REPUBLIC OF ZAMBIA

GOVERNMENT GAZETTE

Published by Authority

Price: K15.00 net
Annual Subscription: Within Lusaka—K400.00

No. 7552] **Lusaka, Friday, 9th February, 2024** **[Vol. LX, No. 17**

GAZETTE NOTICE NO. 189 OF 2024

Republic of Zambia

Ministry of Home Affairs and Internal Security

National Forensic Authority

Guidelines on Crime Scene Recovery of Evidential Material for DNA Analysis

Foreword

Forensic Science is the field that uses specialized scientific methods in legal matters. The use of forensic evidence is the modern way of resolving crimes and corroborating the victim/witness testimonies. With the commissioning of the first ever Forensic DNA laboratory in Zambia, there has been a notable increase in the utilization of forensic DNA evidence in the investigation of criminal offences. The DNA analysis of biologic material recovered from crime scenes can, with relatively high confidence, exclude or include a possible suspect.

I am therefore pleased to endorse these guidelines on the Crime Scene Recovery of Evidential Material for DNA Analysis. The National Forensic Authority developed the guidelines in order to control and minimize DNA contamination during crime scene examination. Adherence to the guidelines by all the personnel at the crime scene is of utmost importance in order to prevent contamination of evidence which if left unchecked has the potential to alter the outcome of any criminal investigation with dire social and financial repercussions.

I wish to take this opportunity to thank the National Forensic Authority and all the stakeholders that participated in the development of these guidelines which will enhance standardisation of practice in the recovery of DNA evidential material at crime scenes.

HON. J. MWIIMBU, MP,
Minister of Home Affairs and Internal Security

Terms and Definitions

Chain of custody
Chronological record of the handling and storage of an item from its point of collection to its final return or disposal.

Contamination
Undesirable introduction of DNA, or biological material containing DNA, to evidential material at or after the point when a controlled forensic process starts.

Consumable
Single use or limited use material which is used in the forensic process.

Control sample
Material with known properties, analyzed in order to evaluate the performance of a test and to ascertain the data obtained are valid.

Cordon
Police, military, or security guard lines or circles that prevent access of unauthorized people to an incident/crime scene.

Crime scene
A place where a presumed crime has been committed that is subject to and/or requires forensic examination.

Deoxyribonucleic acid (DNA)
The molecule that carries genetic material for the development and functioning of an organism.

Examination
An act or process of observing, searching, detecting, recording, prioritizing, collecting, analyzing, measuring, comparing and /or interpreting findings.

Examination strategy
Plan developed to specify the requirements and activities for the examination phase of the forensic process.

First responder
First law enforcement officer arriving at the scene responsible for immediate action.

Quality
Degree to which a set of inherent characteristics fulfils a requirement.

Sample
Portion drawn from a whole or population for purposes of examination/testing, not necessarily representative of the whole sample

Abbreviations/Acronyms

CED .....Contamination Elimination Database
CSI .....Crime Scene In-charge
CST .....Crime Scene Technician
DNA ..... Deoxyribonucleic Acid
MHAIS..... Ministry of Home Affairs and Internal security
NFA ..... National Forensic Authority
NFSBD .....National Forensic Science and Biometric Department
OSFP .....Office of the State Forensic Pathologist
ZPS .....Zambia Police Service

1.0 Introduction

1.1 The purpose of this document is to provide guidance on how to control and avoid the incidence of DNA contamination during scene examination, including the searching for, recording and recovery of items, their packaging, transportation and storage prior to submission for forensic DNA examination.

1.2 In this document, contamination is the introduction of DNA, or biological material containing DNA, to evidential material at or after the point when a controlled forensic process starts. This should be distinguished from 'background DNA' which is the adventitious transfer of biological material to evidential material that can occur, prior to the recovery of the evidential material and before investigative agencies have intervened.

1.3 It is recognized that DNA contamination incidents cannot be eliminated completely, given the prevalence of human DNA within the living and working environment. This issue is exacerbated by the increasing sensitivity of DNA analytical techniques.

1.4 This guideline is necessary because DNA techniques in routine use can readily generate profiles from DNA found in minute saliva aerosols or in skin cells deposited on handled items.

1.5 Incident investigation activities can be divided into two distinct phases;

(a) Scene management phase (scene/victim/suspect), during which investigative agencies are involved in locating, recording, recovering, packaging, storing and transporting evidential material, and

(b) The analytical phase in which the recovered evidential material is processed within a laboratory.

1.6 Potential routes for DNA contamination include:

(a) From personnel to the evidential material/DNA sample;

(b) From examiner to gloves to evidential material/DNA sample;

(c) From contaminated consumables including but not limited to; swabs, tubes, personal protective equipment [PPE]/ barrier clothing and packaging materials of the aforementioned to the evidential material/DNA sample; and

(d) From one evidential material to another or DNA sample to DNA sample.

1.7 Contamination may occur as follows:

(a) Directly, also described as 'primary transfer', such as, saliva or dandruff from an examiner onto an evidential material/DNA sample.

(b) Indirectly, also described as 'secondary transfer' or tertiary transfer for multiple step transfers of a single source, such as, from one scene to another via contaminated equipment not properly cleaned from previous scenes.

1.8 Contamination may be:

(a) Sporadic, that is resulting from an incident affecting just one DNA sample from a number in a batch; or

(b) Systemic, resulting from an event that affects a whole batch or series of DNA samples at the same time.

1.9 Reduction in the risk of contamination can be attained as far as is practicable by:

(a) Use of barrier clothing

(b) Restricting access to areas containing evidential material/DNA sample;

(c) Cleaning scene examination equipment and surfaces before and after use;

(d) Rendering consumables free from detectable levels of DNA; and

(e) Ensuring that equipment used at scenes is adequately decontaminated between scenes based on risk assessment.

1.10 Detection of contamination primarily involves:

(a) Comparison of DNA profiles generated from items against a database of reference DNA profiles from personnel from whom there is a significant risk of contamination;

(b) Comparison of DNA profiles generated from items to results detected from quality assurance (QA) testing of reagents and consumables and from laboratory controls;

(c) Cross-checking of profiles within the same batch of samples and from different batches of samples processed within the same laboratory;

(d) Investigation of unexpected results; and

(e) The incorporation of appropriate controls into the forensic process.

1.11 Nothing can be done to reduce background DNA at scenes, but it is essential that everyone in the investigative process:

(a) Is ware of the importance of maintaining the integrity of evidence;

(b) Takes appropriate steps to minimize the risks posed by the inadvertent addition or the transfer of DNA during scene examination or other stages of the forensic analysis process; and

(c) Is aware of the option to take 'background' samples where appropriate.

1.12 Effective DNA anti-contamination process requires a combination of approaches both to minimize the opportunity and therefore the risk of occurrence and maximize the ability to detect contamination when it does occur.

2.0 Scope

2.1 ISO/IEC 17020:2012 'Conformity assessment – Requirements for the operation of various types of bodies performing inspection' is the international quality standard required for scene work.

2.1 The scope encompasses initial forensic science activity at scenes, which includes the following:

(a) The scene examination strategy.

(b) The searching for, recording, recovery, preservation, transport and storage of, evidential material, and

(c) Presumptive tests for use in the field.

2.2 Guidance on the application of this standard to scene examination is provided by the Authority in the 'Accreditation of Bodies Carrying out Scene of Crime Examination' which provides high level requirements with regard to anti-contamination measures including:

(a) Demonstrating that reagents and kits used at scenes are fit for purpose;

(b) A risk assessment of issues surrounding the potential for cross contamination between samples; and

(c) An assessment of each individual scene to ensure that suitable anticontamination measures are in place.

2.3 This Guideline collates the latest thinking on DNA anti-contamination measures and correlates this against the relevant sections of the ISO/IEC 17020 standard to assist in accreditation assessment.

2.4 This Guideline provides requirements and guidance regarding anticontamination measures to be taken at crime scenes which include:

(a) recovery and packaging of evidential material;

(b) transportation and storage of exhibits prior to submission to a laboratory facility for subsequent examination; and

(c) recovery of evidence, which may be undertaken either within the law enforcement agency facilities or by a forensic service provider.

2.5 Within the scope of this Guideline is the use of drying cabinets, given that these may be used as an interim processing stage prior to the submission of items to a laboratory for assessment and analysis.

2.6 The recovery of evidence and taking of reference samples from either victims or arrestees, is outside the scope of this Guideline and will be covered in a separate Guideline.

