Louisiana State Police Crime Laboratory
Forensic Services Guide

Louisiana Department of Public Safety and Corrections

MESSAGE FROM THE LABORATORY DIRECTOR

The Louisiana State Police Crime Lab (LSPCL) opened its doors in 1983. Our mission is to provide quality forensic analysis services to all of our customers. Since then, the LSPCL has only strengthened that commitment and service, while expanding our partnerships to the law enforcement agencies we serve. The LSPCL has successfully maintained accreditation since May 2000, and our ANSI National Accreditation Board (ANAB) accreditation currently covers the disciplines of: Bloodstain Pattern Analysis, Crime Scene Investigations, DNA Forensic Analysis, DNA CODIS Administration, Firearms and Toolmarks, Fire Debris, Footwear/Tire Impressions, Fingerprint/Latents, Trace Materials, Drugs, and Toxicology.

The professionals that staff the laboratory are some of the best in the country. Due to their experience and knowledge, they are often sought after to offer expert opinions and training sessions on our current processes. The LSPCL is excited to offer trainings, such as Basic and Advanced Crime Scene Investigations to our partner agencies.

As technologies continue to advance, so do the services at the LSPCL. The LSPCL is constantly evaluating and implementing cutting edge equipment and processes. The LSPCL is the first laboratory in the country to be awarded the FBI Authority to Operate (ATO) a Rapid DNA booking station terminal. Through partnerships with local agencies the LSPCL will continue to coordinate the deployment of Rapid DNA booking stations statewide. The LSPCL has also implemented a new DNA technology, known as probabilistic genotyping, for complex DNA mixtures, and a new quantitative analysis process for toxicology requests is available. All of the new technological advances will only improve the work product that the LSPCL can provide.

The LSPCL will continue to foster, enhance, and network with our Federal, State, and Local partners. I am humbled to be a part of an agency and laboratory that exceeds standards and provides quality services.

Please take the opportunity to complete the Louisiana State Police Crime Laboratory Customer Satisfaction Survey, located on our website, so we may better serve you.

-Captain Chad Guidry

"JUSTICE, TRUTH, SCIENCE"

Louisiana State Police Crime Laboratory Core Values

LSPCL's Core Values are fundamental qualities that each employee of the Crime Lab should strive to p o s s e s s and exhibit on a d a i l y basis. LSPCL's management is committed to complying with these core values and encouraging all employees to do the same.

LEADERSHIP- Guide and facilitate others to be a positive influence in their careers. Take the time to invest in others in the lab, have patience with trainees and new employees, and assist others without being asked. Contribute to the lab's goals.

SERVICE- Serve the citizens of Louisiana by providing accurate and timely reports, non- biased testimony/opinions based on your work, and professionalism when dealing with the public, agencies, and criminal justice partners.

POSITIVITY- Have an optimistic attitude and invoke a work environment where others will be inspired by you to take on challenging situations with confidence. Project an enthusiastic demeanor that is contagious to those working around you.

CREDIBILITY- Be trustworthy by being truthful and transparent with coworkers and the public. Be reliable and dependable to your unit and to the lab.

RESPECT- Treat others the way you want to be treated, consider others' opinions and ideas with an open mind, and always be kind and courteous.

INITIATIVE- Be proactive; identify solutions to problems and solve them without being prompted. Have the ability to assess an issue and become a problem solver. Go above and beyond what is expected because it benefits the case, the unit, or the lab. Always continuously improve.

TEA**M**WORK- Collaborate with coworkers and management to achieve efficient work flow, timely case reviews, and administrative duties. Complete tasks with a positive, considerate, and professional attitude. Volunteer to conduct tours, be on the audit team or crime scene response, and assist other units when they ask for help, etc.

INT**E**GRITY- Be honest with others, be true to the core values, make the right decision for the right reasons, and follow through with commitments.

PROFESSIONA**L**ISM- Communicate effectively and appropriately. Always find a way to be productive. Take on new challenges, new technology, and new procedures without complaint. Be thorough in your work and take strides to improve your skill set. Be active in and contribute to the profession.

ACCOUNTABILITY- Justify your actions and decisions without excuses, be responsible for your assigned duties and other actions, complete tasks and assignments in a timely manner, and be detail-oriented.

BALANCE- Create a work environment that is pleasant and fun to work in. Participate in work related functions to increase morale and camaraderie. Avoid workplace tension and conflict.

