

**NCSBI Quality Assurance Program**  
**For The Western Regional Laboratory**

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## **NCSBI Quality Assurance Program for the Western Regional Laboratory**

### Provisions for Modification and Updating of This Manual

Any updates, modifications, additions, or deletions to this manual prepared after the issue date on the coversheet will have the following information located at the bottom of each page:

Issue Date: \_\_\_\_\_ Supersedes: \_\_\_\_\_

Prepared By: \_\_\_\_\_ Date: \_\_\_\_\_

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

Originating Unit: \_\_\_\_\_

# **NCSBI Quality Assurance Program for the Western Regional Laboratory**

## **TABLE OF CONTENTS**

<a href="#"><u>SECTION 1</u></a> .....	Planning and Organization
<a href="#"><u>SECTION 2</u></a> .....	Qualification and Training of Personnel
<a href="#"><u>SECTION 3</u></a> .....	Documentation
<a href="#"><u>SECTION 4</u></a> .....	Control of Equipment, Instruments, Materials, Reagents, Chemicals and Supplies
<a href="#"><u>SECTION 5</u></a> .....	Validation of Analytical Procedures
<a href="#"><u>SECTION 6</u></a> .....	Evidence Handling Procedures
<a href="#"><u>SECTION 7</u></a> .....	Internal Quality Control and Standards for Latent Print, Footwear and Tire Track Analysis
<a href="#"><u>SECTION 8</u></a> .....	Data Analysis and Reporting
<a href="#"><u>SECTION 9</u></a> .....	Proficiency Testing
<a href="#"><u>SECTION 10</u></a> .....	Audits
<a href="#"><u>SECTION 11</u></a> .....	Safety

# **NCSBI Quality Assurance Program for the Western Regional Laboratory**

## **1. Planning and Organization**

### **1.1 Goals**

It is the goal of this agency to:

- a) Provide state and local law enforcement agencies laboratory services for drug analysis and latent impression analysis (latent prints) and crime scene responses associated with an official criminal investigation.
- b) Ensure the quality, integrity and scientific accuracy of this analysis through the implementation of a detailed Quality Assurance/Quality Control (QA/QC) program.

### **1.2 Scope**

The QA/QC program described in this manual is intended to support drug analysis and latent impression analysis, to ensure the analyst/chemist are operating within established performance criteria, and to ensure that the quality and integrity of the analysis is maintained and is scientifically sound.

### **1.3 Program Objectives**

The objectives of this quality assurance program are to:

- a) Ensure uniformity and accountability in records and analytical techniques.
- b) Measure quality performance with administrative and technical case reviews, and to be able to act on any discrepancies encountered.
- c) Ensure the accuracy of the analysis conducted.
- d) Document corrective actions taken.
- e) Terminate non-conforming analyses and procedures.
- f) Monitor personnel and equipment performance.
- g) Ensure the use of documented and valid procedures and equipment.

- h) Provide feedback to management on performance standards.
- I) Ensure that drug analysis and latent impression analysis results are technically sound and/or legally defensible.
- j) Provide guidelines to employees so they will know what is expected of them.
- k) Ensure that the personnel performing this analysis have the appropriate level of training and education.
- l) Ensure the analyst are competent in performing the analysis in interpreting results through a series of proficiency tests.
- m) Provide a safe workplace.
- n) Provide for competent external audits to see that the operating policies and procedures are being followed and that they are adequate.

#### 1.4 Authority and Accountability

Individual analysts/chemists in the Western Regional Laboratory with delegated responsibilities are empowered by the Special Agent In Charge to carry out these responsibilities and to act in his place.

This means, for example, that the Forensic Analyst/Chemist may reject any chemical, supply, reagent, or procedure which fails to meet specifications. The Safety Officer (S/A Pintacuda) is empowered to take appropriate actions in the event of a spill or contamination problem.

Specific delegated responsibilities include:

1. The Special Agent In Charge is ultimately responsible for the Quality Assurance program pertaining to audits and all other delegated responsibilities.
2. The Forensic Analyst / Chemists have the responsibility to see that the QC functions are being carried out in the Western Regional Laboratory on a day to day basis
3. The Forensic Analyst /Chemist is responsible for the testing and validation of new reagents and equipment, developing, maintaining and communicating new and

existing procedures and maintain and update manufacturer information that they made or developed.

