewed to ensure that corrective actions are taken.

7.2.3 Hazardous waste records

Hazardous waste disposal records are kept by safety officer.

Supporting Documents


NPHL/M/FM035-Waste Disposal Form

8.0 Safety program audits and inspection

8.1 Safety program audits

NPHL safety committee or appropriately trained personnel biannually conducts auditing of the safety program by using a safety checklist (Appendix 3).

The management makes a follow-up on the audited report to ensure that all required actions arising from the audit are implemented and completed.

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8.2 Safety Inspection

NPHL management through Safety Officer conducts safety inspection once annually or whenever need arises by using an inspection checklist to ensure proper state of readiness and function of fire safety program, status of laboratory equipment (including emergency showers and eye wash equipment), materials for hazardous spillage containment, proper containment and control of areas for storage of infective, flammable, combustible and toxic materials, decontamination and disposal procedures and staff adherence on Good Laboratory Practices.

Safety officer conducts periodic safety inspections to ensure compliance and enforcement.


Supporting Documents

Safety Inspection checklist

Safety audit checklist

Safety audit plan

Safety Inspection Records

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9.0 Hazards identification, Risk assessment and Risk mitigation

9.1 Hazards identification

NPHL uses information from safety guidelines, Material Safety Data Sheet (MSDS), resulting from the previous assessment to identify hazards.

All hazardous areas are clearly marked by using signage and physical barriers. Specific hazardous materials to be used within the laboratory or laboratory sections are clearly marked through labels present on the materials. All entrances and exits to work areas are marked as to the hazards present within. Special attention is paid to fire hazards, flammable materials, toxic, harmful or biologically hazardous materials.

9.2 Risk assessment

NPHL through Safety Officer Conducts risk assessment using NHPL/SP/55 Risk Assessment Procedure at least once annually or whenever need arises.

The assessment is conducted by the safety committee members under the organization of the safety officer.

9.3 Risk mitigation

The risks identified during assessment are handled through corrective action plans developed. Corrective measures can be by elimination wherever possible, substitution with an alternative activity, containment, and or using personal protective measures.


Supporting Documents

NPHL/SP/08_Corrective action Procedure

NPHL/SP/09_Preventive action procedure

NHPL/SP/55_Risk Assessment Procedure

NPHL/M/FM024_Risk assessment form

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10 Personnel Training and Competency

10.0 Personnel Training

NPHL management ensures that, all laboratory staffs are aware of the safety precautions before performing any activity in the laboratory. The Safety Officer provides in house safety training for laboratory and supporting staff once monthly and fire drill once annually. The orientation on safety is done to new employee(s) within thirty days. Safety committee prepares annual plan which is implemented throughout the year.

The orientation and training records are kept in the personnel file

10.2 Competency

NPHL management ensures that personnel conduct activities within the facility under close supervision until competency has been demonstrated.

No worker is exempted from demonstrating competence irrespective of rank, experience or background. Competency assessment is done once in every two years.

Supporting Documents


NPHL/SP/20_Personnel Management procedure

NPHL/M/FM036_Employee training plan

NPHL/M/FM156_Employee Training Plan/Needs Assessment

Staff Competence Assessment Records

Staff Training Plans

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11.0 Operational Control

11.1 General safety

NPHL follows a preventive and proactive approach to manage sources of risks associated to electrical installations and equipment electrical defects. This is achieved by performing regular equipment safety checks prior to operating the equipment, equipment servicing, and use of voltage stabilizers and restriction of equipment access without authorization.

11.2 Microbiological agents' inventory and information

NPHL keeps the inventory of all biological agents which are handled, stored or disposed of in their respective sections. These agents are maintained under locked or secured conditions at all times depending on their risk classification (Appendix 1).

In order to assure the security, oversight, and control of these agents, access to freezers, refrigerators, and any other storage area(s) are restricted to the respective section head, the one who is directly responsible for the agent(s) and those authorized.