"Wherever he steps, wherever he touches, whatever he leaves, even without consciousness, will serve as a silent witness against him. Not only his fingerprints or his footprints, but his hair, the fibers from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects. All of these and more bear mute witness against him. This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong, it cannot perjure itself, it cannot be wholly absent. Only human failure to find it, study, and understand it can diminish its value."

-Dr. Edmond Locard

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INTRODUCTION

The rapidly evolving and expansive field of Forensic Science commands a need for constant attention by the various individuals who have devoted themselves to this career path. New technology, techniques, and procedures are continually developed, providing new capabilities or refinements to existing capabilities, allowing cases to be worked in ways the law enforcement community never would have imagined were possible. We strongly urge investigators to use this as a guide for their crime scene examinations and investigations, as the ultimate goal in its creation was to provide a valuable reference guide for evidence collection and submittal for analysis.

With that in mind, the Louisiana State Police Crime Laboratory Forensic Services Guide has been compiled to assist law enforcement personnel with the basic procedures of proper evidence handling and the importance of doing so for their investigations. Recognition, collection, and preservation of physical evidence is one of the most vital aspects of solving crimes. Thus, accuracy and attention to detail cannot be overemphasized when handling evidence.

This handbook should give officers the necessary tools to develop their ability to recognize the numerous types of evidence that may be encountered. This handbook is enabled with hyperlinks to various sections in this document, laboratory forms, and websites that will assist you in locating forms and information necessary for submitting evidence to the laboratory.

All agencies are encouraged to keep regular contact with the Louisiana State Police Crime Laboratory to remain informed about any changes or modifications to existing lab techniques, procedures, or capabilities.

While this guide gives a wide variety of specific information, many conditions are out of your control. In a perfect environment, these recommendations should be followed; however, there may be instances where the situation you are experiencing is not described in this guide.

Please do not hesitate to contact properly trained personnel at the Crime Laboratory if you feel this manual lacks information crucial to your investigation or to clarify anything outlined herein that seems unclear. This guide is not intended to supersede any specific agency and/or department protocols.

IMPORTANT INFORMATION AND CONTACTS

Hours of Operation: 8:00am-4:30pm (Monday-Friday)

Note: The Crime Laboratory is closed every year on state holidays observed in Louisiana. Please contact Troop A (or your nearest troop) if your agency requires assistance with a crime scene or other investigation outside the laboratory's regular hours of operation.

Contact numbers:

- Main Office: (225) 925-6216 ext. 200
- Main Office Fax: (225) 925-6217
- Evidence Receiving: (225) 925-6223
- Troop A: (225) 754-8500

Mailing Address:
Louisiana State Police Crime Laboratory
376 East Airport Avenue
Baton Rouge, Louisiana 70806

Email address: CrimeLab@la.gov

Website: http://www.lsp.org/crimelab.html (Note: our customer satisfaction survey, this guide, submittal forms, and other info can be found here)

Questions for individual departments can be addressed by trained laboratory personnel:

- DNA: (225) 925-7791
- CODIS/DNA Accessioning: (225) 925-7070
- Controlled Substances (Drug Unit): (225) 925-6257
- Toxicology: (225) 925-6256
- Firearms: (225) 925-1774
- Crime Scene: (225) 925-4549
- Latent Prints/Fire Debris/Shoeprints: (225) 925-6098, (225) 925-6016

Other Useful Contacts:

- Haz Mat Unit (Right to Know hotline): Telephone (877) 925-6595 (When hazardous materials are suspected or have been encountered, the Louisiana State Police TESS Unit should be contacted.)

- Department of Child & Family Services (to be contacted if children or vulnerable adults are in need of assistance at a scene): Telephone: (888) 524-3578

- Department of Public Safety Central Supply Warehouse (to obtain Blood Alcohol/Toxicology Kits and evidence envelopes for your agency): 290 East Airport Avenue, Baton Rouge, LA 70806. Telephone: (225) 925-6152

- Louisiana State Fire Marshal (for fire scene investigations): Telephone: (225) 925-3647

- FBI Criminal Justice Information Services (CJIS) (to order fingerprint cards or for NGI issues): Telephone: (304) 625-3983 or https://www.fbi.gov/services/cjis/fingerprints-and-other-biometrics/ordering-fingerprint-cards-and-training-aids

- LSP Bureau of Identification/Criminal Records. Telephone: (225) 925-6095

OBJECTIVES

The laboratory's objectives in providing this guide are as follows:

- To explain and highlight the most important aspects of physical evidence in criminal investigations.
- To explain the proper methods officers should utilize for the identification, collection, and preservation of physical evidence.
- To outline the various services provided by the Louisiana State Police Crime Laboratory for law enforcement agencies throughout our state.
- To instruct officers regarding the proper way to submit evidence for analysis to the laboratory.
- To demonstrate the usefulness of expert witness testimony as a valuable tool for attorneys within the judicial process.