3.0 Implementation

3.1 This guideline is available for incorporation into an organization's Standard Operating Procedures and quality management system from the date of publication.

3.2 The requirements set out in this Guideline come into effect on the date of publication of the Guideline.

3.3 The finalized Guideline will be reviewed as and when the Authority deems it necessary.

4.0 Anti-Contamination Strategy

Scene of Crime Anti-Contamination Strategy

4.1 At scenes of crime the risk of contamination shall be minimized as far as is practically possible. A key element of this, especially for serious and major crimes, i.e. where a Crime Scene Technician (CST) or equivalent is deployed, is to manage activities both within and outside the scene and at other relevant locations in a strategic and coherent fashion to ensure that contamination risks are understood and mitigated as far as is practically possible.

4.2 This applies not just to a particular scene or primary/secondary scene, but across a case or linked case, places and vehicles.

4.3 NOTE: The anti-contamination strategy should not be seen to cover health and safety risk assessments in a scene; these are separate issues.

4.4 For each scene of crime an overall and fully documented forensic strategy is required. The anti-contamination strategy is a component of this and shall;

(a) be tailored around the known circumstances of the investigation;

(b) commence at the earliest practicable opportunity following first receipt of case-specific information;

(c) be subject to continual review and modification as the investigation develops;

(d) be properly documented and effectively communicated to all relevant staff and departments.

4.5 The scene of crime must be managed by a multidisciplinary team in order to increase chances of timely recovery and maintenance of integrity of evidential material.

4.6 Factors that shall be considered and written into the anti-contamination strategy include the following:

(a) prior to scene attendance

(b) environmental factors

(c) staff deployment

(d) cordons and scene protection

(e) scene assessment

(f) contamination risks between different parts of the same scene

(g) handovers

(h) release of a scene

Prior to scene attendance

4.7 This shall apply to all individuals including investigators, witnesses, suspects or other members of the public. Physical proximity of the scene to a suspect or victim's address or vehicle, and any personal protective equipment (PPE) worn by the above shall be recorded (time and date shall be documented)

4.8 The strategy should provide a record of previous entry to the scene and their activities, for example, where did they go and what did they touch before control was established.

Environmental factors

4.9 A hot condition that introduces a higher risk of contamination (for example, scenes where extreme heat introduces the risk of contamination due to perspiration whilst undertaking recovery activities); and

4.10 Linking of environments such as communal corridors, waterways or streets.

Staff deployment

4.11 Avoidance of utilizing the same personnel, vehicles or equipment that have attended;

(a) a scene related to the same offence,

(b) a linked scene or incident, or

(c) have been involved in laboratory examination of items recovered from the same case.

4.12 Where operational imperatives dictate that utilizing the same staff cannot be avoided, due consideration before redeployment shall be given to;

(a) the risks and possible transfer mechanisms for material to pass from one scene to another and how these can be mitigated (such as the use of different vehicles and equipment) to provide support to examination at different scenes associated with the same crime or a linked crime; and

(b) showering and change of clothes for practitioners, and ensuring adherence to strict cleaning and decontamination measures for equipment between scenes.

4.13 Due consideration should also be given to the closeness/proximity of scenes with interrelated cross-contamination risks, such as nearby properties where there is a risk that staff may attend the wrong scene or area by mistake.

Cordons and scene protection

4.14 Cordons shall be sufficient and positioned appropriately as a key anti-contamination measure.

4.15 The scene cordon, and scene log, shall be assessed by the first attending Crime Scene Technician (CST) and amended if evidence or forensic opportunities are in imminent risk of loss or contamination.

4.16 Control of the cordon shall be maintained by First Responding Officers who are aware of what their role entails.

4.17 Access to the scene should be controlled as a single point of entry, and wherever possible a common approach path is established.

4.18 Utilizing scene entry tents is an example of good scene management. These can be separated into different areas for putting PPE on and taking it off, and for packaging and disposing of dirty PPE.

4.19 It is the responsibility of the Crime Scene Technician to ensure that the minimum number of people required to undertake the effective examination of the scene are admitted.

Scene assessment

4.20 In the initial assessment of the scene appropriate precautions shall be taken to preserve evidence (wherever it exists) on floors, for example, by identifying boundaries of scene, a controlled pathway through the scene.

4.21 This shall identify what parts of the scene are under protection and the anti-contamination measures required within these including;

(a) parts where PPE shall be worn;

(b) parts where PPE shall not be worn (for example, where overshoes must be removed);

(c) protection of ground surfaces including where stepping plates are to be deployed;

(d) designated areas for disposal of waste such as used PPE.

4.22 Where an evidential material is assessed to be too great a biohazard to be handled, transported and/or stored, relevant professionals should be deployed to deal with it in accordance with Health and Safety regulations

4.23 Inadvertent movement of material from one part of a scene to another constitutes a contamination risk, for example, communal living areas or shared/public areas within scenes or where rooms within a scene have been ascribed particular significance by witnesses. Under these circumstances, additional measures to avoid cross-contamination shall be considered;

(a) to control entry to and exit from specific areas within the scene;

(b) examination of different rooms on different days or by different personnel;

(c) change of PPE and/or other equipment between different parts of the same scene. Under these circumstances PPE/other equipment should be retained to allow for subsequent assessment as to whether cross-contamination may have occurred.

Handovers

4.24 During the handover of responsibilities to new staff, briefing shall be provided on the anti-contamination strategy and anti-contamination measures.

Release of a scene

4.25 Prior to the release of a scene, sufficient steps shall be taken to minimize the risk of material relating to the offence remaining and being inadvertently transferred once the scene is released. This includes, for example, cleaning blood and other body fluids from communal or publicly accessible areas.

Anti-Contamination Strategy Across a Case

4.26 Throughout the duration of an investigation specific notes should be made of each scene including;

(a) dates and times of examinations;

(b) all the anti-contamination measures implemented and reasons for these, including measures to minimize the risk of specific identified contamination risks.

5.0 Personnel

5.1 All personnel whose role includes attendance at scenes shall be trained and fully competent with regard to DNA anti-contamination measures.

5.2 Key to this is being trained in and demonstrating knowledge through assessment of;

(a) contamination issues including contamination theory and understanding the mechanics of contamination, the rationale behind anti-contamination measures, and practical knowledge of any anti-contamination-related Standard Operating Procedures (SOPs) employed at scenes to avoid contamination;

(b) issues relating to contamination risks and their avoidance in specific processes and methods shall be an integral part of staff training and the relevant issues shall be included within the training plans and manuals.

5.3 All personnel attending a scene shall be made fully aware of the risks specific to the scene and how they are to be mitigated. These include but not limited to the following categories of Officers:

(a) Forensic scientists;
(b) Custody Officers;
(c) CID officers;
(d) Victim Support Unit Officers;
(e) Forensic Pathologists;
(f) Pathologist Assistants
(g) Law Enforcement Officers;
(h) Staff from Forensic Science providers
(i) Personnel from other emergency services including paramedics and fire service staff.

5.4 It is the responsibility of the Crime Scene In-charge (CSI) to ensure that all individuals attending the scene are aware of, and conform to, the anti-contamination measures specific to the crime scene in question.

5.5 Anyone suffering from a short-term medical condition that causes the shedding of body fluids or particles (for example, colds, coughs, influenza, hay fever or elevated temperature promoting sweating) should be actively discouraged from attending the scene. There

is also an increased risk of contamination from individuals who are naturally heavy shedders or have certain skin conditions. This increased risk may be acceptable provided that it is effectively managed by the use of appropriate PPE/ barrier clothing and adherence to anticontamination procedures, and that the DNA profile of the affected individual is available for searching against the relevant elimination database.

5.6 All staff called to a scene specifically for examination purposes (searching, recording and recovery) shall ensure that they have sufficient equipment to undertake their duties. This includes equipment needed for taking effective anticontamination measures and for health and safety requirements. The equipment includes:

(a) Sufficient PPE/ barrier clothing;

(b) Sufficient consumables including recovery and packaging equipment;

(c) Sufficient cleaning materials; and

(d) Equipment that has been effectively cleaned since the last deployment to a scene.

5.7 All staff working in the forensic process MUST have had a DNA sample taken from them for submission to the relevant staff elimination database, and the absence of such a sample should be recorded.