11.3 Work practices and decontamination

11.3.1 Good laboratory techniques.

NPHL personnel work by adherence with Safety Code of Conducts (Appendix 2) and universal precautions. Nobody authorized to work within the laboratory before undergoing competency assessment. All staffs are aware on the routes of Infection.

NPHL provides adequate safety equipment, facilities and PPE to ensure its staff works safely. Policies and procedures for laboratory activities such as operations, maintenance and cleanness are available and accessible to the laboratory working areas where those activities are conducted. A NPHL/SP/59- safety practice describes some of the safety requirements.

Laboratory work areas are designed and undertaken in such a manner as to reduce the possibility of personnel contact with harmful aerosols, whether of biological or chemical origin.

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All work with culture, DNA or RNA and other biological materials that may generate aerosols, are performed in a certified biological safety cabinet. Samples are only centrifuged in safely-capped enclosures and vortex-agitated in containers with lids.

11.3.2 Decontamination of biological materials

NPHL use NPHL/SP/57 for routine decontamination of working areas. It also uses NPHL/SP/58 for equipment decontamination.

All disposed samples, cultures or any infectious biological materials are decontaminated accordingly before transporting them for incineration using NPHL/SP/30-Procedure for Waste Management.

All infected reusable materials and clothing such as laboratory coats, shoes and glassware are decontaminated.

Supporting Documents

NPHL/SP/30-Procedure for Waste management

NPHL/SP/57_Procedure for cleaning of the laboratory environment


NPHL/SP/58_Equipment decontamination procedure

12.0 Clothing and Personal Protective Equipment (PPE)

12.1 Protective clothing in the laboratory

NPHL management is providing laboratory protective clothing appropriate to the level of risk and available for those working in and visiting within the laboratory. When not in use, clean protective clothing should be kept in designated places specific for that purpose. Contaminated protective clothing is washed or disposed of in the designated area to ensure chemical and biological decontamination.

Laboratory personnel change protective clothing at appropriate intervals immediately if it is known to be contaminated with hazardous materials to ensure cleanliness and

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decontamination. All laboratory coats or gowns MUST be removed before leaving the working area.

It is prohibited to wear PPEs outside the laboratory working areas such as tea room, offices and library as well as at the public areas like corridor, lift and cafeteria.

12.2 Face and body protection

NPHL management is providing safety glasses, facial shields and other eye and face protectors to all laboratory employees to be worn when handling chemicals, blood and body fluids if engineering controls are not in place.

12.3 Gloves

NPHL management provides appropriate gloves that are worn when it is reasonably anticipated that the workers will have contact with blood and other body fluids as well as potentially hazardous materials and non-intact skin or when handling contaminated items or surfaces.


Disposable gloves are not washed or decontaminated for re-use, and are disposed of in biohazard waste containers immediately after use. Laboratory workers shall replace gloves if torn, damaged or if internal contamination is suspected. They are removed before handling reference materials like computers or keyboards.

12.4 Footwear

NPHL laboratory employees must wear flat, ergonomically comfortable shoes that cover the entire foot.

Disposable, fluid resistant shoe covers are worn for activities where splashing is expected and when visitors are touring the emerging and reemerging section.

Open-toed sandals are not allowed when working within the laboratory.

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12.5 Respiratory Protection

NPHL provides respiratory protection for its employees who perform activities that require the use of respirators. Employees who use respirators are obliged to undergo training and medical evaluation before using these items.

12.6 Safety equipment and facilities

NPHL management ensures that the first aid items and emergency procedures are available within the laboratory.

First aid equipment like first aid kit, eye wash station and emergency shower etc. are for summoning medical assistance and prompt transfer when required. All areas in which this equipment is located are clearly identified.

12.7 Biological Safety Cabinet


NPHL management ensures that certified and properly functioning biological safety cabinets (BSCs) are available in the areas where biohazard materials are processed. The location, design and type of BSC utilized are appropriate to the level of risk of containment required and are certified annually.