OVERVIEW OF CRIME LABORATORY SERVICES

Analysis is performed for official criminal investigations only. The Louisiana State Police Crime Laboratory does not conduct evidence examination services for private individuals or corporations. The only time the Crime Lab is involved in civil litigation is when criminal cases become civil in nature.

Additionally, the Crime Laboratory's forensic services include assistance with crime scene investigations. When requested by an authorized law enforcement agency, scientific analyses in several forensic disciplines and court appearances that require expert testimony are available at no charge. The only exception is a criminal case for which the court orders lab services when a defendant has shown cause.

The procedures contained herein conform to LRS 15:41, 32:1700 et seq., and 40:4601 et seq., and shall form the basis for the confiscation, storage, transfer, release, disposal of evidence or contraband, and property seized.

Laboratory Services are to provide:

- Assistance to any Louisiana law enforcement agency, upon request, in criminal matters only; these services are furnished at no cost to agencies requesting such help.
- Assistance to Louisiana law enforcement agencies includes crime scene processing, where specialized scientific knowledge is needed.
- Examination, analysis, and comparison of numerous types of physical evidence. This is explained in greater detail throughout this guide.
- Expert witness testimony in courtroom proceedings.
- Instruction, both basic and specialized, to law enforcement personnel within the state. Requests for in-person instruction should be directed to the Laboratory Director or appropriate Manager or Supervisor.

SECTIONS OF THE LSP CRIME LABORATORY

The Louisiana State Police Crime Laboratory is comprised of three main analytical units or sections: Chemistry, Physical Evidence, and DNA.

CHEMISTRY UNIT

Drug Chemistry

- Analyze pharmaceuticals, powders, liquids, crystalline substances, illicitly made tablets, and vegetable material samples for the presence or absence of controlled dangerous substances, as prohibited by LRS 40, Schedules I-V
- Provide information on processing of clandestine labs and large seizures of illegal drugs
- Disseminate current drug trend information and safe handling practices to law enforcement agencies

Toxicology

- Analyze blood and urine for drugs that may cause impairment
- Quantify certain drugs in blood
- Analyze blood samples to determine ethyl alcohol levels for impairment cases
- Permit laboratories to perform Blood Alcohol and Toxicology analyses in Louisiana

DNA UNIT

Forensic DNA

- Analyze biological samples taken from crime scenes, victims, suspects, etc. (swabs, cuttings)
- Screen items of evidence for possible recovery of DNA (blood, semen, other body fluids, and contact DNA)
- STR and Y-STR analysis
- CODIS DNA database searches (for eligible DNA profiles)

CODIS DNA / Accessioning

- Receive DNA collection kits taken from arrestees, convicted offenders, and sex offenders
- Process DNA from arrestees and convicted offenders for upload into the CODIS database
- Perform agency training on proper data collection and use of DNA collection kits
- Conduct Familial DNA Searches of the CODIS Database
- Oversee the Louisiana Rapid DNA Booking Program

PHYSICAL EVIDENCE UNIT

Firearms

- NIBIN database entry of evidence firearms and cartridge cases
- Obliterated serial number restoration
- Gunshot residue analysis for distance determination
- Firearms examination
- Toolmark examination

Crime Scene

- Assist law enforcement agencies with processing crime scenes (including vehicles) and recovering evidence
- Provide blood stain pattern analysis
- Provide trajectory analysis
- Fracture comparison
- Process evidence for fingerprints
- Indented writing processing

Latent Prints/Impressions/Fire Debris

- Latent print comparison
- AFIS / NGI database entry of prints from crime scenes
- Impression comparison (shoeprints, tire tracks)
- Fire debris & ignitable liquid analysis
- Identification of fingerprints from unknown/deceased individuals

CHAIN OF CUSTODY

The chain of custody is a record that documents custody of evidence items collected during criminal investigations; this record is chronicled from the moment of its collection until its final disposition. It is date and time stamped to capture the timeline of events, and can be comprised of digital and/or paper documents. It allows the courts to question all persons who possessed an item regarding their handling procedures and actions.