6.0 Equipment and consumables receipt, handling and storage

6.1 Steps shall be taken to ensure that appropriate precautions are taken to minimize the contamination of consumables prior to use:

6.2 As a minimum this includes secure storage, restricted access, steps to minimize the chance that the handler (Fonnelop et al, 2016) causes inadvertent DNA contamination and the risk of DNA being transferred from adjacent items or the storage environment.

6.3 Any sample packaging and/or collection kits used shall be fit for purpose. This can be demonstrated by consumable manufacturers and kit assemblers meeting the requirements set out in ISO 18385:2016 and for other non-DNA consumables, set out in the Publicly Available Specification (PAS) 377:2012.

6.4 8.1.4 Areas used for the storage and handling of consumables, samples and evidential material shall be secure and access restricted to authorized personnel only.

Personal Protective Equipment (PPE)/barrier clothing

6.5 PPE/ barrier clothing serves a double purpose:

(a) To protect the wearer from contact with hazardous materials; and

(b) To protect evidential material from contamination by the wearer.

6.6 For serious and major incidents, PPE/ barrier clothing for entering the scene shall consist of the following:

(a) Face mask (and beard snood on top of mask if required), which shall be N95 type mask that is effective at preventing DNA transfer. Other masks may need to be used for other purposes (for example, health and safety). This should be recorded. The wearer shall keep talking to a minimum whilst sampling, or when recovering samples/evidential material, or when in close proximity to possible sources of DNA evidence. The wearer shall also avoid adjusting or otherwise manipulating the face mask (or glasses if worn) whilst at the scene. Where this cannot be avoided, the outer gloves should be cleaned or replaced immediately.

(b) Mob cap/hairnet: A mob cap or hairnet, or the hood of the scene suit shall be worn at all times in the scene to prevent shed hair or skin flake contamination by the examiner.

(c) Gloves: Two pairs shall be worn at all times when handling exhibits that will require analysis. These shall be disposable and powder free nitrile gloves. The powder in gloves has been found to inhibit subsequent DNA analysis and can potentially contaminate items being handled, therefore powdered gloves should be avoided. Exposure of skin or clothing shall be avoided by for example:

- Taping the inner pair to the scene suit; or
- Inserting the thumb through a hole in the cuff to prevent the suit sleeve from rucking up and always wearing gloves over the top; or
- Wearing 'long cuff' gloves as the 'inner' pair so that the cuff can be stretched over the sleeves of the scene suit.

6.7 The outer gloves shall be changed or cleaned regularly, ideally at a designated place away from the area being examined, both before and after handling individual items that may be submitted for DNA analysis.

6.8 Over-suit: This shall be worn, including the hood or mob cap, at the scene. It shall not be modified by making holes or openings in the suit that expose skin or clothing or be otherwise handled unnecessarily at the scene.

6.9 Overshoes: These should be worn at all times within the scene unless otherwise directed by the CSI or equivalent. Exposure of skin or clothing between the scene suit and overshoes should be avoided, if necessary by taping them together.

6.10 If any of the PPE / barrier clothing becomes visibly stained or compromised they shall be changed. If any item(s) of PPE/ barrier clothing is believed to have become a potential source of contamination this possibility shall be recorded in the examination notes and the specific item(s) of PPE / barrier clothing seized as evidential material.

6.11 The order of putting on PPE /barrier clothing shall be as follows:

(a) Face mask (and beard snood, where required) should be put on before any other protective clothing to avoid the latter from being contaminated with saliva aerosols, followed by;

(b) Mob cap (and hard hat, if required);

(c) Safety glasses (if required)

(d) First pair of gloves;

(e) Over-suit;

(f) Overshoes; and

(g) Second pair of gloves.

(h) At the point of recovery of DNA a face mask and double gloves shall be worn.

6.12 The wearing of gloves and face masks when searching and recovering evidence at all scenes regardless of their seriousness is essential, as most contamination occurs by;

(a) handling items without gloves or where the gloves are torn; or

(b) talking, sneezing or coughing over the items.

6.13 Due consideration should also be given to wearing additional or alternative PPE / barrier clothing depending on the specific health and safety requirements of each scene.

6.14 All PPE/barrier clothing including overshoes should be removed at the designated exit point when exiting a scene and placed in a bag. This shall be sealed either for appropriate disposal or retention.

7.0 Consumables including disposable equipment.

7.1 Consumables are single-use commodities used in the collection, preservation and processing of material for forensic analysis, and are bought and used up recurrently. These include PPE/ barrier clothing, tamper evident containers, swabs and packaging that come into direct contact with the material for forensic analysis. A consumable can also be equipment used in the collection, processing and safe handling of the material, for example, disposable tweezers and scissors.

7.2 Wherever possible, consumables including disposable equipment that will come into direct contact with the evidential material intended for DNA analysis shall be quality assured to be free from detectable human DNA or forensic DNA grade.

7.3 Assurance can be provided by the consumables being independently assessed as compliant with ISO 18385:2016 or through quality control (QC) testing of batches of reagents and consumables, verified by the generation and documentation of data, as being fit for purpose when using the most sensitive DNA tests.

7.4 Consumables/items should be individually sealed or provided as a self-contained kit comprising a set of all the required items for a specific activity. Where these are not available, all reasonable efforts should be made in the storage, transport and handling of multiple packs of consumables to minimize the risk of cross-contamination post-receipt from the supplier. For example, a box of disposable nitrile gloves should be dedicated solely for use as outer gloves and should be kept in a re-sealable bag that is only opened when wearing a pair of under-gloves.

Packaging

7.5 The packaging of collected material shall preserve the integrity of the potential material for forensic examination and minimise the risk of loss, degradation or contamination. As a minimum this should include;

(a) separate packaging of items where the packaging of items together is likely to compromise them;

(b) the appropriate packaging for the size, condition and forensic analysis requirements of the material recovered;

(c) secure sealing; and

(d) appropriate labelling.

Non-disposable equipment

7.6 Equipment that is to be re-used at different scenes and that may have come into direct contact with items being recovered for subsequent DNA analysis should be effectively sterilized prior to re-use. Based on a risk assessment, this might include, for example;

(a) equipment and kits to undertake examination of the scene;

(b) lighting equipment;

(c) stepping plates for the preservation of surfaces; and

(d) pens, rulers and scales.

7.7 For crime scenes ideally, a new fingerprint brush/powder is used if DNA recovery has not been completed prior to use. For volume incident scenes, sequential processing should be undertaken to minimize cross-contamination, together with periodic replacement in particular when there is any possibility that a contaminated surface may have been brushed

7.8 Equipment shall be sterilized and used according to documented SOPs demonstrated to be effective at removing DNA. A sterilizing log should also be kept, which provides traceability to the equipment cleaned.

8.0 Scene Activities and Procedures

8.1 All activities within the scene, including any cleaning and/or storage area deployed should be controlled by a suitably trained individual who has gained competence in the understanding of the mechanisms of contamination, assessment of risk and minimizing risk whilst promoting detection. Typically, this is by a Crime Scene In-charge. Compliance with anti-contamination procedures may be the responsibility of another nominated individual such as a forensic practitioner or the scene investigator in attendance.

8.2 Where the controlling individual requires additional input from suitably qualified sources in relation to anti-contamination measures this input shall be documented.

8.3 Access to the scene should be restricted as far as is practicable to those personnel who need access for a specific reason.

8.4 Movement within the scene should be kept to the minimum possible for the work that has to be undertaken.

8.5 Verbal communication around areas of interest within the scene should be kept to a minimum despite the fact that masks are being worn.

8.6 The touching of spectacles, face, telephones, door handles, light switches, pens, paper, rulers, etc., without subsequently changing or cleaning the outer pair of gloves should be avoided.

8.7 The use of electronic devices should be minimized within the scene and, if used, appropriate anti-contamination procedures carried out. Smoking should be avoided.

8.8 Items from which samples are taken should be handled carefully and as little as possible, and packaged at the earliest opportunity.

8.9 All items seized shall be packaged, sealed and labelled at the time they are taken, and wherever possible the packaging should be taken to the item and not the item to the packaging. Measures should be put in place to prevent/minimise contamination of equipment and consumables brought into the scene, for example, setting up a clean area within the scene for equipment to be placed if required.

8.10 Packaging and other containers should be of an appropriate size for the items being packaged so that the item does not become damaged, and the packaging does not become compromised during transportation and storage.

8.11 Due care and consideration should be made when deciding whether to package items separately or whether to combine them (for example, cigarette).

9.0 Drying cabinets and temporary storage of items.

9.1 Consideration shall be given to preserving DNA from degradation for items recovered that are wet; should freezing not be a suitable option (for example, wet clothing) then items shall be dried in a controlled environment.

9.2 If practicable, recovered items for DNA laboratory examination should be transported to the laboratory without delay. Where this is not practicable, for example, where exhibits' reviews are required or items are not required for immediate submission, the risk of degradation of evidence should be assessed. Actions should be taken to minimize the loss of evidence, for example, drying or prioritization of the examination of higher risk items.

9.3 All items shall be stored in such a manner that they cannot be cross contaminated, tampered with or stolen, and so that only authorized personnel have access to them. This is essential in order to ensure that the integrity of the evidence cannot be compromised and that the chain of custody can be demonstrated and therefore does not provide the basis for any subsequent challenge.

9.4 Samples that are obviously stained with body fluids such as blood should be dried separately from less obviously stained items to prevent contamination by transfer of dried flakes, etc. Items considered for sensitive DNA tests should be dried separately, unless recovered co- mingled from the same owner and separation would compromise other material of interest.

9.5 Short-term storage conditions should be in accord with the facilities' SOPs, which specify best practice for each type of evidence. Where the circumstances of the case dictate, wet or damp items should ideally be dried to preserve DNA prior to forensic examination. Where it is not possible to commence drying the item immediately on receipt, it shall be adequately packaged to preserve the distribution of evidence, for example, by folding it into a piece of brown paper then immediately freezing it in a polythene bag to minimize degradation.

9.6 Regardless of where they are located, drying rooms or cabinets used to dry recovered items should conform to the same general requirements as any other room or equipment used for accreditation to ISO/IEC17025 for body fluid searching and examination. This requirement has been stipulated by NFA because drying necessitates opening the packaging and therefore should only be undertaken in a controlled environment. An exception is where a wet item has been packaged in a breathable polymer bag that has been demonstrated to enable the item to dry out in situ without leakage of DNA from the sealed bag.

General operational principles

9.7 Sufficient drying space capacity should be made available to ensure that the drying of submitted items can commence without delay during typical daily casework. As a contingency for exceptional peaks in demand, sufficient freezer space should be kept free for storage of items until drying space becomes available. Under no circumstances should the drying processes be accelerated by using heat or with fans.

9.8 Items between which a link may be of evidential significance should not be dried in the same space, for example, by sequentially drying one after the other in the same cabinet or room. Potentially linked items from the same case MUST be dried at different physical locations.

9.9 The drying cabinet should ideally have the following characteristics:

(a) Temperature controlled between 15.5°C and 24°C.

(b) Humidity controlled, relative humidity not to exceed 60 per cent.

(c) Under negative air pressure with 12 to 15 air changes per hour.

(d) Air re-circulated through an activated high efficiency particulate air (HEPA) filter.

(e) Drying area not in direct sunlight.

(f) Walls, ceiling and floor shall have surfaces that readily allow decontamination.

(g) A locking mechanism on the door to prevent access except by the authorized personnel.

9.10 Ideally a dedicated room(s) should be utilized, accessed by a lobby area for putting on/removing PPE/barrier clothing and equipped with commercially manufactured drying cabinets. These cabinets are specifically designed to meet the above specification and therefore will be easier to decontaminate than drying facilities that have been modified from other applications. Both the room and the drying cabinets within shall be subject to regular and effective cleaning regimes, and environmental monitoring.

Decontamination of re-usable equipment between exhibits

9.11 The following are examples of how equipment may be decontaminated. However, it is essential that the processes adopted are documented and their effectiveness verified in the hands of the end-user. In all instances due consideration should be given to the health and safety implications of using these cleaning regimes. They shall be risk assessed and safe systems of work established prior to use.

(a) Items that are not suitable for immersion in fluid without damaging them should be thoroughly cleaned using a disposable cleaning roll or wipes liberally wetted with a chemical that inactivates and removes DNA. If direct contact with sources of DNA will occur, then the removal of the cleaning agent is necessary. Where equipment or items are susceptible to corrosion, then an appropriate cleaning agent that does not corrode shall be used.

(b) Small items thought to be contaminated that are suitable for immersion in fluid without damaging them should be submerged in a cleaning agent, scrubbed/wiped down to remove material. They should be rinsed in sterile distilled water should direct contact with sources of DNA for recovery occur.

9.12 An example of cleaning surfaces (including drying cabinets) is as follows:

(a) Spray the entire surface with a chemical at the concentration that is effective (for example, 1% solution of sodium hypochlorite destroys DNA).

(b) Leave for 5 minutes.

(c) Wipe the entire surface thoroughly using disposable cleaning roll (or similar).

(d) If direct contact with items for DNA recovery will occur, it may be necessary to clean with water to remove cleaning agent residue.

Handling procedure for drying

9.13 Between each use, the drying cabinet must be decontaminated.

9.14 Only one item should be handled at a time.

9.15 The packaging should be opened at the opposite end to the original seal so that the integrity of the original seal is verifiable if necessary. This shall be undertaken outside of, but very close to, the drying cabinet.

9.16 Paper should be placed under the item to capture any trace evidence that might fall off while it dries. This paper should be packaged separately and submitted with the item. Segregation of items and the handling of items potentially in the same case shall be observed at all times, for example, scene and suspect, victim and suspect, different suspects, different locations within a scene, and multiple scenes.

9.17 Once the items have dried they should be re-packaged and re-sealed using tamper proof tape. Ideally the original packaging should be re-used, but where this is not possible, the item should be re-packaged and sealed in appropriate replacement packaging, and the original packaging should be retained for continuity purposes and recorded as a sub-item. The location of the drying cabinet and the time and date of the drying (as well as any other samples in the batch) should be recorded in the event of quality assurance (QA) investigations, etc.

Record keeping

9.18 The following anti-contamination records shall be kept.

(a) Cabinet logs shall be maintained for each cabinet. These shall detail the following:

— The exhibit number and incident reference number of each item.

— The person who placed the item in the cabinet including time and date, plus confirmation that the cabinet was decontaminated beforehand.

— The person who removed the item from the cabinet including time and date, plus confirmation that the cabinet was decontaminated afterwards.

(b) Room access logs.

— Competency records of staff accessing the drying facilities.

— Cleaning logs.

— Case notes shall be recorded where applicable.

— All instances where contamination is suspected in the handling and drying of the item, giving details of the incident.

Personnel considerations

9.19 Prior to being granted access to the drying cabinet facilities, each member of staff shall have demonstrated competency in operating the cabinets. Key to this is being trained in and through assessment demonstrating knowledge of;

(a) contamination issues;

(b) the rationale behind anti-contamination measures; and

(c) practical knowledge of the anti-contamination-related SOPs employed in the handling of items and operation of the drying facilities to avoid contamination.

9.20 Issues relating to contamination risks and their avoidance in specific processes and methods shall be an integral part of staff training documentation and the relevant issues shall be included within the training plans and manuals.

9.21 This guidance shall be introduced to all new users of the drying facilities as part of their training.

9.22 Where a member of staff has a cold or other medical condition that risks compromising forensic casework, such as persistent coughing or sneezing, consideration should be given to excluding them from the drying area as per section

Personal protective equipment (PPE)/ barrier clothing

9.23 Outdoor clothing, for example, coats, gloves, scarves, and other personal belongings are not permitted within the drying facility.

9.24 The following protective clothing shall be worn by all individuals including staff, visitors and service engineers when entering the drying area, and all of whom should provide an elimination sample.

Laboratory coats

9.25 Dedicated disposable laboratory coats that fully cover the neck, arms and wrist areas shall be worn and properly fastened. Alternatively, a scene suit may be worn, fully fastened.

9.26 Coats/suits shall be changed before handling items from a different case, individual, location and where other circumstances dictate, for example, after handling a heavily stained exhibit.

9.27 It is acceptable not to change laboratory coats when handling different items of clothes that have been worn at the same time by the same individual.

9.28 For handling volume crime samples, it is acceptable to use a lower cost alternative of wearing disposable paper aprons and sleeve covers over the laboratory coat and changing the apron and sleeve covers between items, rather than the laboratory coat.