12.8 Eyewash stations

In laboratory technical work areas eye wash stations are conveniently located. The eye wash devices are tested weekly by the laboratory staff to ensure proper functioning.

12.9 Emergency showers

Emergency showers are available and accessible to locations where caustic and corrosive chemicals are used. The emergency shower is tested weekly by respective section laboratory staff to monitor its functionality.

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12.10 Chemical Safety Hood

NPHL management ensures that certified and properly functioning chemical safety hood is available in the area where hazardous chemicals are processed.

12.11 First Aid and Spill Kits

First Aid and Spill kits are available in working areas and accessible all time. The kits are updated twice annually.

12.12 Hand-washing

Hand washing sink and accessories are available in each technical working area for the staff, student or visitors to wash their hands immediately whenever they have been contaminated as well as at the time before leaving the laboratory.

Supporting Documents

NPHL/SP/32- Procedure for Hand Washing

NPHL/SP/34-Procedure for BSC operation


NPHL/M/FM076 Emergence Shower Maintenance Form

NPHL/M/FM075 Eye Wash Maintenance Form

NPHL/M/FM042 First Aid and Spill Kits Inventories

NPHL/M/FM096 Biological Safety Cabinet Maintenance Records

Chemical Safety Hood Maintenance Records

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12.13 Good Housekeeping Practices

Housekeeping practices includes regular cleaning and disinfecting the refrigerators, freezers, water-bath and centrifuge. Work benches and laboratory environment are decontaminated and are kept clutter free as per NPHL/SP/57 Cleaning of Laboratory Environment.

Supporting Document

NPHL/SP/57 Cleaning of Laboratory Environment.

NPHL/M/FM041 Daily bench cleaning log

13.0 Chemical Safety

NPHL use NPHL/SP/36: Safety Chemical Storage Procedure and respective chemical MSDSs to ensure that safe storage, handling, use and disposal of chemicals comply with standard required.


13.1 Measures to avoid chemical contamination

NPHL ensures that appropriate facilities such as chemical fume hood, flammable, acid or corrosive cabinets and PPE that comply with international requirements are available and used when storing, handling and processing hazardous chemicals including compressed gases and cryogenic materials. All purchased materials that might be hazardous are accompanied by a MSDS. Hazardous liquids such as acids and alkalis are stored below eye level. Large containers are securely stored near the floor but at a height that allows for safe ergonomic handling.

13.2 Discarded chemicals

Chemical materials, absorbents and neutralizers used during the cleanup of a spill of hazardous materials are considered hazardous waste. NPHL management through Safety Officer ensures that these materials are stored with the rest of the facility's hazardous waste until they are removed from the site for ultimate disposal.

Safety Officer ensures that prior to disposal of these chemical waste the following information is displayed on the containers as stipulated on the MSDS:

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Date, laboratory section, constituents, physical properties (gas, liquid etc.), volume, hazardous properties (flammable or explosive) and records thereof kept.

Supporting Documents

NPHL/SP/36 Chemical Safety Procedure

Material Safety Data Sheet

14.0 Fire precautions

14.1 Construction

NPHL facility has been constructed based on fire reduction strategies like fire-proof doors, emergency exits, alarm systems, fire extinguishing equipment etc.

14.2 Emergency exits

Emergency exits are designed to ensure safe evacuation of personnel from work areas.

14.3 Alarm systems

NPHL facility is installed with automatic smoke, and heat detectors. The system is tested twice a year by the installation vendor.

14.4 Fire risk reduction strategies


NPHL management ensures that flammable materials are properly managed in the workplace. Ways to prevent fires are in place; limiting the amounts of flammable and combustible materials; providing proper ventilation to ensure flammable vapors do not accumulate and controlling ignition sources.

Fire extinguishing equipment is appropriately located and periodically maintained (six monthly). Laboratory staffs are regularly trained on fire safety.

All works involving the release of flammable vapor are conducted in the chemical safety hood.