The importance of a properly documented chain of custody cannot be overemphasized. The chain of custody is often closely scrutinized, and admission of evidence in trial is challenged and sometimes rejected because of improper handling or documentation. Therefore, it is extremely important that proper methods be used in collecting, preserving, and documenting physical evidence.

Avoiding Weak Links:
The chain of custody can be challenged in an attempt to expose weak links. To avoid weak links, it is important to keep the following in mind:

A. Keep the chain as short as possible: evidence should be handled by a minimal number of people. A chronological log should be maintained, or records to construct this chronology should be easily retrievable. This includes the dates and times of transfer and the name of person(s) to whom evidence was transferred.

B. Documentation may be maintained in several ways:
   1. A special form for all evidence in the case
   2. On each individual container of evidence
   3. Electronically, using secure passwords and/or PINs (personal identification numbers)

C. The same person who recovered the evidence should seal and place evidence labels on each container.

D. NEVER store evidence in a vehicle at any time of the year. Exposure to the heat, moisture, light, etc. may destroy an item's evidentiary value.

E. Evidence delivery to the Louisiana State Police Crime Laboratory should be made in accordance with both your agency's policies and the policies set forth in this guide.

F. All evidence submitted to the Crime Lab must be properly packaged and sealed, using tamper evident evidence tape. All seals must be initialed on and off the tape (as illustrated on page 25). Contact the Crime Lab for instructions on maintaining evidence integrity for items that are too large to be packaged. The "General Evidence Packaging" section will provide more information on this topic, or you may reference the evidence type you are packaging within the "Specific Evidence Handling" section.

Legal Requirements:
To maintain the judicial admissibility and value of the evidence, the investigator should be able to:

A. Identify each piece of evidence when asked to do so

B. Describe the exact location of the item at the time it was collected

C. Prove that the chain of custody has been properly maintained

D. Describe changes that may have occurred in or to the evidence between the time of its collection and its introduction in court

GENERAL EVIDENCE HANDLING

Physical evidence is any object that can provide a link among crime victim(s), suspect(s), or scene(s). The proper handling of evidence is crucial in any investigation, often determining whether or not a case can be solved or successfully adjudicated. In any investigation, the validity of information derived from examination of the physical evidence depends upon the care with which evidence has been handled. If evidence has been improperly collected, handled, documented, or stored, its value may be destroyed and no amount of laboratory work will be of assistance. If handled properly, the likelihood that useful information can be obtained from the evidence is increased.

Stages of Processing a Crime Scene (The following assumes control has been established, lifesaving efforts have ended, and the area is considered a secure crime scene.)

A. Protection: The first officer at the scene has the initial responsibility of protecting the scene. Upon arriving at a crime scene, officers may not be sure what evidence is most valuable. Therefore, all items should be treated with equal significance.

   1. Take note of people and vehicles in the general area. Document any first responders that are/were present and the general actions they took. Support personnel (e.g. detectives, wrecker service, search & rescue canines, chase teams, traffic/crowd control, etc.) should be contacted immediately, if needed.
   2. Guard all entrances/exits to the crime scene.
   3. Limit crime scene access to essential personnel ONLY. This includes limiting access to other law enforcement or auxiliary personnel not actively processing the crime scene. An inner and outer crime scene perimeter may be needed, and should be clearly marked with barrier tape.
   4. Note your route through the scene. Do not use victim/suspect suspected points of entry or exit, if possible.
   5. Remove people from the scene—victims, suspects, or witnesses—so that they do not purposely or inadvertently alter or destroy evidence. Instruct them not to discuss the events. Document if they have disturbed anything in or around the scene.
   6. Maintain a crime scene log in which the name, department, arrival, and departure of each person at the crime scene is recorded. Note who has been inside the scene perimeter (EMS, fire department, etc.).
   7. Use a camera, video camera, or other means to document the scene as it was initially found.
   8. Record any changes to the scene by your actions or those of emergency personnel.
   9. Make note of the following but do not move or pick up anything:
      a. Doors and Windows: opened, closed, or locked?
      b. Lights, TVs, or Radios: on or off, and which ones?
      c. Odors in the air? (cleaning solutions, cigarette smoke, perfume, gunpowder, etc.)
      d. Items out of place?
      e. Condition of body? (if applicable)