9.29 Dedicated coats shall not be worn outside the drying area to which they have been assigned.

Gloves

9.30 Disposable gloves shall be worn at all times in the drying area, and removed when leaving the area. Two layers of gloves shall be worn; ideally powder-free nitrile or other suitable alternative, and shall not be removed within the drying area.

9.31 The wrist of the glove should cover the wrist of the laboratory coat. Where this is not possible, disposable cuffs shall be used to cover the gap.

9.32 The outer set of gloves shall either be changed or cleaned using a validated method for the effective removal of DNA, whenever they come into contact with a potentially contaminated surface, for example, a door handle, chair, stationery, or when retrieving items from the floor.

9.33 Outer gloves shall be changed or cleaned between the handling of different items.

Face masks

9.34 When examining exhibits, face masks (N95) shall be worn that are properly tied and adjusted to cover the nose and mouth.

9.35 Touching the mask with gloved hands shall be avoided. If it is necessary to adjust the mask then the outer gloves shall be changed or cleaned.

Hair cover

9.36 Disposable mob caps or similar hair cover shall be worn entirely covering the head hair within the drying facility.

9.37 Where necessary, for example with bearded individuals, additional hair cover (snoods) shall be used to ensure that all facial hair is covered when used in conjunction with the face mask.

Gowning procedure

9.38 Ideally the gowning/disrobing procedure shall be undertaken in a lobby area or designated area proximal to the entrance/exit of the drying facility.

9.39 Gowning-up should be undertaken in an appropriate sequence, in line with the anti-contamination strategy an example of which is the following:

(a) On entering lobby/room/designated area, immediately put on a face mask (and beard snood where required). Do not talk at all until the mask is securely fitted.

(b) Then put on a mob cap and ensure that all hair is secure within the cap.

(c) Next put on goggles or any other appropriate eye protection.

(d) Then put on the first pair of gloves.

(e) Then put on disposable laboratory coat or scene suit.

(f) Then put on overshoes; and finally

(g) Put on the second pair of gloves.

10.0 Contamination detection measures.

10.1 It is recognized that even when all practicable precautions are taken to minimize the risk of contamination, incidents will still inevitably occur. The primary vectors for contamination transfer are personnel, equipment and consumables.

10.2 In the majority of circumstances there is no requirement to retain PPE/barrier clothing following a scene examination. However, consideration must be given to retain PPE/clothing where there has been the potential of any cross contamination during the examination. This should be applied to both the PPE worn by the scene examiners as well as clothing/footwear worn by the emergency responders/ police officers etc. Where the decision is made to retain the PPE/Clothing it should be rationalized and fully documented.

10.3 Consumables that have been manufactured specifically to minimize the presence of DNA contamination should be used; manufacturers who are compliant with ISO 18385:2015 are required to generate and retain DNA profiles from manufacturing and assembly staff who are at risk of contaminating products so that comparisons may be performed against these profiles to check for potential contamination.

10.4 All individuals entering the scene shall be recorded in the scene log. From a contamination perspective, these fall into the following two categories.

(a) All law enforcement staff whose roles routinely entail scene attendance and are therefore categorized as at high risk of contaminating material with their own DNA. This requires profiles from these individuals to be held on a contamination elimination database (CED), and these are routinely screened against each crime stain profile relevant to their police service or area prior to the crime stain profile being loaded on to the National DNA Database or reported in a particular case. All police personnel whose roles are categorized as a high contamination risk shall be included on the CED.

(b) Other individuals whose roles do not include routine attendance at scenes, (for example, first officer attending) and non-police personnel (for example, personnel from other emergency services) are not included on the CED and therefore not routinely screened against crime stain profiles for potential contamination events. These individuals may pose an even higher risk of contamination at a particular scene than the previous category. A first officer attending (First Responding Officer) will not be wearing PPE/ barrier clothing, may have only basic forensic awareness training and their first priority is to deal with the immediate situation rather than contamination avoidance. Where contamination is suspected, then these individuals may be required to provide a sample for profiling and comparison for elimination purposes as a one-off exercise.

10.5 No individual should be permitted to enter the controlled scene of crime unless they consent to being compared against crime stain profiles for potential contamination, where this is deemed necessary.

11.0 Management oversight and continuous improvement.

11.1 There shall be governance and oversight by the senior management of respective law enforcement, and other agencies undertaking scene recovery of DNA evidence, with regard to contamination avoidance, monitoring and detection, as described in this guidance, including the drying and temporary storage of items. This shall include a Crime Scene In-charge with appropriate technical knowledge having responsibility for;

(a) assessment and review of contamination, including responsibility for undertaking investigations into contamination events to identify the root cause, potential of other cases being contaminated, and for escalating contamination issues to senior management where required;

(b) maintaining a log of contamination events and periodically reviewing these to identify trends and potential for further anti-contamination measures as part of an overall continuous improvement process;

(c) ensuring that the competence of staff is maintained and demonstrated through a formalized and effective competence management system; and

(d) reviewing environmental monitoring results for drying cabinets to determine the ongoing efficacy of decontamination procedures.

11.2 Reviews assessing contamination trends shall be made available to the National Forensic Authority to enable overall trends within the industry to be monitored.

11.3 There should be good communication with staff and staff ownership of contamination issues. Improvement at the team/unit level should also be encouraged with regular feedback on performance, including notification of contamination events, plus trends in contamination incidents, with a view to continuous improvement in performance.

Gazette Notice No. 190 of 2024 [0900697/2

Republic of Zambia

Ministry Of Home Affairs And Internal Security
National Forensic Authority

Performance Standards And Guidelines For Forensic Pathology In Zambia

Foreword

The Medicolegal Death Investigation system is responsible for conducting death investigations and certifying the cause and manner of unnatural and unexplained deaths. In Zambia, an average of 4000 forensic postmortems are conducted annually representing approximately 90% of all deaths that are notified to the Coroner and Zambia Police Service. Thus, the practice of Forensic Pathology plays a pivotal role in the medicolegal investigation of death and ultimately in the carriage of justice in the country.

I am therefore pleased to endorse the Performance Standards and Guidelines on Forensic Pathology in Zambia. These guidelines, promulgated by the National Forensic Authority, should enable the forensic medical practitioners who are listed under the Office State Forensic Pathologist to conduct the medicolegally authorized postmortems in a consistent manner and to a high professional standard. The guidelines are systematically developed statements to assist the decisions of practitioners and are based on the best available evidence. Further, guidance is provided on the effective collaboration between the forensic medical practitioners and officers from the Zambia Police Service in the investigation of death.

I would like to take this opportunity to acknowledge the National Forensic Authority and all the stakeholders who participated in the development of the guidelines. In the long term, it is the expected goal that each of the participants within the death investigation process will meet these established professional standards and their obligation to fulfill their responsibilities in a competent and professional manner.

HON. J. J. MWIIMBU, MP,
Minister of Home Affairs and Internal Security

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Terms and Definitions

Cause of Death

The underlying disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury.

Coroner

A Coroner is either (a) a sitting magistrate of a Subordinate Court or (b) a fit person appointed by the Judicial Service Commission in Zambia. Coroners are mandated to hold inquests in cases that are sudden and unexpected or unnatural. They are also authorized to direct medical practitioners to conduct a forensic post-mortem examination to investigate the circumstances of the person's death.

Coroner's Inquest

An inquest is a hearing into a death to determine; (a) the identity of the deceased, (b) how, when, and where the deceased died, (c) persons to be charged with the death of the deceased, and (d) any other particulars required by law.

Forensic Pathology

A field of forensic science that is case-based, research-oriented, and a science-based endeavour to study traces through their detection, recognition, recovery, examination, and interpretation in the medicolegal investigation of sudden and unexpected deaths from all causes.

Forensic Post-mortem Examination

A Post-mortem Examination performed pursuant to statute under the order of a coroner.

"Listed Forensic Medical Practitioner"

A medical officer listed to conduct FPEs in Zambia as per National Forensic Act.

Manner of Death

A system for classifying deaths based on the presence or absence of intent to harm and the presence or absence of violence, the purpose of which is to guide vital statistics nosologists to the correct external causation code in the International Classification of Diseases. The manners of death include; natural, accident, homicide, suicide, and undetermined.

Medicolegal death

A death that is sudden, unexpected or violent (unnatural) in which the Police or Coroner has an interest.

Post-mortem Examination

An examination and dissection of a dead body by a physician to determine the cause, mechanism, or manner of death, or the seat of disease, confirming the clinical diagnosis, obtaining specimens for specialized testing, retrieving physical evidence, identifying the deceased, or educating medical professionals and students.

'**Scene**' -Place that is subject to and/or requires forensic examination.

Abbreviations/Acronyms

CJS	Criminal Justice System
TWG	Technical Working Group
NFA	National Forensic Authority
OSFP	Office of the State Forensic Pathologist
PATHAZ	Pathologists' Association of Zambia
NFSBD	National Forensic Science and Biometrics Department
LFMP	Listed Forensic Medical Practitioners
JSC	Judicial Service Commission
FPE	Forensic Post-mortem Examination

1.0 Introduction

The Guidelines and Performance Standards were developed by a Technical Working Group (TWG) constituted by the Executive Director of the National Forensic Authority (NFA). The TWG consisted of officers from the National Forensic Authority (NFA), the Office of the State Forensic Pathologist (OSFP), and the National Forensic Science and Biometrics Department (NFSBD).

The objective of the Guidelines and Performance Standards is to enable Forensic Pathology Service Providers demonstrate high standards of professional performance using valid and acceptable criteria in Zambia.

The Guidelines and Performance Standards are built upon the Forensic Autopsy Performance Standards issued by the National Association of Medical Examiners (NAME) 2020, Forensic Pathology - Code of Practice and Performance Standards in New South Wales 2012, and the Code of practice and performance standards for forensic pathology in England, Wales and Northern Ireland 2022.

The Guidelines and Performance Standards are divided into sections, each dealing with a specific aspect of the activity of the Listed Forensic Medical Practitioners (LFMP). Each section begins with a statement of the standard of practice expected of the LFMP. All LFMPs will be expected to display competencies derived from these Guidelines and Performance Standards. The Guidelines and Performance Standards expand, where necessary, upon how these Guidelines and Performance Standards should be maintained during FPE.

1.1 Organization of Death Investigation System in Zambia

Zambia uses Coroners system of Medico-Legal Death Investigation under the Inquests Act, 1939. The Coroner orders a post-mortem examination and holds inquests as required.

The Zambia Police initiates the MLDI process by completing the Brought-In-Dead (BID) Certificate for community deaths. The OSFP conducts the medical aspect of the death investigation.

1.2 Scope

These Guidelines and Performance Standards set out what is expected of the LFMP in the performance of MLDI. They provide a framework within which clinical audit and performance review can be carried out to assure the quality of performance of individual LFMPs, as well as to facilitate the collection of evidence for the revalidation process.

The Guidelines and Performance Standards are directed to LFMPs. All LFMPs, regardless of their engagement in forensic pathology service provision, share the same duty to the Criminal Justice System.

1.3 Importance of the Performance Standards and Guidelines

The purpose of the Performance Standards and Guidelines is to provide reasonable and practical guidelines for the practice of FPEs for all LFMPs who are ordered to perform FPEs. The LFMPs MUST carefully consider their competence level to conduct an FPE and realise that this competence may vary depending on the circumstances of the death. In addition, it is intended that these Performance Standards and Guidelines will enable all LFMPs to demonstrate high standards of professional performance using valid and acceptable criteria. The state of the body balances the applicability of a Performance Standard and Guidelines in a specific case (e.g., decomposition), information known at the time of the FPE, and professional judgment.

The Performance Standards and Guidelines are not designed to inhibit professional autonomy but are intended to;

(a) ensure completeness of the FPE,

(b) minimize non-reviewable errors at FPE,

(c) ensure appropriate samples are collected at FPE and,

(d) ensure appropriate ancillary testing is performed after FPE.

Adherence to the Performance Standards and Guidelines is an essential requirement of being maintained as an LFMP.

1.4 Investigation of medicolegal deaths

The objectives of a medicolegal examination of a body are;

(a) to determine the cause of death

(b) to determine the circumstances (manner) of death

(c) to document all relevant findings

(d) to determine or to exclude other factors that may have contributed to the death

(e) to collect trace evidence from the body in police cases

(f) to positively identify the body

(g) In addition, the LFMP may subsequently be called upon to:

(i) testify in court to the findings

(ii) interpret their significance, how they occurred, and the nature of the weapon used (if any)

(iii) estimate time of death

1.5 The duties and responsibilities of the LFMP

(a) Maintain personal expertise: Expertise is a product of education, training, and experience. LFMPs must keep up to date with the latest methods and information

(b) Maintain standards: LFMPs MUST use documented procedures (as detailed in the Practice Manual for Medicolegal Death Investigations (MLDI)) and participate in appropriate schemes of peer review and audit.

(c) Maintain integrity of evidence: LFMPs MUST ensure and maintain the integrity of evidence in order not to compromise investigations. They must also provide a professionally independent and unbiased opinion on the cause and circumstances of death, and other medicolegally relevant issues.

(d) Maintain duty to the court: The LFMP has a duty to the court to give expert evidence.

(e) Maintain an understanding of the laws governing MLDI: The LFMPs MUST be conversant with the Inquests Act Chapter 36 of the Laws of Zambia 1939, National Forensic Act No.2, 2020, and other supporting legislation.

(f) Maintain Service Provision: LFMPs MUST;

(a) attend or assess scenes either before, during or after the FPE,

(b) perform the FPE as directed by the order for postmortem,

(c) obtain the assistance of any person or persons in performing the FPE and,

(d) in conducting any other examinations and analyses, seek any institution or person other than a coroner to conduct other examinations and investigations that are appropriate in the circumstances.

1.6 Professional Standards in Forensic Pathology

1.6.1 Introduction

The Health Professional Council of Zambia (HPCZ) is responsible for registering and licensing Medical Officers (MO). The LFMP is an MO bound by the principles that govern good medical practice despite having additional responsibilities in MLDI. The Performance Standards and Guidelines form the base against which should be judged every action taken by an LFMP.

The NFA is mandated by the National Forensic Act No. 2 2020 to set the Performance Standards and Guidelines that underpin high-quality forensic pathology service provision. The Authority ensures that the minimum standards are adhered to, and is mandated to investigate any reported misconduct or miscarriage of justice by any forensic service provider in line with offences committed under the Act. The LFMPs MUST, therefore, ensure that their work is of high quality and demonstrates a commitment to transparency and accountability.

1.6.2 Code of Ethics for LFMPs

LFMPs MUST practice MLDI according to the following principles:

(a) Avoid any misrepresentation of training, experience, or area of expertise.

(b) Limit professional opinions to their recognised areas of expertise.

(c) Avoid any material misrepresentation of data upon which an expert opinion is based.

(d) Follow the MLDI laws, Performance Standards and Guidelines, that are in place.

(e) Be independent scientific agents who MUST tell the truth and strive to leave a truthful impression.

(f) Avoid issuing misleading or inaccurate claims.

(g) Communicate effectively and truthfully with the decedent's next-of-kin, police, and the coroner on the cause and circumstances surrounding the death.

(h) Disclose potential areas of interest.

1.6.3 Quality Assurance for MLDI

1.6.3.1 LFMPs' list

The OSFP maintains a list of MOs who can conduct FPEs approved by the National Forensic Authority.

Only MOs on the list are eligible to perform FPEs. The list is a public document, which is published by the National Forensic Authority. This list provides information to the CJS as to which MOs are AUTHORISED to conduct FPEs.

The LFMPs are classified as follows based on the type of post-mortem examinations they should perform:

(i) Class I consists of Forensic Pathologists and Anatomic Pathologists with at least three years' experience in forensic pathology. These are allowed conduct all FPEs.

(ii) Class II consists of Anatomical Pathologists with less than three years' experience in forensic pathology. These are allowed to conduct homicides, accidents, suicides, maternal deaths and natural deaths, with the exception of all deaths in custody, paediatric homicides, skeletonized remains, charred bodies and post-mortem examination of exhumed remains.

(iii) Class III consists LFMPs undergoing training in anatomical or forensic pathology. These are allowed to conduct all FPEs under the direct supervision of a consultant forensic pathologist, but are not allowed to testify in court

(iv) Class IV consists of non-pathologist LFMPs. These are allowed to conduct road traffic accidents, uncontested suicides and any other cases as guided by the OSFP.

1.6.3.2 Performance Standards and Guidelines

The LFMP uses these Performance Standards and Guidelines in medicolegal cases to demonstrate a commitment to a uniform approach to the quality of FPEs.

1.6.3.3 FPE Record (FPER)

Immediately following the FPEs, the LFMP MUST submit a completed FPE Record (FPER) to the OSFP providing information, including the preliminary cause of death, as given to police.

1.6.3.4 Peer review of post-mortem examination reports

All post-mortem examination reports on homicides, criminally suspicious deaths, and deaths in custody are to be subjected to peer review before the report's release to the police.

The originating LFMP must submit all materials that will allow for an effective review of the case by the peer-reviewing practitioner. The minimum requirement is the post-mortem examination report, history and circumstances as provided by the police, informant(s), district secretary viz. scene, post-mortem images, and ancillary study reports (e.g., toxicology, histology).

The LFMP who performed the post-mortem examination is responsible for the post-mortem examination report and provides testimony on the case. The peer reviewer is not a substitute expert witness for the LFMP who performed the post-mortem examination report. The completed peer review form and the existence of a review by the SFP or designate are disclosable to the CJS.

1.6.3.5 Submission of final Reports of FPE

A copy of the final reports of FPEMUST be provided to the OSFP.

1.6.4 Postmortem examination facilities

The LFMPs MUST only perform forensic post-mortem examination in facilities that have been licensed by the Authority.

1.6.5 Record-keeping

The maintenance of adequate records is vital, and whole notes must be kept of briefings and conferences, as well as all work carried out, tests performed, and results obtained.

2.0 Medicolegal Deaths

2.1 Performance Standard

Medicolegal deaths provoke public interest, raise questions, or produce mistrust of the rule of law. Performing FPE protects the public interest and provides the information necessary to address publicsafety issues.

2.2 Guidelines

The following are the categories of medicolegal deaths that MUST be investigated:

(a) deaths due to violence.

(b) known or suspected non-natural deaths.

(c) unexpected or unexplained deaths when in apparent good health.

(d) unexpected or unexplained deaths of infants and children.

(e) deaths occurring under unusual or suspicious circumstances.

(f) deaths of persons in Police Service and Correction Service custody or any other lawful custody.

(g) deaths known or suspected to be caused by diseases constituting a threat to public health.

(h) deaths of persons not under the care of a physician.

(i) death associated with police action.

(j) death due to acute workplace injury.

(k) death caused by apparent electrocution.

(l) deaths caused by lightning

(m) death by apparent intoxication by alcohol, drugs, or poison.

(n) death caused by witnessed or suspected drowning.

(o) unidentified body.

(p) skeletonized human remains.

(q) charred body.

(r) body recovered in a mass disaster

(s) deaths caused by human animal conflict

3.0 Initial contact with the LFMP

3.1 Performance Standard

The LFMP MUST be readily accessible to the Police and the Coroner. At the initial contact with the Attending Police Officer, the LFMP MUST determine:

(a) that the coroner has been notified of the death and has ordered the FPE,

(b) the nature of the case and, if known, medicolegal issues raised by it,

(c) whether the case raises any issues of conflict of interest,

(d) the requirement for attendance of the LFMP at the scene of discovery of the body when required, and

(e) discussion of these issues must be fully documented by the LFMP, with relevant dates and times and handed over to the OSFP.

3.2 Guidelines

(a) It is the responsibility of the OSFP to ensure that the LFMP is available when contacted by the Police or the Coroner.

(b) The Police MUST initiate contact with the LFMP.

(c) The LFMP should be alert to the issues of conflict of interest, should there any doubt the LFMP MUST contact SFP or designate.

4.0 The briefing

4.1 Performance Standard

The LFMP MUST consult the Attending Police Officer before attending the scene, during the briefing, the LFMP will, in liaison with the Attending Police Officer, and other experts present, and in the light of available information, determine;

(a) health and safety issues in relation to the scene of discovery of the body and the personnel involved in the examination of that scene,

(b) evidential issues are raised by the circumstances of death, and how these issues are best approached,

(c) risks of contamination are posed by the circumstances of the case and what measures are required to prevent such contamination, and

(d) the plan of approach to the examination of the scene and body.

4.2 Guidelines

(a) The LFMP MUST ensure that they obtain such details of the history and circumstances of the death.

(b) The brief MUST be conducted by the Attending Police Officer.

(c) The briefing MUST be conducted before the LFMP carries out any examination of the body or the scene of the of discovery of the body.

(d) The LFMP must record any briefing given to them in sufficient detail.

5.0 Scene of Discovery of a Dead Body

5.1 Performance Standard

It is recognised that with advances in forensic scientific examination at scenes, scene examination may have competing aspects. Thus, Police and the OSFP MUST seek specialised assistance from the NFSBD where necessary.

The body MUST not be touched or moved before consulting the OSFP to avoid loss of cardinal evidential data relevant to medicolegal death investigation. The LFMP should attend the scene where such attendance is likely to benefit the medicolegal death investigation. The LFMP may attend the scene even after the body has been moved in order to gather additional data. The LFMP may review photographs and/or video recordings to opine even when not present at the scene.

5.2 Guidelines

(a) The Attending Police Officer MUST NOT touch the body before consulting the LFMP.

(b) The LFMP MUST attend the scene where such attendance is likely to benefit the investigation.

(c) The LFMP may attend the scene retrospectively.

(d) The Police and the OSFP may consult the NFSBD at any stage of investigation.

(e) The LFMP may at times make opinions based on a review of the scene photographs or video recordings.

6.0 Conduct at the scene

6.1 Performance Standard

The scene is under the control of the Police. The LFMP's approach to the body and the examination of other aspects of the scene MUST be undertaken in consultation with the Police. Such discussions must include routes of access to the scene and the prevention of contamination and destruction of evidence.

The LFMP MUST always record their actions and observations at the scene using comprehensive writing, including sketch plans where appropriate. These records may be needed during the report preparation and when giving evidence in court.

Except where the body has been exposed to fire or is decomposed or skeletal, recording the ambient temperature and, if possible (given the body's position), the body's deep temperature will generally be taken. However, it is recognised that the latter is invasive and may interfere with collecting other, potentially more important evidence at the scene. The LFMP MUST be able to justify the lack of taking of a body temperature if the scene was attended.

6.2 Guidelines

(a) The scene of discovery of the body is under the custody of the police.

(b) Prior to or on arrival at the scene, the FRO, the CIO or designate MUST brief the LFMP on the circumstances surrounding the death.

(c) The LFMP and the CIO or designate MUST consult the NFSBD where necessary.

(d) LFMP MUST record the circumstances surrounding the death given at this briefing.

(e) The LFMP's approach to the body and the examination of other aspects of the scene MUST be undertaken in consultation with the police and relevant specialised offers from the NFSBD.

(f) The LFMP MUST record their actions and observations at the scene.

(g) The ambient temperature and, if possible (given the body's position), the body's deep temperature MUST be taken.

7.0 Other aspects of management of the scene of discovery of a body

7.1 Performance Standard

Detailed examination of the scene of discovery of the body will be undertaken by specialised Departments and/or Units Police and/or the NFSBD. However, the LFMP may be required to inspect other aspects of the scene and note the findings.

It may be appropriate for the LFMP and specialised officers from the Police and/or NFSBD jointly to examine the scene, including features such as the distribution and appearance of any bloodstains.

7.2 Guidelines

(a) The LFMP may be required to inspect other aspects of the scene and note the findings.

(b.) The LFMP and specialised officers from the Police and/or NFSBD may jointly examine the scene.

8.0 Forensic Postmortem Examination

8.1 Attendance at Postmortem

8.1.1 Performance Standard

Attendance at the FPE is limited to technical staff, coroners, and investigators from relevant agencies. No one should be present merely as a casual observer, not even senior police officers who are not directly involved in the investigation.

Authority to deviate from this standard MUST be obtained from the OSFP. The family may request the OSFP in writing with reason that other individuals attend an FPE. The OSFP reserves the right accept or deny the request.

8.1.2 Guidelines

Attendance at the FPE is limited to technical staff, coroners, and investigators from relevant agencies.

8.2 Identification

8.2.1 Performance Standard

Identification of the body MUST be established by the Investigating Police Officer. If identification cannot be established by the Investigating Police Officer, it must be facilitated through the OSFP.

8.2.2 Guidelines

(a) Identification of the body MUST be established by the Investigating Police Officer.

(b) Identification must be established before the body is released to the next of kin.

8.3 Continuity

8.3.1 Performance Standard

Continuity of the body confirms that the post-mortem examination is being done on the correct body. The continuity of the body must be confirmed by the LFMP, who must be satisfied before starting the examination that the body is the one referred to in the Coroner's Order for Postmortem.

Continuity can be confirmed by such means as a Brought in Dead Certificate, or the body may be directly identified to the LFMP by the relatives, police, or another authorized person. If the LFMP is not satisfied, they MUST not proceed with the FPE and are required consult the OSFP.

8.3.2 Guidelines

(a) The continuity of the body must be confirmed by the LFMP.

(b) If the LFMP is not satisfied, they MUST not proceed with the FPE and are required consult the OSFP.

(c) The FPE report MUST indicate how continuity was achieved.

8.4 The Postmortem Examination

8.4.1 Performance Standard

The performance of an FPE involves close teamwork between the LFMP and the investigating police officers.The LFMP MUST establish and objectively identify, recover, preserve, and transmit evidentiary material found on the body.

The objective of an FPE is to identify the body, determine the cause and manner of death, and in some instances estimate the time since death by integrating;

(a) history,

(b) circumstances surrounding the death,

(c) scene photograph findings if available,

(d) postmortem findings, and

(e) ancillary study findings.

8.4.2 Guidelines

(a) The LFMP MUST work collaboratively with investigating police officer.

(b) The LFMP MUST make opinions independent of the investigating police officer.

(c) The LFMP MUST establish and objectively identify, recover, preserve, and transmit evidentiary material found on the body.

8.5 Collection, handling and preserving trace evidence from the Body

8.5.1 Performance Standard

Suspicious and violent deaths may become the subject of either a criminal or civil investigation.

Modern forensic science techniques, are sensitive and sophisticated, therefore, any material related to such cases that may require forensic science analysis MUST be handled in such a manner as to avoid loss, contamination and damage.

8.5.2 Guideline

The LFMP MUST ensure that evidence from the body is identified, collected, preserved/packaged, and handed over to the investigating police officer.

8.6 Involvement of other Specialists

8.6.1 Performance Standard

The LFMP MUST seek specialist involvement in FPE when they encounter cases that require the input of other specialists such as;

(a) forensic entomology,

(b) forensic anthropology,

(c) forensic odontology

(d) paediatric pathologist, and

(e) neuropathologist.

8.6.2 Guideline

The LFMP MUST seek specialist involvement in FPE as need arises.

8.7 Forensic Postmortem Notes

8.7.1 Performance Standard

Comprehensive contemporaneous notes are essential and MUST be taken of every procedure undertaken in order to aid the LFMP author the FPE report. Notes should be accompanied by diagrams and/ or photographs. Notes must include the time, date and place of FPE and the names of personnel participating in the FPE. These notes MUST be retained and may be required for peer review, or audit.

8.7.2 Guidelines

(a) The LFMP MUST make comprehensive contemporaneous notes of the FPEand submitted to the OSFP

8.8 Collection and submission of Toxicology Samples

8.8.1 Performance Standard

Toxicology testing is not required for all cases and should only be requested if required for determining the cause of death or a pertinent medicolegal issue. The samples must include;

(a) heart blood,

(b) peripheral blood, and

(c) urine.

Other samples, including liver **(if blood is absent)** or stomach contents, may be collected at the LFMPs discretion.

Toxicology testing is performed using the following categories:

(a) Poisoning cases

Includes organophosphates, herbal medications, poisonous gases and other poisons

(b) Alcohol only.

Includes: ethanol, methanol, acetone, and other volatile substances in an ethanol intoxication-related death.

(c) *Exclusionary toxicology*

Required to exclude drugs/alcohol as a contributory factor to death.

Toxicology samples should be submitted as soon as possible with sufficient information to permit the forensic toxicologist to decide on the type and scope of laboratory testing. Information required on the submission form includes the clinical history (or investigative background).

8.8.2 Guidelines

Toxicology testing MUST be requested at the discretion of the LFMP as circumstances demand.

8.9 Retention of material after Postmortem Examination

8.9.1 Performance Standard

Unnecessary or ill-considered retention of material removed at FPE has caused considerable distress to bereaved relatives. The LFMP MUST carefully consider whether material needs to be retained and for what purpose.

Any retention of organs must be authorized by the OSFP.

It is important that at the time of the postmortem examination the LFMP documents whatever material is to be retained and informs the SFP. It is important to list retained materials in the autopsy report and/or the case record.

8.9.2 Guideline

(a) The retention of organs at FPE MUST be authorized by the OSFP. The LFMPs MUST list the retained materials in the FPE report.

8.10 Interpretation and Opinions

8.10.1 Performance Standard

Interpretations and opinions must be formulated only after a consideration of history, circumstances surrounding the death, scene findings, findings at FPE, and necessary ancillary studies.

8.10.2 Guidelines

The LFMP MUST integrate the Police investigative reports, available medical records, medications (where applicable), and scene findings, FPE findings, and ancillary study results in formulation of the opinion on the Cause and Manner of death.

9.0 The Forensic Postmortem Examination Report

9.1 Format of FPE report

9.1.1 Performance Standard

The standard sets out what must be included for the production of scientifically valid and impartial reports which are appropriate for use within the criminal justice system. The FPE report MUST have the necessary components including case details, case history and circumstances, FPE findings, ancillary study results, opinion of the cause and manner of death in line with the World Health Organisation.

9.1.2 Guidelines

The LFMP MUST produce an FPE report that will record:

(a) the demographic details of the deceased,

(b) the history and circumstances the LFMP received in advance of the FPE,

(c) FPE findings,

(d) all investigations made either personally or by submission to a laboratory for report,

(e) all samples that have been retained by the LFMP and

(f) summary and opinion.

9.2 Submission of the FPE Report

9.2.1 Performance Standard

The report shall be submitted to the Police as soon as is practically possible. If there is to be a significant hold-up, the reasons for this should be given and explained. Normally, delays should only be those occasioned by the need for time-consuming special investigations, such as toxicology, neuropathology or cardiac pathology. Histology should not be a reason for significant postponement of a final FPE report.

9.2.2 Guideline

(a) The LFMP MUST submit the FPE report to the Police within 90 days of receiving the Coroner Order for Postmortem Examination.

(b) The LFMP MUST give an explanation for issuing the FPE report outside the 90-day period.

9.3 Amendment of FPE Report

9.3.1 Performance Standard

Where an LFMP wishes to amend an FPE report, the reasons should be clearly stated in the amended report.

9.3.2 Guideline

The LFMP MUST clearly state that the report has been amended and reason for the amendment.

10.0 Pre-trial

10.0.1 Performance Standard

The LFMP shall attend pre-trial with the party that calls them. During this meeting the LFMP will explain all findings and their interpretation in the context of the case.

10.0.2 Guidelines

(a) The LFMP MUST available for pre-trial when called upon.

(b) The LFMP MUST seek feedback to determine whether those involved understand the outcomes of the pre-trial.

11.0 Attendance at court

11.0.1 Performance Standard

LFMPs shall ensure that they are appropriately prepared prior to attending court to give evidence. The evidence given shall be objective and fairly presented and attention drawn to any areas of speculation. Proper and objective consideration will be given to any interpretations or conclusions fairly raised by the defence, particularly if they are supported by their own expert opinion.

The role of the LFMP is not to provide evidence that supports the case for the Prosecution or for the defence. Opinions must be objectively reached and have scientific validity. The evidence on which that opinion is based must also be available.

Facts may emerge during the course of an investigation, sometimes even during the course of the trial, which may make the LFMP modify a previously held opinion. The LFMP has a duty to give any new facts due consideration and ensure that his or her evidence remains objective and valid. If previously held conclusions can no longer be substantiated, any change of opinion must be clearly stated.

11.0.2 Guidelines

(a) The LFMP MUST ensure that they are well prepared prior to attendance at court to give evidence.

(b) The LFMP MUST ensure that appearance and behaviour conform to acceptable professional standards and court etiquette.

(c) The LFMP MUST deliver evidence in an audible and understandable manner.

(d) The LFMP MUST deal with questions truthfully, objectively, and impartially.

(e) The LFMP MUST give answers to technical questions in a manner understandable by those who have no technical or scientific training, without losing the scientific meaning.

(f) The LFMP MUST where it appears that a lawyer has misunderstood or is misstating evidence, ensure that the court is made aware of that misunderstanding or misstatement.

Printed and Published by the Government Printer, P.O. Box 30136, 10101 Lusaka