14.5 Storage of flammable materials

NPHL has designed a specific area with appropriate signage for safe storage of flammable materials. The storage area is managed by store keeper and safety

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All flammable materials are well labeled with the following information:

- Container contents, such as acid, alkali
- A flammable sign

Supporting Documents

NPHL/SP/36- Procedure for Safe Storage of Chemicals

Material Safety Data sheet

Flammable Material Inventory

15.0 Transport of samples

NPHL transport infectious substances in accordance with IATA (International Air Transport Association) regulations. All samples which are not complying with these regulations are transported based on NPHL/SP/37- Procedure for Transport of Biological Materials.

Supporting Documents

WHO - Guidance Regulations for the Transport of Infectious Substance.

NPHL/SP/37- Procedure for Transport of Biological Materials.

16.0 Waste management


NPHL manages waste as per Infection Prevention Control Guideline (IPC) of MoHCDGEC – Tanzania as well as NPHL/SP/59 Safety Practice and NPHL/SP/30– Waste management procedure. Management of waste starts by segregating waste when it is produced whereby three categories are produced.

These include:

- Noninfectious (Normal waste)
- Infectious. (Biohazard waste)
- Sharps.
- Chemical waste.

Supporting Documents

NPHL/SP/59_Safety Practices

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NPHL/SP/30-Procedure for Waste Management.

NPHL/SP/36- Procedure for Safe Storage of Chemical.

Material Safety Data Sheet

17.0 Laboratory Biosecurity

NPHL Biosecurity measures provide assurance that individuals working with pathogens and toxins will not deliberately use those materials to harm others and will take every reasonable precaution to prevent others from doing so.

NPHL Biosecurity measures includes but not limited; -

17.1 Physical security

NPHL facilities and Laboratory areas are restricted to authorized personnel only. All storage areas including freezers and refrigerators should be locked when storing high risk samples (biological materials), cultures, chemical reagents or supplies.

NPHL provides digital access control cards for employees to access sensitive areas like parameter testing areas. Visitors are accompanied by their hosts.

17.2 Information security


NPHL Director is the top-level responsible authority for delivering information outside concerning the laboratory:

- Information about stored biological agents
- Test procedures and diagnostic results
- Personal information of laboratory workers in high containment facility.

17.3 Personnel security

NPHL through MoHCDGEC provides identity cards for all employees and are worn all the time during official hours to indicate personnel identity and authorization levels.

Visitors are accompanied by the authorized person and visitor logs are kept.

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17.4 Material control and accountability

This is described in detail on 10.2 Microbiological agents' inventory and information

17.5 Transport security

The laboratory director, or an appointee, e.g. the laboratory safety officer, shall be responsible for the provision of appropriate guidance and direction to all sites that submit samples to the laboratory.

All samples shall be transported to the laboratory in such a manner as to prevent contamination of workers, patients, or the environment.

Samples shall be transported in approved, inherently safe, leak-proof containers.


Samples sent within a facility's premises shall comply with the facility's rules for safe transport.

Samples sent outside the facility shall comply with prevailing regulations regarding the transport of infectious and other materials of biological origin.

Samples, cultures and other biological material transported between laboratories or other facilities shall be sent in a manner compliant with facility safety rules. Where applicable, international and national regulations pertaining to transport of dangerous materials for road, rail and ship shall apply.


Materials deemed by national or International Standards as dangerous goods intended for national or international air transport shall be packaged, labelled and documented in compliance with current national or international regulations or requirements.

NPHL keeps records for all transported hazardous materials such as biological waste generated, surveillance and outbreak samples as well Proficiency Testing samples.