10. Attempt to "freeze" the scene as closely as possible to the condition in which it was found to minimize the destruction of evidence.
    a. Protect suspected routes of entry and exit. If possible, use another entrance to the scene to avoid destroying possible latent footwear and fingerprint impressions, or other types of evidence.
    b. Protect evidence (such as footwear and tire impressions, biological and trace evidence) from inclement weather.
    c. Wear gloves and, if necessary, mask and shoe covers when entering the scene. (Shoe covers should be worn at scenes where biological and trace evidence and latent footwear impressions may be important.) These types of items are known as Personal Protective Equipment (PPE).
11. Collect victim/suspect clothing, including footwear. If clothing is removed at the scene by emergency personnel, advise them not to cut through any bullet holes or pattern impressions in the clothing.
12. Record any observations of the suspect or victim. Any injuries? Any bloodstains on hands or clothing? Condition?
13. If first responders are turning the scene over to other detectives, fully brief those assuming command.

B. Recognition:
1. Evidence recognition is an acquired skill, improved and refined over the course of an officer's career. Education and experience will improve this skill.
2. By making themselves aware of the functions of the Crime Lab and what analyses the LSP Crime Lab or other labs can perform, officers can determine what items at a scene hold the best evidentiary value.
3. Understanding all types of evidence and what questions they may potentially answer will aid tremendously in the reconstruction of a crime.

C. Documentation: Documentation of the crime scene has a two-fold basis of significance:
1. Legally: If evidence associated with a crime scene is not properly collected or documented, this may present complications when tried in court.
2. Scientifically: Incorrect or incomplete crime scene documentation can impede the forensic analysis process, resulting in little or no assistance in solving your case.

IMPORTANT: Nothing at the crime scene should be altered until a detailed record of scene and item condition, location, etc. has been made, unless inaction will immediately cause loss or deterioration of the item.

Utilize the following methods as necessary:
- Written notes
- Sketches
- Photographs
- Audio and/or Video recording

D. Collection & Preservation:

1. The general rule is to submit the evidence in the same condition as when collected. Exceptions are noted throughout this manual. (E.g. some evidence must be dried, refrigerated, or frozen).
2. Care should be exercised when collecting all evidence. This section provides general guidelines for handling evidence during collection.
3. Evidence should not be collected until the whole crime scene has been documented (unless transient evidence will potentially be lost if not immediately collected). First responders should ensure the scene remains secure until trained crime scene response personnel arrive.

If any uncertainties arise regarding how to collect, package, or preserve evidence, please call Crime Lab personnel for instructions or on-site assistance. *Louisiana State Police crime scene investigators are on call* 24 hours a day, 7 days a week for this purpose.*

Contact numbers for LSPCL crime scene personnel are listed on pages 7 and 44 of this manual.

1. Use personal protective equipment (PPE) to prevent contamination of both personnel and the scene.
2. Remain aware of your and others' movements in and around the crime scene. Even slight changes could impede or alter forensic analysis.
3. With some types of evidence, known comparison samples (references) are necessary.
4. Labeling evidence accurately is of the utmost importance. Labeling errors, inconsistencies, and oversights tend to be one of the most frequently encountered, yet avoidable, challenges for forensic analysts.
5. Identify and protect fragile and/or perishable evidence (e.g. consider climatic conditions, crowds/hostile environments). Ensure that all evidence that may be compromised is immediately documented, photographed, and collected.
6. Some items must be thoroughly dried before packaging (DNA swabs, bloody clothing, plants, etc.) After drying, these types of evidence are best stored in clean paper containers. Plastic containers should **NEVER** be used for long-term storage of biological fluids or fresh vegetable material, except urine collected in the approved BU or PM kit.

E. Packaging: Use appropriately sized containers to package your evidence securely and properly. Avoid folding or stuffing larger items into smaller containers or packaging smaller items in very large packages (unless secured to the package).

1. Paper Containers: Paper is appropriate packaging for most types of evidence. Paper is porous—it allows water and other vapor to escape. Clothing and other cloth items which are to be examined for DNA evidence should always be packaged in paper; moisture can lead to the destruction of DNA evidence. Plant materials, such as marijuana or

mushrooms which are confiscated fresh, should be dried before submittal to the laboratory or packaged in paper. Additional information about packaging evidence of this type can be found in the "Specific Evidence Handling" section, within the categories entitled Fire Debris, DNA & Controlled Substances.

Items collected for fire debris analysis should NEVER be stored in paper containers, even for short periods of time—this allows the ignitable liquid vapors to escape, or could cause contamination of the sample.

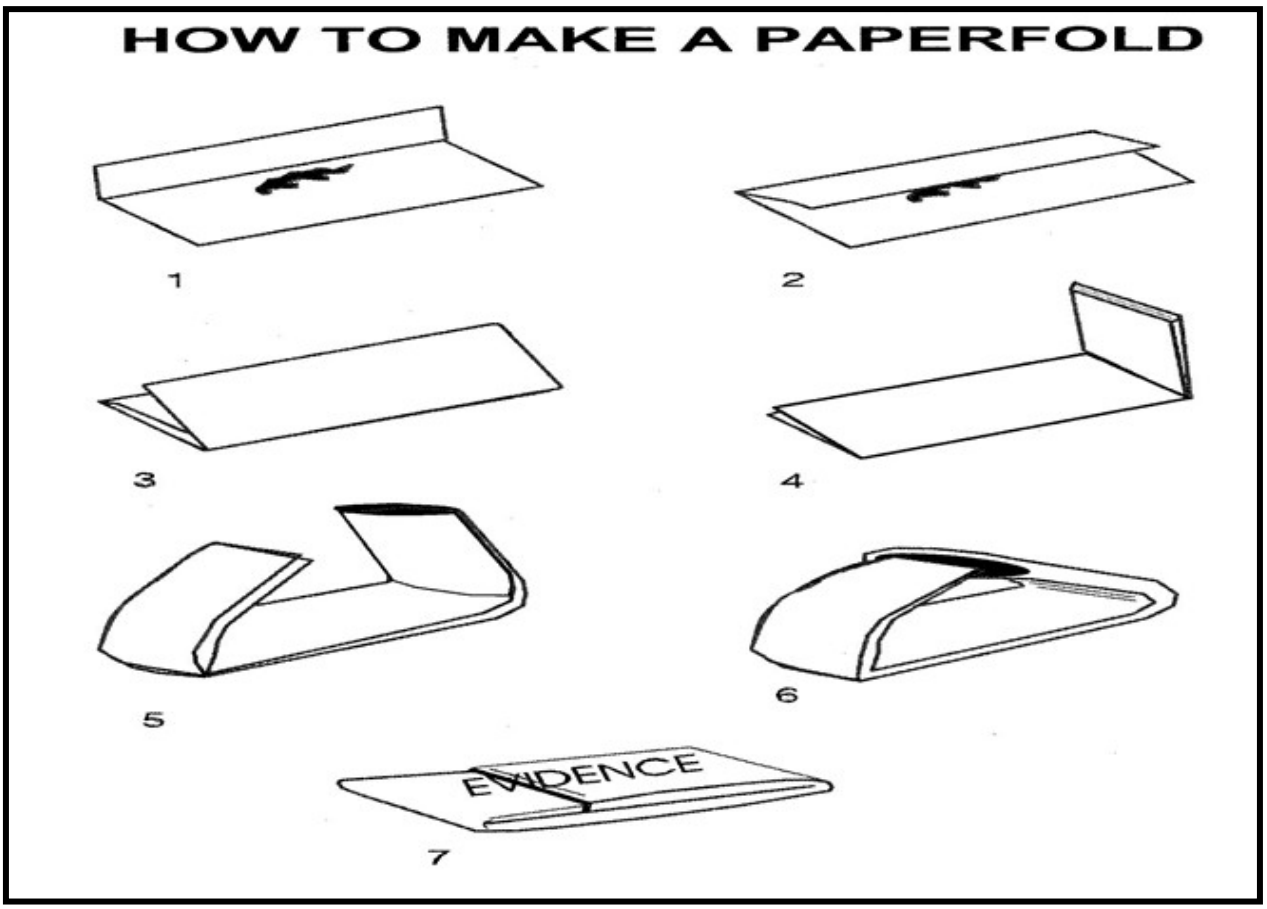
a. Bags: Paper bags are widely used and very effective in packaging most types of evidence. Evidence should fit inside the paper bag comfortably, while allowing sufficient room to fold the top over and apply evidence tape for proper sealing.
b. Envelopes: Like paper bags, envelopes may leak at the seams and may not be suitable for powder evidence unless the seams are taped.
    i. Heavy-gauge paper envelopes of various sizes are best for packaging narcotics evidence or moderately heavy evidence items.
    ii. Paper evidence packets are widely used for enclosing very small, easily lost pieces of evidence (paint chips, hairs, fibers, small pieces of glass, etc.). Ensure that the paper is folded and sealed so that the sample cannot escape. Paper packets should then be labeled and enclosed in an outer, labeled evidence envelope.
    See below for illustrations on making paper evidence packets
    iii. Manila "coin" envelopes are very useful for packaging evidence items such as cigarette butts, cartridge cases, or similarly sized items.

2. Boxes: Cardboard boxes are used to create a durable enclosure for items that could possibly be broken, crushed, abraded, eroded, or damaged in any way and for heavy, bulky items. Unless they have a waxy finish, cardboard shares paper's porous nature and is a good choice for items that may contain residual moisture and for DNA samples. Cardboard boxes should not be used for trace evidence (or when the item being packaged is to be examined for trace evidence.)

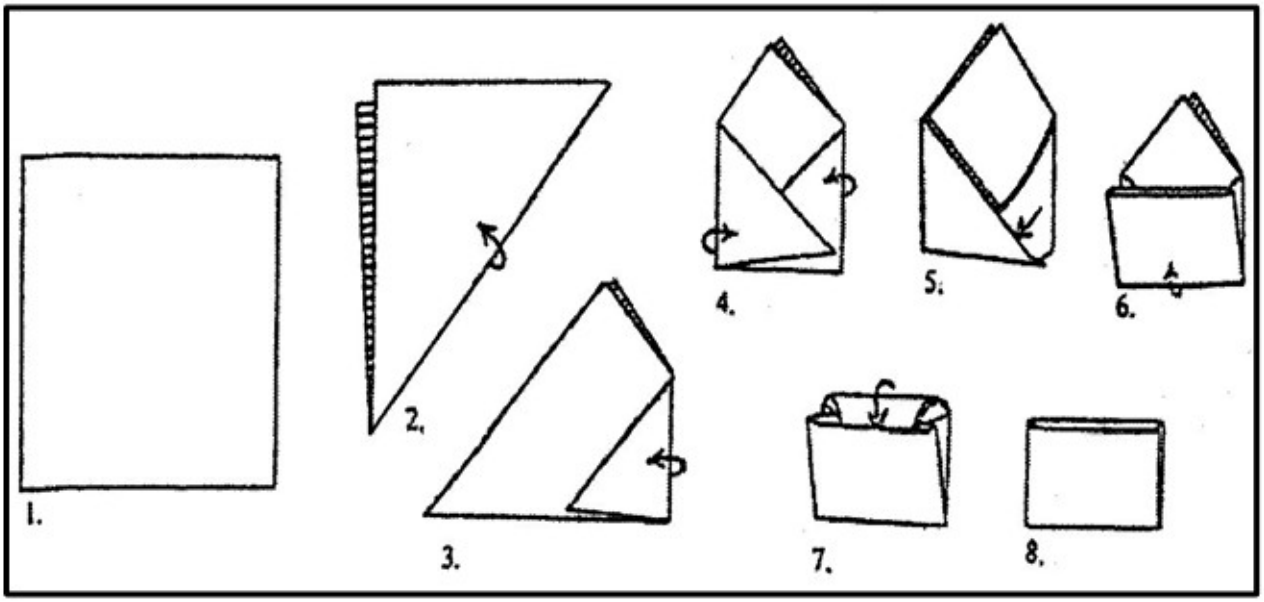
   Cardboard boxes (i.e. copy paper boxes or similar): Many forensic supply companies carry boxes designed for packaging weapons, including knives, long guns, and hand guns.

   Please submit reasonably sized boxes that are not overfilled, too heavy, awkward, or bulky.

3. Metal Containers: New, clean, lined paint cans are ideal for storing non-biological samples that could evaporate and that contain volatile smell/fumes. The most common example is fire debris suspected of containing ignitable liquids. A previously used can is not acceptable due to contamination risk. Lids should be sealed completely with no debris in the rim of the can.



The above and below figures illustrate two popular ways of making paper folds.



4. Glass Vials or Jars:
    a. These are useful for collection of liquid evidence, such as urine or blood. They may also be used for packaging liquid fire debris evidence (e.g. gasoline, charcoal lighter fluid, etc).
    b. Please do not submit glass jars or tubes without packaging them securely within boxes, or similar enclosures, to prevent breakage.
    c. