SRI LANKA ACCREDITATION BOARD

For CONFORMITY ASSESSMENT

DRAFT SPECIFIC CRITERIA FOR

FORENSIC TESTING LABORATORIES

AMENDMENT SHEET

Date	Doc No	Page/ Section	Description of Change	Revision No	Approval

ABBREVIATIONS

CRM	-	Certified Reference Materials
QC	-	Quality Control
RM	-	Reference Materials
SLAB	-	Sri Lanka Accreditation Board for Conformity Assessment

CONTENTS

1. INTRODUCTION

1.1. The requirements for accreditation are laid down in the International Standard ISO/IEC 17025: General requirements for the competence of calibration and testing laboratories. These requirements apply to all types of objective testing but in certain instances additional guidance is necessary to take account of the type of testing and the technologies involved.

1.2. This document has been prepared by the Expert Committee on Forensic Testing and authorized for adoption by the Council of Sri Lanka Accreditation Board (SLAB). It supplements ISO/ IEC 17025 standard and provides specific guidance on the accreditation of forensic testing laboratories for use by assessors and by laboratories preparing for accreditation. It gives detailed guidance for those undertaking qualitative and quantitative examination of the composition, nature and properties of materials, products and substances.

1.3. In the preparation of this document, ILAC-G19:08/2014 - Modules in a Forensic Science Process and NABL 113 - Specific Guidelines *for* Accreditation of Forensic Science Laboratories and Checklist for Assessors has been used extensively.

1.4. This document covers the application of the ISO/ IEC 17025 for accreditation of chemical testing laboratories, applicable to products groups as given in Appendix A. This document should be read in conjunction with the Rules and Procedures of SLAB.

2. SCOPE

Forensic Science refers to application of science to criminal investigations and in administration of justice. It includes investigation and/or examination of crime scene, recovery of evidence, laboratory examination, interpretation of findings and presentation of the conclusions in administration of justice including courts or for intelligence purposes.

The scope of accreditation of SLAB is applicable to the following disciplines/areas of activity in the Forensic Science Laboratories

1. Crime Scene Investigation
2. Digital Forensics (Audio, Video, Biometrics and Computer analysis)
3. DNA Analysis
4. Explosives
5. Fingerprints
6. Marks and Impressions
7. Fire investigations
8. Firearms and Ballistics
9. Forensic medicine and pathology
    a. Clinical forensic medicine
    b. Forensic Histopathology
    c. Forensic anthropology and Odontology
10. Forensic Psychology
11. Forensic entomology
12. Forensic Toxicology
13. Narcotics and Psychotropic substances
14. Handwriting and Questioned Documents
15. Forensic Serology
16. Forensic trace evidence analysis
17. Accident investigations
18. Forensic miscellaneous

Accreditation in additional disciplines may be offered in future as per requirement.

3. NORMATIVE REFERENCES

- ISO/IEC 17025 – General requirements for the competency of testing and calibration laboratories
- ILAC-G19:08/2014 - Modules in a Forensic Science Process
- NABL 113 - Specific Guidelines *For* Accreditation of Forensic Science Laboratories and Checklist for Assessors

4. TERMS AND DEFINITIONS

4.1. **Competence**

Competence is the demonstrated ability to apply knowledge and skills and, where relevant, demonstrated personal attributes.

4.2. **Contamination**

Contamination is the undesirable introduction of substances or trace materials to exhibits at any point within the forensic science process.

4.3. **Contract**

A contract may be any written or oral agreement to provide forensic services.

Note: a contract does not necessarily involve payment for the services and may be mandated by law and may need to be in accordance with local, regional or national legal requirements.

4.4. **Court Statement**

A Court statement is a written document or any other acceptable format of the results and interpretations of forensic tests/examinations submitted to the court. Such reports may be in a format prescribed in legislation and may also be in electronic format. In addition, a copy of the court statement may be submitted to law enforcement investigators, members of the judiciary and other relevant authorities.

4.5. **Critical findings**

Observations and results that have a significant impact on the conclusion reached and the interpretation and opinion provided. In addition, these observations and results cannot be repeated or checked in the absence of the exhibit or sample, and/or could be interpreted differently.

4.6. **Customer**

The customer is normally the organization and/or a person asking the forensic unit to perform all or a specific part of the forensic science process. This also includes the term 'client'. This may be an internal customer. If work is requested via legal mandate (e.g. court order) or if the results of examination/testing are to be provided to a member of the judicial system, then the judicial system may be considered to be the customer.

4.7. **Equipment**

Equipment refers to all tools, instruments, software, reagents and chemicals that are used as part of the forensic science process which need to be monitored and controlled.

4.8. Examination/test
Examination/test has been used in this document to refer to sampling, inspections/ observations, analysis, comparisons, interpretations and opinions.

4.9. Exhibit
An exhibit is an item or sample recovered as part of an investigation. This includes everything recovered in the forensic science process including swabs, whole objects, and debris and may include derived items like casts of footprints, finger mark lifts.
Exhibits may sometimes be referred to as 'evidence'.

4.10. Facility
Facility is any physical environment used to protect the integrity of exhibits, conduct testing, or support any other aspect of the forensic science process, for example, permanent premises, offices, tents, storage area, mobile office, mobile laboratory, vehicles of the forensic unit.

4.11. Forensic unit
A forensic unit is a legal entity or a defined part of a legal entity that performs any part of the forensic science process.

4.12. Impartiality
Actual and perceived presence of objectivity.

Note 1: Objectivity means that conflicts of interest do not exist or are resolved so as not to adversely influence subsequent activities of the forensic unit.

Note 2: Other terms that are useful in conveying the element of impartiality are: objectivity, independence, freedom from conflicts of interest, freedom from bias, lack of prejudice, neutrality, fairness, open-mindedness, even-handedness, detachment, and balance.

4.13. Investigator
A person, however named, trained to perform scene of crime examinations and/or any other related investigations. Other names used for this function are, for example, Scene of Crime Officer (SOCO), Crime Scene Investigator, Scene of Crime investigator and Scene of Crime Examiner.

4.14. Non-conforming examination and testing
Non-conforming examination and testing refers to any aspect of the forensic unit's work, including, scene examination, laboratory examination, sampling, testing, results or expert witness testimony that do not conform to the forensic unit's policies, procedures or the agreed requirements of the customer. Examples are using equipment that is out of specification, misidentifying a drug or incorrectly interpreting a blood pattern.

4.15. Objective Examination / Test

An objective examination/test is an examination/test which, having been documented and validated, is under control so that it can be demonstrated that all appropriately trained staff will obtain the same results within defined limits. These defined limits relate to expressions of degrees of probability as well as numerical values.

Objective examinations/tests will be controlled by:

- documentation of the examination/test
- validation of the examination/test
- training and authorisation of staff
- maintenance of equipment

and where appropriate by:

- calibration of equipment
- use of appropriate reference materials
- provision of guidance for interpretation
- checking of results
- testing of staff proficiency
- recording of equipment/test performance

Visual inspection, qualitative examinations, comparative examinations and computer simulations are included in the definition of objective examination/test. In this document the word examination or test refers to an objective examination or test.

4.16. Reference Collection

Reference collection is a collection of stable materials, substances, objects or artefacts of known properties or origin that may be used in the determination of the properties or origins of unknown items.

4.17. Reference Material

A reference material is a material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

4.18. Sampling

Sampling is a defined process whereby a part of a substance, material or product is taken to provide for testing of a representative sample of the whole. The process should be based on statistically valid techniques, where possible. A sample is a portion drawn from a population for the purpose of examination/testing to determine the attributes of the whole. In forensic science, 'sample' is also used to describe physical objects collected as exhibits, or sub-sets of these. These exhibits may be

collected using criteria other than conventional statistical criteria, for example, samples collected at a scene of crime. In this document the term sampling will be used for both purposes.

In order to identify the samples that need to be taken, and the sequence of performing different sampling, a sampling strategy, sampling plan and sampling procedures are required.

- The sampling strategy is the overall approach to sampling.
- The sampling plan is the method of implementing the sampling strategy.
- The sampling procedure is the method used to retrieve the sample.

4.19. Scene of crime

The term 'scene of crime' is used to identify a scene of incident prior to establishing whether a criminal or illegal action has taken place or not. The scene of crime is not solely restricted to the location of the incident (primary scene of crime), but also includes areas where relevant acts were carried out before or after the incident (secondary scene of crime). In addition to the obvious scenes of crime this may also include accident investigations, suspicious fires, vehicle accidents, terrorist attacks, and disaster victim identification.

Note: The forensic science process is not restricted to situations in which the incident and purpose refer to the investigation of a crime. Other examples include civil litigation, parentage determination, environmental protection and control of gaming and other gambling-related activities.

4.20. Subcontractor

A subcontractor is a legal entity that is not part of the forensic unit and that is contracted to do work for the forensic unit within the subcontractor's own legal entity and under the subcontractor's own management system.

4.21. Referral

A formal process whereby a case or a case material is introduced to additional resources with expertise that is not possessed by the professional concerned or to a qualified professional for in-depth assessment, consultation, review, second opinion and to solve a specific problem or to take further action where necessary.

The professional concerned should give the final opinion on the case considering and analysing the results of referrals.

4.22. Testing

Testing is used in the document when there is an activity including measurements and analytical techniques.

4.23. Validation

Validation is confirmation, through the provision of objective evidence that requirements for a specific intended use or application have been fulfilled.

4.24. Verification

Verification is Confirmation, through the provision of objective evidence that specified requirements have been fulfilled.

5.0. MANAGEMENT REQUIREMENTS

5.1. ORGANIZATION

The requirements of ISO/IEC 17025 clause 4.1 apply.

5.2. MANAGEMENT SYSTEM

The requirements of ISO/IEC 17025 clause 4.2 apply.

Forensic science in administration of Criminal justice requires that intensive measures be undertaken to ensure the overall quality of scientific findings. To accomplish this, a quality system is required to provide laboratory management with continuing confidence that results and conclusions are accurate, impartial and relevant. Forensic science laboratories must, therefore, establish and maintain a quality system that is appropriate for the range of forensic disciplines as well as the types and numbers of examinations that are conducted.

5.3. DOCUMENT CONTROL

The requirements of ISO/IEC 17025 clause 4.3 apply.

The requirements for the accessibility and control of documents apply to permanent facilities and also to all sites or locations where work is performed, e.g. scene of crime.

5.4. REVIEW OF REQUESTS, TENDERS AND CONTRACTS

The requirements of ISO/IEC 17025 clause 4.4 apply.

5.5. SUBCONTRACTING OF TESTS

The requirements of ISO/IEC 17025 clause 4.5 apply.

Any subcontracting/ utilizing the other's facilities is purely/solely the responsibility of the Forensic Science Laboratories and they (FSLs) are legally responsible for the test reports. Subcontracting should be placed with a laboratory complying with ISO/IEC 17025:2005 requirements.

5.6. REFFERAL OF TESTS

Any referral utilizing the other's facilities/specialties is purely/solely the responsibility of the Forensic unit and they are legally responsible for the reports. A register should be maintained of all such referrals.

5.7. PURCHASING SERVICES AND SUPPLIES

The requirements of ISO/IEC 17025 clause 4.6 apply.

The forensic unit shall define and document its policies and procedures for the selection and use of purchased external services, equipment and consumable supplies that affect the quality of its service. There shall be procedures and criteria for inspection, acceptance/rejection and storage of consumable materials, for example, consumables used at the scene, during analysis and personal protective equipment.

Appropriate quality records of external services, supplies and purchased products shall be established and maintained for a period of time, as defined in the management system. This system shall include the recording of lot numbers of all relevant reagents, control materials and calibrators, the date of receipt and the date the material is placed in service.

5.8. SERVICES TO THE CUSTOMER

The requirements of ISO/IEC 17025 clause 4.7 apply.

5.9. COMPLAINTS

The requirements of ISO/IEC 17025 clause 4.8 apply.

Responses to any complaints, appeals or opportunities for improvement shall include examination of the potential impact on any work that has been undertaken by the forensic unit. In the event that it is shown that there could have been an impact on any work this shall be dealt with through the non-conforming work process.

Note: The term "appeal" in this document should not be confused with the use of "appeal" in a legal sense. Appeals and the appeals process in the context of this document is an internal process of the forensic unit whose result is being appealed against. The decision on the appeal remains that of the forensic unit that is being appealed against, and does not require a hearing or decision on the appeal by some external agency or court.

Complaints may be received from many sources including customers, victims of crime, police forces, other departments within the same organization e.g. laboratory, scene of crime unit, law enforcement investigation unit and the judiciary.

In addition, when a court decision is successfully challenged and this reflects on any work performed by the forensic unit this shall be handled through the corrective action process or other improvement processes.

5.10. CONTROL OF NONCONFORMING TESTING AND/OR CALIBRATION WORK

The requirements of ISO/IEC17025 4.9 apply.

Initially the significance of a non-conformity in relation to the validity of examination or test results shall be evaluated and its root cause identified. This shall include thoroughly investigating the

review of casework already reported. The policies and procedures shall ensure that there are designated defined responsibilities for the management of non-conforming work and actions that shall be taken. This may include withdrawing or withholding test reports, informing the customer, halting examination and testing, re-testing or re-examination, modifying the procedures or methods or re-training.

The corrective action once identified and approved shall be implemented promptly. The designated authority shall then decide when work can resume. It is important to ensure that non-conforming work is effectively identified and associated corrective actions are implemented in all relevant areas of the forensic unit.

Where it is found that the forensic unit has issued a report containing non-conforming work that is deemed to significantly affect the result, the customer shall be notified immediately, the work or report recalled (where possible) and additional work or report issued by the forensic unit.

Where it has been identified that the non-conforming work could recur, appropriate corrective action shall be implemented. This shall include the potential review of casework already reported prior to the non-conforming work being identified and implications for other cases and other sections in the forensic unit as well as implications for the forensic unit's own internal policies and procedures.

The non-conforming work and all actions taken shall be recorded.

5.11. IMPROVEMENT

The requirements of ISO/IEC 17025 clause 4.10 apply.

5.12. CORRECTIVE ACTION

The requirements of ISO/IEC 17025 clause 4.11 apply.

5.13. PREVENTIVE ACTION

The requirements of ISO/IEC 17025 clause 4.12 apply.

5.14. CONTROL OF RECORDS

The requirements of ISO/IEC 17025 clause 4.13 apply.

The forensic unit shall have documented procedures to create and maintain records relating to each case under investigation. The information that is to be included in case records shall be documented appropriately and may include, but not be limited to, records of any communication with the customers (verbal or written), contract review, examination and testing requested and agreements with customer, exhibit receipts, descriptions of exhibits including packaging and seals, subpoenas, records of observations and test/examination results, reference to procedures used, diagrams, print-outs, photographs, videos.

The records required to support conclusions shall be such that in the absence of the original member of staff, another competent member of staff could evaluate what had been performed, interpret the data and if necessary repeat the activity.

The records shall be sufficient to provide an auditable trail.

The recording method chosen will depend on the aspect of the forensic science process being carried out at the time. Records can be obtained by e.g. drawing or writing, photocopies, computer, sound recording, voice recording, photographs, video, 3D laser scanning.

In general, records should be made in a permanent manner; for example, handwritten notes should be in permanent ink. Exceptions can be made when environmental conditions prevent the use of ink. In addition it may be appropriate to make diagrams and tracings in pencil, including coloured pencils.

Where technical abbreviations are made in records, these abbreviations should be clearly defined and readily understood.

Database/Register shall be maintained up to date with strict confidentiality, under a designated officer/s with supervision of Head of the Institution.

5.14.1. Case Records

The laboratory must maintain a case record in a designated location under unique case designator, usually a laboratory case number. Administrative and analytical documentation generated by a laboratory on a particular case constitute a case record. The laboratory must have documented policies regarding:

- describing its case designator system and
- detailing the information that is to be included in a case record.

All data and observations and any other analytical or administrative records which support conclusions must be generated and kept by the laboratory. Examples of administrative records include records of case related conversations, evidence receipts, description of evidence, packaging and seals and other pertinent information. Examples of analytical records include reference to procedure(s) followed, test(s) conducted, standards and controls used, diagrams, print outs, autoradiographs, photographs, observations and results of examinations. In general, the records required to support conclusions must be such that in the absence of the analysts/ examiners any competent analyst/examiner or supervisor could evaluate what was done and interpret the data.

Where instrumental analyses are done, operating parameters must be recorded. Instrument charts and graphs on analyses that are batched eg. Blood alcohol determination, drug screening) may be more appropriately kept in a central location as specified in the laboratory's procedure manuals. Where appropriate observations or test results must be preserved by photography (eg. electrophoretic runs, physical matches), photocopies may also be suitable (eg. T.L.C. results questioned documents). When a test result or observation is rejected, the reason(s) must be recorded.

Calculations and manual data transfers must be checked, preferably by a second person. The case record must include an indication that such checks have been performed and by whom.

Each page of every document in the case record must bear the laboratory's unique case identifier and the analyst/examiner's name or initials. Laboratory generated examination records must be paginated using a page numbering system indicating total number of pages. Since case notes and records of observations are subject to summons and/or scrutiny, they must be of a permanent nature. Handwritten notes and observations must be in ink not in pencil. Pencil (including colour) may, however, be appropriate for diagrams or making tracings. Abbreviations are acceptable only if they are readily comprehensible to a reviewer. It must be clear from case record when the work was performed (eg. Relevant date and where appropriate, time).

5.14.2. Evidence Control

The forensic science laboratory must have a documented evidence control system. The control system is effectively designed when it ensures and documents the integrity of physical evidence. A chain of custody record (eg. Signature, date, time, description of evidence) must be maintained which provides a comprehensive history of each evidence transfer, over which the laboratory has control. Each individual item of evidence must be marked with unique case designator for identification. Should the item not lend itself to marking, its proximal container must be marked. Labeling on caps/ lids alone is not acceptable because of the risk of wrongly replacing the lids during batch testing of similar samples.

The identification should be retained throughout the life of the item in the laboratory. The system shall be designed and operated to ensure that items cannot be confused physically or when referred to in records or other documents. Upon receipt of evidence, any abnormalities or departures from normal or specified conditions shall be recorded. When there is any doubt as to the suitability of an item for test or examination or when an item does not conform to the description provided or the test/examination is not specified in sufficient detail, the client shall be consulted for further instructions before proceeding with the case. Evidence must be stored under proper seal, specially

designed and used for protecting so that its contents cannot readily escape or become contaminated. If tapes are used to seal containers must be initialed (or otherwise identified) to record the person sealing the evidence. Evidence must be protected from loss, cross transfer, contamination and/or deleterious change. When destructive tests are necessary, procedures must ensure that as much material as possible is retained for re-analysis, if necessary. Procedures for sub-sampling must ensure that sample integrity is maintained. When items have to be stored under specified environmental conditions, these conditions shall be maintained, monitored and recorded. A secure area for overnight and/or long term storage of evidence must be available. Access to evidence storage areas must be restricted and its access should be limited to the personnel authorized by the Head of the Institution.

5.14.3. Evidence Retention and Disposal

The laboratory must establish and document its policy and procedures for the retention and disposal of exhibits following the completion of examinations and/ or testing.

5.15. INTERNAL AUDITS

The requirements of ISO/IEC clause 4.14 apply.

The internal audit program shall, where relevant, include evidence collection, scene of crime investigation activities, examination/testing activities, interpretation process, and reporting.

The evaluation of the implementation of the forensic unit's procedures shall include direct observation of the examinations and testing undertaken on-site or in the laboratory.

5.15.1. Witnessing Scene of Crime Activities

The forensic unit should have a witnessing program to ensure that the persons working in the organization have the competence required of them.

Factors to be considered when deciding on the approach to be taken to witnessing include, but are not limited to:

- The degree of complexity of a particular scene in order to confirm competence
- Frequency of attendance at different scenes
- Scope of accreditation
- Experience of the personnel
- Frequency at which a suitable scene appears, for example terrorist incidents.

Scenes which are infrequently encountered may require other means by which to confirm competence, e.g. mock incident or other types of simulations. Other activities which take place for the purpose of confirming competence.

The person who performs the witnessing shall have the appropriate competence.
Witnessing should not only cover the procedural part of the work but also go into the depth of the technical competence of the staff and their ability to take relevant decisions at the scene of crime.

5.16. MANAGEMENT REVIEW

The requirements of ISO/IEC clause 4.15 apply.

6. TECHNICAL REQUIREMENTS

6.1. GENERAL

The requirements of ISO/IEC clause 5.1 apply.

6.2. PERSONNEL

The requirements of ISO/IEC clause 5.2 apply.

6.2.1. Competence

The forensic unit shall have a policy that ensures all staff working in the forensic units is competent to perform the work required.

The management system shall define each role in the forensic unit and its limitations and specify requirements for qualifications, training, experience and knowledge for the tasks assigned to each role. Having qualifications, training and experience neither guarantees practical competence nor sound judgement. Therefore, management or responsible persons shall be able to demonstrate with objective evidence that all personnel are competent, by carrying out assessments of their knowledge and skills against defined criteria.

The forensic unit shall ensure that temporary staff are competent and work in accordance with the unit's management system.

In assessing the competence of an individual the forensic unit shall ensure that where appropriate taff have relevant understanding of the technology behind the crime e.g firearms, and the technology used to investigate the crime e.g. fingerprints, DNA profiling, blood pattern analysis. They shall also have sufficient competence and experience to recognize the significance of anything unusual, for example, a staged burglary or altered exhibits.

Training shall follow an up-to-date, defined training program and the assessment of competence shall take place at every level of professional development for the person involved. Where test or technique specific training is given, acceptance criteria shall be assigned to demonstrate the effectiveness of the training e.g. observation of the relevant examinations/tests or analyses by an experienced officer, satisfactory performance in the analysis of quality control/quality assurance samples, correlation of results with those obtained by other trained staff. Where necessary, training programs should also include training in the presentation of evidence in court.

The assessment of competence may take a variety of forms, dependent on the task(s) performed e.g. written and / or oral examinations; practical exercises; or direct observation by a qualified person. In many cases, some combination of competency assessment will be the most appropriate approach.

Each forensic unit shall maintain an up-to-date record of the training that each member of staff has received. These records shall include academic and professional qualifications, external or internal courses attended and relevant training (and retraining, where necessary) received whilst working in the forensic unit. Records shall be sufficiently detailed to provide evidence that each member of staff has been properly trained and that their competence to perform a task or test has been formally assessed. These records should be retained for an appropriate defined period according to the expectations of the customer and / or the legal system.

A procedure shall be in place for introducing employees into the forensic unit, and should define the training and the supervision required. This procedure or process may vary depending on the ability, qualifications and experience of those being trained. An individual's training programme shall be based around their expertise, specialist knowledge and their experience.

The forensic unit shall also have procedures for the on-going training and maintenance of competence, skills and expertise.

When employing staff from another organization (including a forensic unit) their competence shall be verified by the forensic unit.

Additional considerations relating to personnel

A Code of Conduct (however named) for the forensic unit should be in place that addresses ethical behaviour, confidentiality, impartiality, personal safety, relationship with other members of the forensic unit and any other issues needed to ensure appropriate conduct of all staff. The Code of Conduct should also be applicable to all personnel, permanent, temporary and contract personnel.

6.2.2. Minimum Qualification Criteria

Technical Management of Forensic Science laboratories must have relevant scientific qualifications and appropriate forensic experience.

6.2.2.1. Laboratory Director

The laboratory Director is defined as the person with direct operational control of the laboratory. He/she must have at least postgraduate degree in the relevant field and desirable to have additional qualifications in management and administration with sufficient experience. He/she must be knowledgeable of the scientific functions and forensic aspects of the laboratory's work, preferably through experience as a forensic scientist. Where the forensic science laboratory is a part of the parent organization, the Laboratory Director does not necessarily have to be the Director or the parent organization.

6.2.2.2. Reporting Officers

The reporting officer shall have the qualifications and experience as given below for each sub-discipline.

Crime Scene Investigation

Graduates in science or equivalent qualifications related to the scope of accreditation
with three years relevant work experience.

Digital Forensics (Audio, Video, Biometrics and Computer analysis)

Graduates in computer science or information technology or equivalent qualifications related to the scope of accreditation
with three years relevant work experience.

DNA Analysis

Graduates in Biological science or equivalent qualifications related to the scope of accreditation
with three years relevant work experience.

Fire investigations, Firearms and Ballistics, Handwriting and Questioned Documents, Forensic miscellaneous, Forensic trace evidence analysis, Explosives, Marks and Impressions

Graduates in science (with Chemistry / Physics as a subject) or equivalent qualifications related to the scope of accreditation
with three years relevant work experience.

Forensic medicine and pathology

Medical graduate with MBBS or equivalent qualification recognized by Sri Lanka Medical Council (SLMC).

Fingerprints

Graduates in science or equivalent qualifications related to the scope of accreditation
with three years relevant work experience.

Clinical forensic medicine

Medical graduate with MBBS or equivalent qualification and registered at Sri Lanka Medical Council (SLMC).

Forensic Histopathology

Medical graduate with MBBS or equivalent qualification and registered at Sri Lanka Medical Council (SLMC) preferably with post graduate qualification.

Forensic Odontology

Batchelor's degree holder in Dental Surgery with postgraduate qualification in forensic odontology from a recognized university and registered at Sri Lanka Medical Council (SLMC).

Forensic anthropology

Medical graduate with MBBS or equivalent qualification and registered at Sri Lanka Medical Council (SLMC) preferably with post graduate qualification.

Forensic Psychology

Graduate in Clinical Psychology or equivalent qualification preferably with criminal or forensic psychology as a component from a recognized university / institution approved by the UGC.

with at least 03 year experience in the relevant field.

or

Postgraduate in forensic psychology from a recognized university / institution approved by the UGC.

with at least 02 year experience in the relevant field.

Forensic entomology

Graduate in biological science or equivalent qualification preferably with forensic entomology as a component from a recognized university / institution approved by the UGC.

with at least 03 year experience in the relevant field.

or

Postgraduate in forensic entomology from a recognized university / institution approved by the UGC.

with at least 02 year experience in the relevant field.

Forensic Serology

Graduates in science with Chemistry and biology or equivalent qualifications related to the scope of accreditation.

with three years relevant work experience.

Forensic Toxicology, Narcotics and Psychotropic substances

Graduates in science (with Chemistry as a subject) or equivalent qualifications related to the scope of accreditation

with three years relevant work experience.

Forensic Medical Toxicology

Medical graduate with MBBS or equivalent qualification and registered at Sri Lanka Medical Council (SLMC) preferably with post graduate qualification.

6.2.2.3. Supporting Personnel (Non-Testifying Staff)

Support personnel must meet the requirements of their job descriptions. The job description and the duties performed must be in agreement. New members of staff, independent of previous experience, qualifications, must have satisfactorily completed laboratory's training program before being authorized to work independently.

6.2.3. Training

A training programme must be established and documented for each functional area of the laboratory. The training programme must include:

- the performance of competency test(s) in all applicable areas and
- where, relevant, the presentation of evidence in the court

Competency testing must include:

- an evaluation of knowledge of existing literature and
- the examination and identification of known and unknown materials

New members of staff, whatever be their qualifications or previous experience, must have satisfactorily completed the laboratory's training programme before being authorized to work independently. Laboratory Director or authorized nominee must formally authorize staff to perform work independently. Training records must be maintained for all personnel. Such records must include details and dates of:

- relevant academic qualifications,
- participation in the laboratory's training programme
- in-house and external training courses undertaken
- conferences, seminars, workshops etc. attended

Records must be sufficiently detailed to show that staff members have been properly trained, that their subsequent ability to perform casework has been fully assessed and that they have been authorized to perform work independently.

A laboratory training programme must emphasize and teach the skills and knowledge required to achieve the optimum standards of competence and good laboratory practice within a specific area of work. Training must also include a substantial knowledge of forensic science across its wide spectrum and of criminal and civil laws and procedures. A demonstration of competence to perform what is expected must be included in the programme. It is recommended that the laboratory establishes a formal means of recognition of successful completion of the training such as a certificate, letter or memorandum. The field of forensic science requires examiners to present and defend their findings in the open court of law. Because of this unusual requirement, practitioners must develop the technical and personal skills to perform competently.

Some experience/ training must be received in a forensic science laboratory. Credit for other experience/ training must be evaluated as appropriate in a particular case. Work experience and training should be considered with respect to intensity and diversity. Experience/training outside the forensic science laboratory may be substituted for experience/training in the forensic science laboratory to the extent that it has been demonstrated to be relevant and adequate. If there is little diversity in the person's work, correspondingly shorter periods of training/ experience may be sufficient.

Reporting officers/ analysts must be acquainted with the methods that are generally accepted in the discipline. All examiners must be able to articulate concepts and provide opinion/testimony relevant to assigned tasks. Pertinent training must be given to all trainees prior to appearance as an expert witness in the court. This may include conducting mock court, actual court observations and provision of appropriate reading material.

The laboratory must have an employee development programme. The library of the laboratory must contain current books, journals and other literature dealing with each functional area. A system must exist to encourage each employee to review appropriate new literature. The laboratory must foster an atmosphere wherein employees are encouraged to improve their knowledge and skills to grow as individuals and to develop their full potential. The primary means for accomplishing this is a dynamic employee development programme. It should address the various opportunities available to employees such as:

- professional organisations and their meetings,
- staff development seminars provided by the government agencies, and technical training courses conducted by various scientific institutions
- in-house technical meetings, seminars and courses,
- university courses

The developmental programme should state how employees can participate in it and must detail the procedures to be followed when applying for such training. If the laboratory has any special criteria for selection of personnel for the programme, they should be stated. It is important that such a programme demonstrates planning for the development of individual employee, laboratory sections and the laboratory as a whole. In the absence of a written programme, a well documented record of provision of time and funding to employees for training will serve to verify that the laboratory has an employee development programme.

6.3. ACCOMODATION AND ENVIRONMENTAL CONDITIONS

The requirements of ISO/IEC clause 5.3 apply.

One key responsibility of the Director of the laboratory is to provide an adequate and safe working environment. Laboratory facilities should reflect due consideration of space, design, security, health and safety. If each of these factors is properly planned and set in place, the laboratory's mission is enhanced and the responsibility of the Director is met. It is recognised that laboratories will be required to comply with Government building and safety legislation. The accreditation criteria shall accommodate the provisions of such legislation.

6.3.1. Space

Each employee must have adequate work space to accomplish assigned tasks. Sufficient space must be provided for storage of supplies, equipment and tools. Analysts/ examiners must have space available for writing reports and other official communications. Where possible, there must be a clear delineation of areas used for the clerical aspects of laboratory work and the areas used for testing/ examinations. Adequate and appropriate space must be available for records, reference work and other necessary documents. Sufficient space must be available for each instrument to facilitate its operation.

Accessories should be stored near each instrument to facilitate its use and operation. (Labs. in which usable space falls below adequate levels may experience health and safety problems, compromised efficiency, adversely affected morale and productivity and an increased risk of mishandling and contaminating the evidence. In designing and planning for additional space or a new facility, future space requirements should also be projected.

6.3.2. Design

The physical design should permit the efficient flow of case exhibits from the time of its acceptance until its proper disposal. The relative locations of functional areas should facilitate the use of equipment and instruments. Adequate and proper lighting must be available for personnel to carry

out assigned tasks. Adequate and proper plumbing and wiring must be available and accessible. The laboratory must have proper ventilation, adequate heating, cooling and humidity control as per the requirements. Bench and floor surfaces must be appropriate for the work being performed. The design should maximise laboratory functions and activities, safeguard the physical evidence, protect the confidential nature of the laboratory operations and provide a safe and healthy environment. Lack of space and / or fiscal resources are not acceptable reasons for unacceptable laboratory practices.

6.3.3. Security

Access to the operational area of the laboratory must be controllable and limited. Visitors must not have unrestricted access to the operational areas of the laboratory. A record must be retained of all visitors to the operational areas of the laboratory.

Where a laboratory exists within a host agency facility, documented procedures may be required to permit entry during off-hours for emergencies. Such arrangements are acceptable if they include, for example, the breaking of a storage seal to access a key, code etc. and notifying an authorised laboratory person. Each emergency access to the laboratory should be properly documented.

All exterior entrance/ exit points to the laboratory facility must be controlled in order to prevent access by unauthorized personnel. All security doors must have keys or other access devices limited to authorised personnel. The entire exterior perimeter of a forensic science laboratory must inhibit unauthorized access to the laboratory e.g. suspended ceilings which permit undetected entry to the laboratory are unacceptable.

Short term and long term evidence storage areas require limited/ controlled access. Internal areas requiring limited/controlled access must have a lock system. Each access device (keys etc.) must be accounted for in a register and their distribution limited. The laboratory must be monitored during vacant hours by an intrusion alarm, CCTV cameras or by security personnel. The laboratory must have a fire detection system wherever possible. In keeping with any relevant statutory requirements appropriate fire extinguishing devices must be available and policies and procedures of laboratory security must be clearly documented. Laboratory personnel should be trained in fire fighting.

6.3.4. Health and Safety

Health and safety are everyone's responsibility and require the commitment of each employee to be effective. Management's commitment is essential for long term success of a health and safety

programme. Such a cooperative relationship will safeguard the employees of a Forensic Science Laboratory as well as address management's responsibility and liability.

All elements of the laboratory's health and safety programme must be clearly documented in a manual, which is readily available to all staff.

Examples of procedures, which must be included, where appropriate, are:

- procedure for handling chemical spills,
- cleaning and disinfecting procedures for biological spills,
- cleaning and decontamination procedures for radioactive spills,
- procedures including follow up procedures such as counselling for dealing with needle- stick injuries,
- evaluation procedures including a plan of the facility showing the location of safety equipments and fire extinguishers,
- policy on the use of protective clothing eg. gowns, coats, gloves, goggles etc.,
- policy on eating, drinking, applying cosmetics etc. in the laboratory,
- waste disposal procedures,
- routine cleaning and disinfection procedures for work benches, floors, centrifuges, refrigerators etc.,
- immunization policy,
- accident reporting protocols,
- special procedures for handling hazardous substances.

Material safety data sheets must be available in conjunction with the safety manual. Work related 'Accident Insurance' coverage for all employees shall be provided by the Management.

An officer must be designated as the Health and Safety Manager. Ideally, the Health and Safety Manager should have received training in occupational health and safety concepts and in the relevant legislative requirements. The health and safety programme must be monitored regularly and audited at least annually to ensure that its requirements are being met.

Records of safety audits must be maintained. The laboratory must encourage the use of available safety devices required by its health and safety manual. Signs must be present to identify safety equipment such as fire extinguishers, safety showers, eye wash facilities, spill kits etc.

Proper equipment and material must be available to handle toxic and carcinogenic biological and/or other dangerous material spills. Spill kits must be available for acids and solvents. Appropriate

disinfectants must be available (It is recommended that 0.05 per cent sodium hypochlorite be used for routine disinfection and 0.5 per cent sodium hypochlorite be used for spills of blood and body fluids).

Where appropriate, the laboratory should have safety showers and eye wash equipment of suitable locations and in good working condition. The operation of safety showers must be checked regularly. If commercial eye wash preparations are used, it must be ensured that the solutions are within their expiry dates or if distilled water is used the water must be changed at least once a week.

Sufficient exhaust hoods must be available to maintain a safe work environment. Biology safety cabinets must be available for handling exhibits, samples etc. where protection of analysts/examiners from biological hazards is necessary. Fume cabinets must comply with relevant National/International Standards.

Sufficient first aid kits must be available and strategically located. An adequate number of personnel must be trained in first aid procedures. Appropriate storage must be trained in first aid procedures. Appropriate storage must be provided for volatile, flammable, explosive and other hazardous materials. A flammable liquids storage cabinet is required for all but small volumes. Acids and solvents should not be stored together. It may be necessary to store some material in locked cabinets/cupboards and magazines. Storage on high shelves is discouraged. Suitable carriers must be available to carry large bottles. The emergency exits from the laboratory must provide safe passage in an emergency. Evacuation routes must always be kept clear. General cleanliness and good housekeeping must be apparent. Foodstuffs must not be kept in laboratory refrigerators/freezers/ovens. Centrifuges used for the biological material must have sealed buckets or a sealed rotor.

There must be a documented 'waste management programme', which includes procedures for the disposal of:

- chemical wastes
- biological wastes
- sharp and broken glass
- uncontaminated waste, for example, paper waste
- radioactive waste

Laboratories are also reminded of the requirements of the Quarantine laws and regulations of Sri Lanka in relation to imported biological materials. The following must be in place:

- a record or inventory of imported biological materials, their source and when they were received by the laboratory,
- a documented policy on the disposal of imported biologicals from the lab.
- staff training covering :
- disposal procedures

A register must be maintained of laboratory accidents, injuries and other incidents and the follow up action taken. Suitable protective clothing/equipments must be available at all the times. The nature of these items will be dependent on the work being undertaken and might include:

- laboratory coats/ gowns
- disposable gloves
- rubber gloves
- heat/ cold resistant gloves
- protective eye wear
- face masks
- plastic/ rubber aprons
- foot wear

When radioactive and X-ray work are performed, detectors must be used regularly to monitor radiation levels and the wearing of film badges by staff may be necessary. Staff must be advised of immunization and other appropriate precautionary measures. It is recommended that relevant records be kept. Appropriate hand washing and hand drying facilities must be available. Hand basins should not be fitted with domestic taps but with a suitable alternative, for example, elbow or foot activated devices. The use of communal towels is discouraged. Single use towels or automatic hand drying devices are preferred. A suitable cleaning agent must be available. Gas cylinders must be secured. Samples/ specimens/ exhibits referred to other laboratories must be transported in accordance with the specific criteria given by the laboratory.

Regular training on safety issues shall be provided to all necessary the laboratory staff.

6.4. TEST AND CALIBRATION METHODS AND METHOD VALIDATION (ISO/IEC 17025: Clause 4.4)

The requirements of ISO/IEC clause 5.4 apply.

6.4.1. General

Test methods and procedures used must be accepted in the field or supported by data gathered and recorded in a scientific manner. Since a variety of scientific procedures may validly be applied to a given problem, standards and criteria for assessing procedures need to remain flexible. In forensic science, well established procedures are often scattered throughout peer-reviewed literature as well as in less formal documents obtained from conference proceedings and in house laboratory manuals. Furthermore, minor modifications to improve published methods can be implemented by a laboratory as appropriate to a particular need. The important point is that the procedures used be demonstrably capable of producing valid results.

Even though a procedure may be widely used, there is often no single document articulating a professional consensus as to its acceptability. Under these circumstances, it relies on the technical knowledge of its members, the inspection team and/or a SLAB Committee comprising recognized experts in the field.

The methods must be subjected to a validation study. This may be done internally, externally and/ or collaboratively. Exchange of blind and reference samples with another competent laboratory is particularly useful for detecting any internal systematic error. It should be noted that written documentation for each validation study needs to be maintained for future reference.

The written technical procedures should include descriptions of sample preparation methods, controls, standards, and calibration procedures. They should also include a discussion of precautions, possible sources of error and literature references. Although many acceptable procedures may exist to perform a particular examination, considerable variations; in case samples require that forensic scientists have the flexibility to exercise discretion in selecting the method most appropriate to the problem at hand. The laboratory Director needs to ensure that the procedures used must meet acceptable scientific standards (e.g. the use of positive and negative controls). Additionally, standards and reagents used should be of satisfactory quality, (e.g. labelled of certified purity).

Examiners in serology must have:

- access to well established population data bases on the distribution of all genetic markers which are typed in the laboratory and should have:
- access to generate local population data bases on the distribution of all the genetic markers which are typed in the laboratory.

Where sampling is carried out as a part of the test method, documented procedures which include a sampling plan using appropriate statistical techniques must be used. Accreditation cannot be

granted for tests/examinations that a laboratory has never performed or for which records of performance are not available. It is accepted, however, that forensic science laboratories are called upon from time to time to undertake analyses/examinations not covered by the scope of their accreditation. In such cases a laboratory may choose from the following options:

- The laboratory can perform the test/examination and report the result ensuring that no inference can be drawn that accreditation is held for the service.
- The laboratory can seek accreditation prior to performing the test/examination and reporting the results.
- The laboratory can perform the test/examination and report the result indicating that accreditation is not held for the service and seek retrospective accreditation for the test/examination.

Retrospective accreditation can only be granted when a laboratory can demonstrate that all accreditation requirements (including method validation/verification, equipment calibration, staff training etc.) were met at the time the test/examination in question was performed.

6.4.2. Documentation

Test methods and related procedures must be documented and readily available to the analysts/examiners. In addition to a description of the steps involved in the analysis/ examination, documentation of methods and procedures must include, where appropriate:

- description of the sample/ item to be tested/ examined.
- parameters or quantities to be determined.
- equipment/ instrumentation required.
- description of sample preparation methods, controls, standards and calibration procedures.
- a discussion of precautions, possible sources of error or limitations of the procedure.
- criteria for the rejection of suspect results.
- data/ observations to be recorded and method of analysis and presentation.
- literature references.

The availability of documented methods will give the examiner the necessary resource material to support written conclusions and expert testimony.

Where a test can be performed by more than one method, there must be a documented criteria for method selection. Where appropriate, the degree of correlation between the methods must be established and documented.

6.4.3. Method Validation

All technical procedures used by a forensic science laboratory must be fully validated before using them for casework.(Validation is the developmental process used to acquire the necessary information to assess the ability of a procedure to obtain a result reliably, to determine the conditions under which such results can be obtained and to determine the limitations of the procedure. The validation process identifies critical aspects of a procedure, which must be carefully controlled and monitored.

Validation studies can be conducted by the scientific community (as in the case of standard or published methods) or by the forensic science laboratory itself (as in the case of methods developed in-house or where significant modifications are made to previously validated methods).

Methods may be validated by comparison with other established methods using certified reference materials (where available) or materials of known characteristics. In validating test methods, the following issues (among others) may need to be determined, as appropriate:

- Matrix defects
- Interferences
- Sample homogeneity
- Concentration ranges
- Specificity
- Stability of measured compounds
- Linearity range
- Population distribution
- Precision

Methods developed in-house for both qualitative work must be validated by the laboratory before use. Where a significant modification is made to a validated method, the modification must be appropriately validated by the laboratory before the method is used. Records of all in- house validations must be maintained for future reference.

Where a laboratory introduces a new (validated) method, it must first demonstrate the reliability of the procedure in-house against any documented performance characteristics of that procedure. As a minimum, the method must be tested using known samples (e.g. proficiency test samples, samples form an external agency). It is recommended that the method also be tested using non-probative samples. Records of performance verification must be maintained for future reference.

6.4.4. Reference Materials

Reference materials must be traceable to national and international certified standard reference materials, where possible. Reference materials, certified reference materials and reference collections must be uniquely identified and full details recorded. Purchase, issue and use of these materials must be controlled and records must be maintained.

6.4.5. Standards and Reagents

The quality of the standard samples and reagents must be adequate for the procedure used. Lot/batch numbers of standards and critical reagents must be recorded.

All critical reagents must be routinely tested for their reliability. Standards and reagents must be labelled with:

- name of the reagent and standard,
- concentration, where appropriate,
- preparation date,
- identity of the preparer.

Where necessary, the following must also be included on labels:

- expiry date,
- storage conditions,
- hazard warning.

6.5. EQUIPMENT (ISO/IEC 17025: Clause 4.5)

Equipment which influences the quality of the examination and testing shall be labelled or in other ways identified. Equipment may be owned by the laboratory, borrowed, rented, hired, leased or provided by another source. The responsibility for the calibration status and overall suitability of the equipment used lies solely with the forensic unit.

Where software is used it shall be demonstrated as being fit for purpose. This may be a verification check of the software functionality, for example, the use of a spreadsheet to calculate values, or could be as part of the more wide reaching validation of the forensic science process in which the software is used, for example, the use of databases for matching specific characteristics.

The forensic unit shall have written policies and procedures defining the conditions under which equipment can be used. Policies and procedures shall also be in place for the use of disposable equipment to ensure that such equipment does not contribute to contamination through misuse or re-use.

The facilities and equipment shall only be used by authorised personnel. Where equipment not under the direct control of the forensic unit is used, the unit shall verify that the equipment meets all relevant requirements before each use. Typical measures would include visual inspection, functional checks and/or re-calibration. The verification procedure shall be documented and verification records shall be kept.

Some pieces of equipment used at the scene of crime have self-checks, some are not subject to effects of transportation and require only verification and others may require use of a reference material that validates the calibration and function status as shown to be satisfactory. Verification of equipment performance shall be conducted by staff with the recognized competence to operate and verify the equipment.

Instruments/ equipments must be properly calibrated. Where equipment used for tests, including equipment used for subsidiary measurements, have a significant effect on the accuracy or validity of the test results, that equipment shall be calibrated or otherwise verified before being put into service and shall be subjected to a programme of re-calibration and/ or re-verification.

The programme for the calibration of equipment in forensic science laboratories must ensure that, where the concept is applicable, all significant measurements are traceable, through certificates of calibration held by the laboratory, to the International standards of measurements.

Where a laboratory performs in-house calibrations, by means of comparisons between reference standards and working/measuring instruments, the calibration procedure must be documented. Calibration records (e.g. calibration certificates, calibration data) must be maintained. The laboratory must have a mechanism that alerts staff when calibrations and subsidiary checks fall due and indicates the nature of work required.

The calibration of the parameters associated with chemical analyses and material tests deserves particular attention, because major errors can occur by neglecting or ignoring the basic principles of metrology which also apply to these areas.

6.6. MEASUREMENT TRACEABILITY

The requirements of ISO/IEC clause 5.6 apply.

Reference collections of data or items/materials representative of those encountered in casework which are maintained for identification, comparison or interpretation purposes

e.g. mass spectra, motor vehicle paints or headlamp lenses, drug samples, typewriter print styles, wood fragments, bullets, cartridges, DNA profiles, frequency databases shall be fully documented, uniquely identified and properly controlled.

The quality of reference materials and reagents shall be fit for purpose for the procedure used. Lot/batch numbers of reference materials and critical reagents shall be recorded. All critical reagents shall be tested for their reliability.

Reference materials and reagents should be labelled with:

- name;
- concentration, where appropriate;
- preparation date and/or expiry date;
- identity of preparer;
- storage conditions, if relevant;
- hazard warning, where necessary.

6.7. SAMPLING

The requirements of ISO/IEC clause 5.7 apply.

6.8. HANDLING OF TEST AND CALIBRATION ITEMS

The requirements of ISO/IEC clause 5.8 apply.

6.9. ASSURING THE QUALITY OF TEST AND CALIBRATION RESULTS

The requirements of ISO/IEC clause 5.9 apply.

6.9.1. Quality Control

Analytical performance must be monitored by using quality control procedures appropriate to the type and frequency of the testing undertaken. The range of quality control activities available to laboratories includes the use of:

- Reference collections
- Certified reference materials
- Internally generated reference materials
- Independent checks by other analysts/examiners
- Statistical tables
- Positive and negative controls
- Control charts
- Replicate testing
- Alternative methods
- Spiked samples, standard additions and internal standards

Depending on the particular test/examination, one or more of these examples may be appropriate. Quality control procedures must be documented. A record must be retained to show that appropriate quality control measures have been taken, that quality control results are acceptable or, if not, that remedial action has been taken. Where appropriate, quality control data must be recorded in such a way that trends in analysis can be readily evaluated.

6.9.2. Proficiency Testing

The laboratory must have a documented programme of proficiency testing which measures the capability of its examiners and the reliability of its analytical results. The documentation of a laboratory's proficiency testing programme must include how the test samples are obtained/prepared, who has tested them and in what time frame, which laboratory staff member directs the programme, how and where the testing information is maintained, what corrective actions are taken, if required, and who oversees them.

Each laboratory must participate in atleast one proficiency testing / interlaboratory comparison program per sub-discipline, covering all sub-disciplines over a period of four years. In addition to participating in external proficiency testing, a laboratory should conduct inter-laboratory or intra-laboratory proficiency testing using blind tests prepared internally or externally and submitted as normal casework evidence or re-examination (when applicable) by another examiner of evidence on which casework was previously completed or known samples prepared internally and externally.

When participating in proficiency testing programme, the laboratory's routine test procedures must be used. Performance in proficiency testing programme must be reviewed by the Quality Manager and relevant supervisory staff. Wherever, necessary, corrective action must be taken. Proficiency testing records must include:

- full details of the analyses/examinations undertaken and the results and conclusions obtained,
- an indication that performance has been reviewed, and
- details of corrective action undertaken, where ever necessary.

For details of approach to proficiency testing, SLAB guidelines for proficiency testing based on ISO/ IEC Guide 43 needs to be referred to.

6.10. REPORTING THE RESULTS (ISO/IEC 17025: Clause 4.10)

The requirements of ISO/IEC clause 5.10 apply.

6.10.1. Test report format

The information that must be included in the reports of tests/examinations is detailed below:

a. a title (for example, test certificate, test report),
b. the name and address of the laboratory and, if different from the address, the location where tests were performed,
c. unique identification of the report (for example, by report number) on each page,
d. the date of issue of the report,
e. the page number and the total number of pages (that is, page "x" of "y") on each page,
f. the name and address of the client,
g. description, unambiguous identification and date of receipt of the item(s) tested or examined,
h. date(s) of performance of the test (s) and or examination (s),
i. identification of the test/examination method (s) or procedure (s),
j. test/examination result (s),
k. reference to sampling procedure (s) used by the laboratory where these are relevant to the validity or application results,
l. reference to other information where this may be relevant to the validity or application of results,
m. the name, title and signature or equivalent identification of the person authorised to release the report.

It is accepted that forensic science laboratories may not be able to comply with all these requirements. In such cases, a simplified report format shall be used.

Where applicable, the case record pertaining to a particular investigation must include following information:

a. Where the laboratory used results of subcontracting / referral laboratories, the source of those results must be clearly and unambiguously identified on the report.
b. Preliminary or interim reports must be clearly indicated as such. Where preliminary or interim reports are issued, the following must be recorded in the case record:
    i. the date and time of issue
    ii. the test/ examination result (s) given,
    iii. the name of the person to whom the result (s) were given

A copy of the report issued for a test/ examination must be retained in conjunction with the case record. If, after the issue of a report, test data are found to be invalid. The original report must be withdrawn and, if necessary, replaced by one, which is clearly indicated as being a replacement

report. The laboratory policies and procedures for issuing reports must be documented. These must include:

a. prescribed formats for reports, certificates, witness statements, etc.,
b. issue of preliminary or interim reports,
c. electronic transmission of reports,
d. retention of the reports in the case record,
e. report authorization,
f. withdrawal of invalid reports.

In case of electronically generated reports, laboratory must have appropriate controls such as access, storage, and back-up results and appropriate password protection. In case the report has to be accessed from the website by the customer there must be appropriate control to ensure that the report is downloaded in protected format.

6.10.2. Case Record Review

The laboratory must have documented its policies and procedures for the technical and administrative reviews of case records. This must include:

- the criteria to be used for each type of review;
- the number/percentage of case reports to be reviewed; and
- the course of action in case any discrepancy is found.

Case records that have been reviewed must bear evidence of the review, for example, by initials of the reviewer.

6.10.3. Technical Review

Conclusions reported must fall within the range of acceptable opinions of knowledgeable individuals in the field of forensic science or be supported by sufficient data. The laboratory must therefore, review a sample of case records to ensure that the conclusions of its examiners are reasonable and within the constraints of scientific knowledge whenever applicable. Technical review, often performed by a peer, may be carried out on a sample of completed case records (for example, 20 per cent or six cases, whichever is fewer per examiner per month). The sampling rate could vary depending upon the situation (for example, a new examiner may have 100 per cent of cases reviewed while a very experienced examiner my have only a few cases reviewed each month). Technical review, while important to the laboratory's quality assurance programme, must not be carried out to the extent that it shifts the perceived responsibility for the

scientific findings from the examiner to the reviewer keeping in mind that it is the examiner/reporting officer who presents a sworn testimony to the findings.

6.10.4. Administrative Review

Administrative reviews must be conducted on all or most of the case records to ensure the completeness, correctness and timeliness of the reports issued.

6.10.5. Court Testimony Monitoring

The laboratory must have and follow a documented procedure whereby the testimony of each examiner is monitored at least once in a year. Areas that must be covered in the evaluation include appearance, poise, performance, effectiveness of presentation. The monitoring procedure must also prescribe the remedial action that is to be taken should the evaluation be less than satisfactory. A record must be kept of each evaluation.

ANNEX 01: EXAMPLES OF DISCIPLINES UNDERTAKEN BY FORENSIC UNITS

The table below lists only some of the forensic disciplines but does not preclude additional activities being undertaken by a forensic unit. Even if some forensic disciplines may not be mentioned here, they may still be included in the scope of this guidance document.

Audio, Video and Computer Analysis

- Speech, audio and video analysis
- Biometrics
- Computers (hardware and software)
- Image enhancement
- Recovery of information from electronic devices and media
- Automated skull reconstruction and aging simulation
- CCTV
- Facial mapping
- Mobile computerized devices (including phone, GPS, PDA)

Controlled/non-controlled Substances

- Botanical material
- Related chemicals and paraphernalia
- Controlled pharmaceutical and drugs

Entomology, Botany, Archaeology, Anthropology , Odontology

Fingerprints

- Fingerprints and finger marks (development and comparison)
- Palm prints (development and comparison)
- Footprints (development and comparison)

Firearms and ballistics

- Bullets and cartridges
- Gunshot residue
- Firearms
- Stun Guns

Hairs, Blood, Body Fluids and Tissues and DNA profiling

- Animal DNA profiling
- DNA profiling
- Parentage testing
- Semen and vaginal secretion analysis
- Body fluid identification
- Mitochondrial DNA profiling
- Blood grouping
- Hair comparison

Handwriting and Document Examination

- Copiers and copied material
- Handwriting
- Inks and printing materials
- Printers and other printed objects
- Security marks
- Embossing and embossed materials
- Indentations
- Paper
- Rubber stamps
- Typewriters and typewritten material

Marks and Impressions

- Damage examination
- Glove marks
- Shoe marks
- Tyre marks
- Fabric impression
- Non-friction ridge body marks
- Tool marks and impressions

Forensic Medicine

- Cause of death determination
- Pathology
- Examination of injuries

Scene Investigation

- Blood pattern analysis
- Fire investigation
- Scene of crime investigation
- Bullet trajectory
- Photography
- Chemical, Biological, Radioactive, Nuclear

Toxicology

- Alcohol
- Pharmaceutical products
- Drugs
- Poisons

Trace Evidence

- Acids
- Alkalis
- Botanical material (excluding controlled substances)
- Components of technical or household appliances
- Dyes and pigments
- Feeding stuffs and ancillary items
- Fibres and hairs
- Food
- Glass
- Lachrymatory chemicals
- Manufacturers marks (including serial number restoration)
- Oils and greases
- Soils
- Adhesives
- Arson & fire evidence e.g. Fire debris
- Clothing/garments
- Corrosives
- Cosmetics
- Electrical devices and components
- Explosives and explosion debris
- Fertilizers
- Firearm discharge residues
- Hydrocarbon fuels
- Light filaments
- Lubricants and spermicidal agents
- Metals and alloys
- Paints
- Plastics
- Pyrotechnic devices

Vehicles and Vehicle Accident Investigation

- Component failures including light bulbs
- Electrical failures
- Speed calculations
- Trajectory determination
- Car immobiliser systems
- Erased markings
- Tachograph charts
- Tyre examination

COMPOSITION OF THE TECHNICAL ADVISORY COMMITTEE

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