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18.0 Reference

1. ISO 15190, Medical laboratories - Requirement for safety.
2. CWA 15793 – Laboratory Biorisk Management Standard
3. National Guideline for the Management of HIV and AIDS in Tanzania Feb 2009, Pages 74 and 165
4. HIV and AIDS Workplace interventions guidelines, Sept 2008
5. Post-exposure Prophylaxis to prevent HIV infection; Joint WHO/ILO guidelines on post-exposure prophylaxis (PEP) to prevent HIV infection (2007)
6. CDC. Universal precautions for prevention of transmission of HIV, Hepatitis B virus and other blood borne pathogens in health-care settings. MMWR 1988:37 377-388
7. Laboratory Safety SOP, YRG Care. S. Samiappan, E. Livant. 2005. ISO 15190, Medical laboratories - Requirement for safety
8. WHO – Laboratory Biosafety manual 3rd edition, 2004
9. Biosafety in microbiological and biomedical laboratories 5th edition
10. HIV and AIDS Workplace interventions participants' manual Sept 2008

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19.0 Contact Information

NPHL Head office is located at Mabibo External off Mandela road


Ubungu municipal

The address and contact information:

National Health Laboratory (NPHL),

P.O.BOX 9081

Dar es Salaam

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20.0 Appendices

Appendix 1: Risk Group Classification

NPHL laboratory is operating as a risk group II laboratory though some risk group III activities are performed in the emerging and re-emerging section of the laboratory.

a) Risk Group II (moderate individual risk, limited community risk)

This group includes pathogens that can cause human and animal disease, but under normal circumstances are likely to be a serious hazard to healthy laboratory workers, the community, livestock or the environment (e.g. *Staphylococcus aureus*, *Listeria monocytogenes*). Laboratory exposure rarely causes infection leading to serious disease; effective treatment and preventive measures are available and the risk of spread is limited.

b) Risk Group III (high individual risk, low community risk)


The group includes pathogens that usually cause serious human or animal disease, or which can result in serious economic consequences but do not ordinarily spread by casual contact from one individual to another, or that can be treated by antimicrobial or antiparasitic agents

Appendix 2: Safety Code of Conduct

All employees are required to observe the following rules:

A. Food, drink and like substances:

- NPHL is prohibiting food, drink and like substances that provide potential hand to mouth contamination in the technical working areas. Designated area has been identified for preparation and consumption of food, drinks and like substances.
- All refrigerators are appropriately labeled to indicate their intended uses. No food for consumption should be stored in any laboratory fridges or freezers. Smoking is prohibited in the laboratory.

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B. Cosmetics, hair, beards and jewellery:


- Application of cosmetics, handling of contact lenses and wearing of rings, earrings, wristwatches, bracelets and necklaces is prohibited in the laboratory working areas. These items shall be locked in their lockers outside working areas during procedures.
- Long hair is secured back and off the shoulders. Men with beards must observe the same precaution. It is good practice to use a disposable covers for hair and beards.

C. Personal property:

- It is prohibited to store personal belongings such as purses, food or medications in the technical working areas. Secure storage, such as lockers, is provided.
- Festive decorations and any others decorations that present potential contamination and or fire hazards are not allowed to be displayed in technical working areas.

D. Hand-washing:

All NPHL staff are obliged to wash their hands with soap and water after removing gloves, before leaving the laboratory working area, before and after using the toilet, after accidental contact with blood, body fluids or before eating, drinking or manipulation of contact lenses; contaminated materials even if gloves have been worn.

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Appendix 3: Safety checklist

SCORING SYSTEM

This safety audit checklist contains of 104 questions worth a total of 208 points. Each item has been awarded a point value of 2 points. Responses to all questions must be either, “yes”, “partial”, “no” or N/A.

- Items marked “yes” or N/A receives the corresponding point value of 2 points.
- Items marked “partial” receive 1 point.
- Items marked “no” receive 0 points.

When marking “partial” or “no”, notes should be written in the comments field to explain why the laboratory did not fulfil this item to assist the laboratory with addressing these areas of identified need following the assessment.