4. The Western Regional Laboratory personnel are responsible for maintaining adequate supplies and replenishing these supplies as well as coordinating the requisition of new supplies as needed for the section.
5. The Safety Officer is responsible for approving all new reagents and ensuring the proper usage of chemicals and equipment within the section as well as all safety related matters.
6. The Training Officer (SAC Reavis) is responsible for developing and updating the Drug training program within the section and administering this program appropriately to all new analysts.
7. The Key Operators of each piece of equipment are responsible for the maintenance of the assigned equipment and ensuring that it is being used properly, and communicating necessary changes and updates to the section.

1. S/A Delmas - All Latent Evidence equipment

2. S/A Pintacuda - UV, GC-MS (both), FTIR (both).

## 2. Qualifications and Training of Personnel

All persons involved in the actual recovery, evaluation, analysis and interpretation of latent evidence and drug analysis shall have a background appropriate to their duties.

### 2.1 Job Description

A current copy of all job descriptions within the Western Regional Laboratory will be maintained by the Special Agent In Charge.

### 2.2 Education, Training and Qualifications of Persons Engaged in Drug Analysis or Latent Evidence Analysis

#### 2.21 General Requirements

All analysts/chemists in the SBI Western Regional Laboratory shall possess a baccalaureate degree, preferably with a major in forensic science, forensic studies, biology or chemistry.

#### 2.22 Requirements for individuals performing Drug Analysis or Latent Evidence Analysis

All new Analysts/Chemists will meet the general training requirements of the Drug Chemistry Section, Latent Evidence Section and be tested prior to performing independent analysis.

1. Successful completion of a test/evaluation and/or the SBI in house training program.
2. Successful completion of written and practical tests and exercises related to above training program.
3. Successful completion of a series of proficiency samples
4. Successful completion of a moot court session.
5. Successful completion of a Final Examination and Proficiency Test

#### 2.23 Experience

Prior to any independent analysis, the analyst/chemist must have

completed probationary period of case analysis experience where all processing methods are approved, and all casework reviewed by a senior analyst.

- 2.24 The analyst/chemist must stay abreast of developments within the field by reading current scientific literature, and by attending seminars, professional meetings and other training sessions. Management should provide analysts with an opportunity to comply with the above.

2.25 Training Records

Documentation of all training will be maintained by the Special Agent In Charge (or his/her designee).



### 3. Documentation

#### 3.1 Current Procedures Manual

A copy of the current technical procedures used for the processing and examination of all evidence received by the Western Regional Laboratory will be maintained by each Forensic Impression Analyst or Chemist.

#### 3.2 Operational Guidelines

##### 3.21 Receipt, Identification, Storage, and Handling of Evidence Submitted to the Western Lab.

Bureau guidelines for the receipt, identification, storage, and handling of evidence submitted to the Crime Lab are documented in the SBI Evidence Accountability policy. A copy of this policy is found in the SBI Crime Laboratory Procedure Manual.

##### 3.22 Guidelines For The Proper Recording of All Analytical Data

The following information will be recorded in the permanent file of every case submitted to the Western Regional Laboratory for analysis. The pre-printed forms used for latent evidence and drugs can be found in the Quality Assurance Manual Appendix A.

- 1) An SBI Physical Evidence Examination Request Form (SBI-5).
- 2) A Analysis/work sheet for item/s showing the types of procedures used or examinations conducted on each item of evidence, the date that procedure was used, and the results obtained. Multi items may require more than one Analysis/work sheets.
- 3) Any of the additional pre-printed pages of notes necessary to document what was done to or with the items of evidence by an examiner/chemist of the Western Regional Laboratory.
- 4) The printouts resulting from an AFIS search.
- 5) Photographs of all questioned footwear evidence submitted.
- 6) The report generated by the Forensic Impression Analyst/Chemist

upon completion of his/her examination.

- 7) A cover sheet for all of the notes will contain documentation that all identifications/notes were verified by a second qualified Forensic Impression Analyst (Latent)/chemist and that the file was reviewed by the Special Agent In Charge or designee.
- 8) A chromatogram/spectrum of a standard will be included with the notes of all compounds reported.

### 3.3 Material Safety Data Sheets (MSDS)

Material safety data sheets will be maintained on all chemicals and reagents used in the Western Regional Laboratory. The Section Safety Officer will maintain a file of those sheets in the Office Supply room.

### 3.4 Schedules and Procedures for Maintenance, Inspections, Calibration and Test of Pertinent Equipment.

An inventory will be kept of all equipment used in the Western Regional Laboratory as described in Section 4.1.2 of this document. Anytime a piece of equipment requires service or maintenance, this will be documented on an "Equipment Maintenance" Form described in Section 4.1.5 of this document. All equipment will be inspected annually as described in Section 4.15 of this manual. Inspection and Certification Logs will be kept on pertinent equipment as described in Section 4.1.6 of this document.

### 3.5 Records of Methods Validation

All records of in-house methods validation testing will be maintained in the Western Regional Laboratory.

### 3.6 Personnel Records

The Western Regional Laboratory Special Agent In Charge will maintain a personnel file on each analyst which is subdivided into the following categories:

- A) Personnel history, assignments, promotions, etc.
- B) Commendations
- C) Complaints and disciplinary action

- D) Training
- E) Evaluations

The Special Agent In Charge will also maintain a separate file of proficiency test results from each trained analyst/chemist.

### 3.7 Quality Assurance and Audit Reports

To document the Quality Assurance/Quality Control program of the Western Regional Laboratory, the SAC will prepare and maintain a Quality Assurance Manual. This manual will be made available to all employees of the Western Regional Laboratory.

Copies of audit reports will be maintained by the Special Agent In Charge. Those reports generated by the SBI Inspection Program will be stored according to Bureau procedure.

### 3.8 Safety Manuals

Copies of the Safety Manuals described in Section 11 of this document will be distributed (or made available) to every employee of the Western Regional Laboratory. They are contained in the Crime Laboratory Procedure Manual.

### 3.9 Security Plan

Copies of the section security plan will be distributed to every employee and maintained in the section files.

**See Appendix A**

#### 4. Control of Equipment, Instruments, Materials Reagents, Chemicals and Supplies

##### 4.1 Equipment and Instruments

###### 4.1.1 Procurement

All equipment and instruments will be ordered by the Special Agent In Charge.

###### 4.1.2 Equipment Inventory Log

An inventory log will be maintained on each piece of equipment in the Western Regional Laboratory by the Special Agent In Charge. This log will include the following information:

Equipment Item	Life Expectancy
Sticker Number	Model Type
Serial Number	Model Number
Year Purchased	Operating Status
Year to Replace	Purchase Price
Replacement Cost	Annual Maintenance Cost

See **Appendix B** for a copy of this form and a discussion of equipment requiring maintenance and calibration.

###### 4.1.3 Operating Manuals

Operating manuals and warranty information provided by the manufacturer will be maintained in the Western Regional Laboratory.

###### 4.1.4 Training

Operators of scientific instruments will be knowledgeable in their use. Operator training will occur during the installation or an in-house training program and will cover the manufacturer's instructions, theory of application, procedures to be used and any calibration requirements.

#### 4.1.5 Equipment Maintenance Forms and Annual Inspection Reports

Anytime a piece of equipment requires service or maintenance - **outside of routine in-house maintenance** - that fact will be documented on a Laboratory Instrument and Equipment Repair Record form. See **Appendix B** for a copy of this form.

#### 4.1.6 Inspection and Certification Logs

Each piece of equipment which needs to be inspected and/or certified, will be checked on an appropriate schedule. Certification will be done using appropriate certified standards and will be documented on a certification log kept by the section Safety Officer.

Some instruments will be inspected and certified routinely by certified external agencies (e.g. Balances)

Examples of inspection and certification logs are found in **Appendix B**

attached to this document. Each certification log will clearly show the certification source to be used and the frequency of certification.

#### 4.2 Materials, Reagents, Chemicals, and Supplies

#### 4.2.1 Sources of Materials, Reagents, Chemicals and Supplies

Analyst/Chemist will use vendor literature (commercial sources) for all materials, reagents, chemicals and supplies used in the Western Regional Laboratory. This literature will show the catalog number, supplier, and required grade, if appropriate.

#### 4.2.2 Procurement

All orders for materials, reagents, chemicals and supplies will be placed by an analyst/chemist and approved by the Special Agent In Charge. Copies of all orders will be maintained for a period of two years.

#### 4.2.3 Receipt of Chemicals, Supplies, Reagents and Materials by the Western Regional Laboratory

All chemicals, reagents, supplies and materials will be received into the Western Regional Laboratory by Special Agent In Charge or Designee, so that they can be checked off against the orders placed.

All inventory will be stored under the conditions specified by the manufacturer. Any materials which require special handling will be handled appropriately and under conditions specified in the Section=s Safety Manuals.

#### 4.2.4 Material Safety Data Sheets

Material Safety Data Sheets will be maintained in the Office Supply room on all chemicals and reagents used in the Western Regional Laboratory.

#### 4.2.5 Laboratory Prepared Reagents and Solutions

All lab prepared reagents and solutions will be made with great care and using good lab practices. The Safety Officer will maintain a log book for each reagent prepared with the following information recorded: chemicals

used, date prepared, initials of the preparing analyst and expiration date.

Examples of these documents are contained in **Appendix C** attached to this document.

All lab prepared reagents and solutions will be clearly labeled as to the contents of the container, date of preparation, and initials of the preparer. All reagents will be stored under appropriate conditions.

Recipes for all lab prepared reagents and solutions will be listed in a book, manual or on a sheet used in the Western Regional Laboratory accessible and will not be deviated from. This procedure will give an ingredient list, safety notes if applicable, preparation instructions and storage instructions if applicable.

#### 4.2.6 Preparation of Glassware and Plasticware

All glassware and plasticware will be clean prior to use.

Disposable plasticware will be disposed of immediately after use.

#### 4.2.7 Disposal of Materials, Reagents, Chemicals and Supplies

Disposal of hazardous wastes will be handled as described in the Chemical Hygiene Plan.

## 5. Validation of Analytical Procedures

- 5.1 The Western Regional Laboratory procedures selected for use in forensic analysis by the SBI Laboratory will be readily available to analysts of the Western Regional Laboratory.
- 5.2 The designated analyst/chemist will be responsible for research of new reagents, test of new equipment and other experimentation conducted within the Lab.
- 5.3 Each analyst in the Western Regional Laboratory will maintain a personal copy of the section's technical procedures manual and will be responsible for any updates and changes which are necessary. A copy of this manual will also be maintained in each processing room and the section technical library. The designated research analyst will be responsible for distribution of all updates and changes to each of these manuals.
- 5.4 The research analyst conducting research on a specific reagent, processing method or equipment may utilize the techniques and chemicals with the approval of the Special Agent In Charge. Research and validation standards must be conducted while obeying all safety and operating guidelines which are available at the time.
- 5.5 New methodology within the Western Regional Laboratory will be researched and validated prior to usage with specific criteria and documentation.
  - 5.5.1 Standards - Each chemical procedure will be tested on various types of applicable substrates to determine the feasibility of developing latent impressions. New equipment test will also be conducted on various materials and documented.
  - 5.5.2 Consistency - Any significant modification made to the analytical procedures provided will be compared to the original procedure using identical samples. Techniques tested will be compared to previously approved or existing applicable procedures and the results compared.
  - 5.5.3 Time - Various substrates with test impressions will be treated and/or tested at various period of time to compare and document the results. If feasible, various environmental conditions should be included in this process.
  - 5.5.4 Documented Reports - Methodology Research Reports will include all



chemicals necessary for procedure(s), formulations and/or directions for preparation of solution(s), application techniques, preservation methods, type of sample utilized and how treated, any variances of prior methods, safety considerations and final comparisons, conclusions and results.

5.5.5 All procedures will be supported by all available literature and pertinent documentation, research and test records, control samples and/or photographic reproductions, and safety information. This reference material should be compiled and maintained by the research analyst for review by any member of the forensic science community.

5.5.6 Upon approval and review of procedures by the Special Agent In Charge (Western Lab or Latent Evidence) and safety officer, the research analyst shall develop written procedures on all techniques and equipment.

#### 5.6 Historical and Archive Records

Documentation related to any technical procedure removed from the approved list of procedures will be maintained by the Special Agent in Charge.

## 6. Evidence Handling Procedures

### 6.1 Evidence Labeling and Documentation

The analyst will ensure that all evidence received is in a sealed condition (unless the nature of the evidence makes this impossible). The analyst will identify the evidence container with the appropriate laboratory file number, indicate if the container is sealed or unsealed, affix the date received and their initials to the evidence container. The analyst will then place the evidence in their assigned locked evidence storage area unless the nature of the evidence makes it a biological hazard. In this case the analyst will take the appropriate action to protect themselves and others from contamination.

6.2 Upon opening the evidence container the analyst will compare the contents with the SBI-5. If there is a discrepancy, the analyst will bring this to the attention of their supervisor or his assistant for verification. The requesting officer will then be notified.

6.3 When the laboratory analysis is complete, the analyst will identify the evidence with the assigned laboratory file number, item number, date and initials. The analyst will return the evidence to the evidence container, seal and identify the container. The analyst will return the evidence to their assigned evidence storage area until it is returned to the appropriate evidence technician, officer or transferred to another laboratory section for further analysis. The analyst will retain a copy of the laboratory report and SBI-5 when the evidence transfer takes place.

## 7. Internal Quality Control for the Western Regional Laboratory

The following control measures will be applied to each occasion in accordance with established procedures in the Crime Laboratory, Drug Chemistry and Latent Evidence Procedures Manuals

### 7.1 Labeling Evidence and Evidence Containers

Each analyst will be responsible for properly marking all evidence containers upon receipt. After completing the case, the analyst will be responsible for labeling the evidence with identifying marks to ensure proper identification at a later date.

### 7.2 Verification of Identifications

When an analyst/chemist makes an identification, the identification will be verified by a second analyst to ensure accuracy. In the latent section, If the identification was made with less than ten (10) points of identification, then a person in a supervisory role is required to verify the identification.

### 7.3 Administrative Case Review

When an analyst completes a case, the Special Agent in Charge of the Western Laboratory or an analyst designated by the Special Agent in Charge of the Western Regional Laboratory will review both the case notes and the report to ensure the results are accurate and complete, all documents have been properly labeled in accordance with SBI Crime Laboratory Policy, and all appropriate processing methods have been used. When the Special Agent in Charge or designated analyst is satisfied that the items reviewed have met the established criteria, the reviewer will sign off on the case notes and report.

### 7.4 Complete Case Review- Latent Section

At least once a year, the Special Agent in Charge of the Raleigh Latent Evidence Section and/or a designated analyst will review a case from each analyst to ensure all technical aspects of the case have been conducted. The case will be selected at random when the final report has been submitted for review. The analyst will turn over all evidence, notes and reports for a complete review of the chemical and processing methods utilized, sequence of processing techniques, applicable computerized searches and entries, preservation methods, safety issues and evidence handling as well as the administrative review discussed in Section 7.5. It will be the responsibility of the analyst completing the case to open all containers and produce the required item in a timely manner to the appropriate individual. Discrepancies will be documented and corrected at the discretion of the Special Agent In Charge. A written report will be prepared and retained by the Special Agent in Charge of the Western Regional Laboratory.

### 7.5 Recording Identifications

All identifications effected within the Western Regional Laboratory will be recorded in a manner in which they will be reproducible at any given time if needed. The Image Processing System, Xerox machine and/or the appropriate photographic equipment may be utilized to record such images. This will include all ten print identifications, elimination prints and shoe and tire track cases. Unique identifying numbers also must be assigned to the images in an acceptable manner.

## 8. Data Analysis and Reporting

## 8.1 Independent Analysis/Review of Data

All analysis performed within the Western Regional Laboratory will be independent and conclusions based on scientifically sound premises. The Latent Evidence Section adopts the following concept:

*There is no scientific basis for requiring a minimum number of identifying characteristics in order to effect a positive identification.*

All latent print identifications will be independently reviewed by a second qualified latent fingerprint. The reviewing analyst will initial the case notes. Both analysts must agree on the interpretation of the data to be reported.

Drug cases will be reviewed by a qualified drug chemist. The reviewing chemist will do a technical and administrative review.

## 8.2 Tolerance Limits for Matches

8.2.1 All latent fingerprint identifications must be verified by another qualified latent fingerprint analysts.

8.2.2 All questioned footwear impression identifications and/or non-identifications must be verified by another qualified footwear analysts.

8.2.3 All questioned tire track impression identifications and/or non-identifications must be verified by another qualified tire track analysts.

8.2.4 All drug identifications must be verified by another qualified Drug Chemist.

## 8.3 Report Writing and Review

8.3.1 Lab reports will be issued on all cases submitted to the Laboratory.

### 8.3.2 Review of Reports

All lab reports will be reviewed by appropriately designated personnel.

#### 8.4 Case Statistical Reports

- 8.4.1 A Western Regional Laboratory weekly caseload statistics report will be transmitted to the section secretary on Monday of each week or the last working day for the individual analyst. This information will be compiled each week by the secretary and distributed to each analyst, the Special Agent In Charge and the SBI Laboratory Assistant Directors Office.
- 8.4.2 A computerized report is generated as needed from the Laboratory Information Management System. This report will be reviewed by the supervisor and/or a designated individual by the supervisor. The designee of the supervisor will review the list of cases and research any potential problem areas noted.

## 9. Proficiency Testing

### 9.1 Open Proficiency Testing

Each Western Regional Laboratory analyst will be tested at least once each year with an open proficiency test. These tests may be prepared internally and/or may be part of an external proficiency testing program.

### 9.3 Proficiency Test Files

The Special Agent In Charge will maintain records of all proficiency tests taken, any deficiencies noted, and - if applicable - corrective action taken. When deficiencies are noted, the file will identify the likely cause of the deficiency.

Analyst/chemist will initial and date the review sheet to acknowledge feedback of the test.

## 10. Audits

Audits are an important aspect of the quality assurance program. They are an independent review conducted to compare the Western Regional Laboratory's performance with a standard for that performance. These audits are designed to provide management with an evaluation of the Western Regional Laboratory's performance in meeting its quality policies and objectives. These audits will occur at least once annually.

### 10.1 SBI Inspection

The Western Regional Laboratory is routinely inspected by an SBI Inspection Team. This team is composed of several agents and SACs from various field districts or laboratory sections and the Bureau Inspector of the SBI. A typical inspection will last one week. During this time, all phases of the operation of the section are scrutinized including: evidence handling and accountability, case turn around time, report writing, note taking, management practices, leave and time management policies, security, records security, inventory of equipment and supplies and personnel records.

### 10.2 Annual ASCLD-LAB Internal Audit

Each year in the month of February, the Western Regional Laboratory will be audited by a special team composed of the following individuals but not limited to:

1. The Laboratory's Quality Assurance Manager (Deputy Assistant Director).
2. Other inspectors from the Crime Laboratory (non Western Regional Laboratory Personnel), as needed.

These individuals will prepare a report for the Assistant Director of the Laboratory and the Latent Evidence Special Agent In Charge covering their findings on the following questions and topic areas:

1. Are the procedure manuals being followed?
2. Is the quality assurance manual being followed?

3. Are safe lab practices being followed?
4. Is the laboratory keeping current with new developments?
5. What needs can be addressed in the Western Regional Laboratory?
6. Are the levels of continuing training and/or education adequate?
7. Are the proper records being kept?
8. Are all quality control measures being met?
9. Any other areas of concern?
10. Findings and problems.
11. Action recommended and taken to resolve existing problems.
12. Suggested date of the next audit or inspection.

A copy of the audit forms to be used by this audit team may be found at the conclusion of this manual.

The Special Agent In Charge will review all findings with the Western Regional Laboratory and will maintain this report along with documentation of steps taken to resolve any problems detected.



## 11. Safety

### 11.1 Policy

The Western Regional Laboratory will operate in strict accordance with the regulations of the pertinent federal, state, and local health and safety authorities.

### 11.2 Written Manuals

Written general laboratory safety manuals will be prepared and issued to all employees of the Western Regional Laboratory.

11.2.1 General Laboratory Safety guidelines are covered in the North Carolina Department of Justice Employee Safety and Health Manual and the North Carolina State Bureau of Investigation Safety Procedures Manual.

### 11.3 Disposal of Biological Waste

Disposal procedures for biological wastes are covered in the North Carolina State Bureau of Investigation Safety Procedures Manual.

### 11.4 Copies of documents related to the Safety Program may be found in Crime Laboratory Procedure Manual.