SCORE SHEET

Section	Heading	Total Points	Score obtained by Lab
1.	General Laboratory Safety	56	
2.	Chemical Safety	28	
3.	Electrical Safety	14	
4.	Laboratory Safety Equipment	28	
5.	Fire Safety	14	
6.	Laboratory Waste	14	
7.	Laboratory Ergonomics	6	
8.	Laboratory Security	8	
9.	Medical Surveillance	8	
10.	Laboratory Signage	6	
11.	Staff Training	6	
12.	Laboratory Design (specific for BSL3 Labs only)	20	
TOTAL SCORES		208	



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No Stars (0-113) <55%	1 Star (114-132) 55-64%	2 Stars 133-152) 65-74%	3 Stars (153-173) 75-84%	4 Stars (174-194) 85-94%	5 Stars ≥195 ≥95%
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GENERAL INFORMATION

NAME OF SECTION:

HEAD OF SECTION:

DATE OF AUDIT:

NAME/DESIGNATION OF AUDITOR:

SECTION 1: GENERAL LABORATORY SAFETY

SUB SECTIONS	OBSERVATION AND QUESTION	Y	N	P	N/A	COMMENTS	SCORE
		(2)	(0)	(1)			
1.1	Laboratory Safety Manual is available and has been updated within the last 12 months.						
1.2	All laboratory personnel have reviewed the Safety Manual and documented their understanding by signing on the signature page.						
1.3	Information with Emergency Call list and hazard warning labels are posted at the laboratory entrance.						
1.4	The Laboratory specific SOPs for hazardous operations have been written; members performing these tasks have read and signed in the signature page that they are familiar with the procedures outlined in the SOPs.						
1.5	Aisles, exits and hallways are clear of obstructions and slipping or tripping hazards. There should be at least 36 inches of clearance for aisles.						
1.6	There is 18 inches of clearance from the top of stored materials to the ceiling in laboratories with fire sprinklers and 24 inches if no sprinklers are present?						
1.7	Excess materials are stored in neat, secure manner that provides						



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	easy access and reduces the potential for falling, collapsing, rolling or spreading of the material.						
1.8	Sufficient open space is available within the laboratory to manage the acquisition and disposition of materials.						
1.9	Overhead storage is limited to lightweight, non-hazardous items.						
1.10	Equipment, chemicals, glassware and supplies not in regular use are stored in areas other than workstations.						
1.11	Food and beverages are not permitted in the laboratory working area or stored in laboratory refrigerators or freezers. Food is eaten and stored only in areas specially demarcated outside of laboratory areas.						
1.12	Spills are cleaned up promptly. No puddles, powders or unknown materials on floors or work surfaces.						
1.13	Spill kits, both chemical and biological are available.						
1.14	Personal desk space and other "clean areas" near or in the laboratory are kept free of all infectious or hazardous materials.						
1.15	PPE such as glove, laboratory coats, gowns, etc. is available and worn for the activities being conducted.						
1.16	Full coverage shoes with good sole grip are worn in the laboratory; no open-toed shoes and sandals are allowed.						
1.17	Respirator wearers are trained and fit tested for size and make of N95 respirators to be worn in the laboratory.						
1.18	Work surfaces and benches are free of clutter to reduce risk of spills and accidents						
1.19	Mechanical pipetting devices are used; pipetting by mouth is not						



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	allowed.						
1.20	Laboratory refrigerators, freezers and microwaves are appropriately labelled; e.g. “no food or beverages”, “non-flammable storage only” etc.						
1.21	PPE is removed before leaving the laboratory.						
1.22	Needles and other sharps are disposed off in a labelled, colour coded, puncture resistant container.						
1.23	Persons wash their hands after handling infectious materials, after removing gloves and when they leave the laboratory.						
1.24	Risk assessments are performed for high risk procedures such as culture of microorganisms.						
1.25	An effective rodent and insect control program is available.						
1.26	First aid kits are available for use at the laboratory.						
1.27	Illumination is adequate for all activities, avoiding reflections and glare that could impede vision.						
1.28	Laboratory furniture (chairs, desk etc) are made of materials that can be easily cleaned (non-fabric material)						

SECTION 2: CHEMICAL SAFETY

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
2.1	Proper safety equipment such as safety glasses, laboratory coats and chemical resistant gloves are worn when handling chemicals.						
2.2	All chemicals are clearly labelled with contents, date of receipt, expiry dates, storage conditions and are in good working condition (not corroded or leaking).						
2.3	Chemical containers, supplies and equipment are stored away from the edges of benches and shelves unless shelf lips or other restraints						



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	are in place.						
2.4	Corrosives are stored below eye level and preferably in hard plastic or rubber tubs.						
2.5	Flammable liquids are stored in an approved flammable storage cabinet. Anything more than 10 gallons must not be kept in the lab.						
2.6	Containers of hazardous chemicals (1gallon/4 liters or larger) are stored in secondary containers to contain spills (chemically resistant tubs).						
2.7	Containers of hazardous chemicals are not stored on the floor. All containers are to be stored in hard plastic or rubber tubs or other secondary containment.						
2.8	Incompatible chemicals stored appropriately (e.g. acids separate from bases, oxidizers separate from flammables).						
2.9	Chemical containers are not stored directly on top of one another, or with incompatible chemicals.						
2.10	Each refrigerator and freezer in the laboratory is labelled as either "safe" or "unsafe" for storage of flammables.						
2.11	The laboratory's chemical inventory has been completed or updated within the last year.						
2.12	Laboratory personnel know how to get MSDS and MSDS are available for all chemicals in use at the laboratory.						
2.13	Fume hood is available for manipulating chemicals (e.g. concentrated acids).						
2.14	Bottle carriers or transportation carts are utilized when moving chemicals from one room to another.						

SECTION 3: ELECTRICAL SAFETY

SUB	OBSERVATION AND QUESTION	Y	N	P	N/A	COMMENTS	SCORE
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SECTIONS		(2)	(0)	(1)			
3.1	Electrical panel access is clear (at least 36 inches in front).						
3.2	High voltage equipment is clearly labelled, properly guarded and its use is restricted to trained personnel only.						
3.3	Extension cords are used only as temporary wiring (<30 days) and not connected in a series with other extension cords or power strips. Cords must be in a good condition with no breaks in insulation or exposed wiring.						
3.4	Electrical cords on equipment are in good condition, i.e., the insulation should not be worn, split or frayed, the plug should not be separated from the cord and the cords should not be pinched in a door or in any other way.						
3.5	No more than one item is plugged into an individual receptacle?						
3.6	Grounded or polarized plugs are unaltered?						
3.7	Laboratory personnel know emergency equipment shutdown procedures.						
SECTION 4: LABORATORY SAFETY EQUIPMENT							
SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
4.1	Emergency Eyewash and Safety shower are available.						
4.2	Access to Emergency Eyewash/safety shower is free of obstruction.						
4.3	Emergency eyewashes tested monthly (flushed) and tests documented.						
4.4	Emergency shower tested at least monthly and documented.						
4.5	Compressed gas cylinders are adequately secured with restrains to keep cylinders from falling. Gas cylinders should be capped when						

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	not in use.						
4.6	Fume hoods are free of clutter and not used for long term storage of equipment, chemicals or supplies not regularly used.						
4.7	Fume hood users know how to check their airflow monitor to verify that the hood airflow is functioning properly						
4.8	A Biological Safety Cabinet is used for manipulation of infectious material.						
4.9	The Biosafety Cabinet is suitable for the type of organisms handled in the laboratory (e.g. Class 11 for handling highly infectious agents).						
4.10	The Biosafety Cabinet is in good working condition and has been certified within the last year.						
4.11	Is there a visual indicator of airflow in the Biosafety Cabinet (Gauge or other indicator).						
4.12	Sharp objects are stored safely to prevent accidental cuts or punctures.						
4.13	Autoclave available for decontamination of laboratory waste.						
4.14	Safety Centrifuge with aerosol free cups is used for centrifugation of infectious materials.						

SECTION 5: FIRE SAFETY

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
5.1	Fire extinguisher is available, mounted and clearly marked.						
5.2	Fire extinguisher access is free of obstruction.						
5.3	Fire extinguishers are charged and have safety pins and seals.						
5.4	Fire alarm is available and functional.						
5.5	Fire drills are conducted every quarter.						
5.6	The laboratory has an automatic system for fire detection and						



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	alarm.						
5.7	Staff are trained in the use of fire safety equipment.						

SECTION 6: LABORATORY WASTE

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
6.1	Chemical waste containers are properly labelled.						
6.2	Chemical waste containers are kept closed.						
6.3	Glass waste disposal box properly labelled and used.						
6.4	Sharps containers properly used and disposed off when $\frac{3}{4}$ full.						
6.5	Infectious liquid waste properly labelled, decontaminated and disposed.						
6.6	Infectious waste separated from non-infectious waste.						
6.7	Infectious waste properly stored and decontaminated.						

SECTION 7: LABORATORY ERGONOMICS

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
7.1	Ergonomic evaluations are done for laboratory employees who use a computer for four hours or more per day.						
7.2	Leg space beneath benches and desks is not used for storage in a way that prevents proper ergonomic posture.						
7.3	Laboratory tasks such as repetitive pipetting, prolonged awkward postures at a microscope are reviewed to reduce ergonomic risk factors.						

SECTION 8: LABORATORY SECURITY

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
8.1	Access to the laboratory is limited or restricted at the discretion of						



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	the Laboratory Director/Manager when experiments are in progress.						
8.2	Laboratory doors are kept closed at all times.						
8.3	The Laboratory Director/Manager controls access to the laboratory and restrict access to persons whose presence is required for program or support purposes.						
8.4	A list of authorized personnel who has access to the laboratory is available.						

SECTION 9: MEDICAL SURVEILLANCE

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
9.1	Is staff enrolled in a medical surveillance programme specific for the type of exposure.						
9.2	Are post-exposure prophylaxis policies and procedures posted and implemented after possible and known exposures.						
9.3	Are occupational injuries or illnesses documented in the safety incidence/occurrence log.						

SECTION 10: LABORATORY SIGNAGE

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
10.1	Laboratory signs identifying unusual hazards are posted at laboratory entrance.						
10.2	Biohazard sign posted on all laboratory room access doors.						
10.3	The hazard warning sign identifies the agent, name and telephone number of the responsible person and indicates any special requirements for entering the laboratory (immunization, respirators or other protective measures).						
10.4	Emergency instructions posted near phones (fire, ambulance etc.).						



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10.5	Current chemical inventory available and posted near door.						
10.6	Are emergency exits clearly labelled, unlocked and unobstructed.						

SECTION 11: STAFF TRAINING

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
11.1	Laboratory and support personnel receive appropriate training on the potential hazards associated with the work involved and the necessary precautions to prevent exposures. All safety training is documented.						
11.2	Laboratory personnel receive annual updates or additional safety training as necessary.						
11.3	All staff been trained in first aid procedures.						

SECTION 12: LABORATORY DESIGN (BSL3)

SUB SECTIONS	OBSERVATION AND QUESTION	Y (2)	N (0)	P (1)	N/A	COMMENTS	SCORE
12.1	The laboratory is physically separated from other activities areas in the same building						
12.2	Entry into the laboratory is through an anteroom, preferable two self-closing interlocked doors in series airlock.						
12.3	Windows and other openings are hermetically sealed.						
12.4	Laboratory contains an observation window so that occupants can be seen from outside.						
12.5	Furniture designed to allow cleaning and decontamination						
12.6	Hands free or automatic sink for hand washing is available.						
12.7	Floor and bench tops easy to clean, impervious to water, resistant to chemicals and						



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	disinfectants.						
12.8	Backup power available in case of power failure. BSC connected to UPS.						
12.9	The culture room is held at negative pressure at all times either through HVAC system or extractor fans.						
12.10	The laboratory has a phone or some other system to communicate with the outside in case of emergency.						

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AMENDMENT RECORD

NAME	DATE	SUMMARY OF CHANGES

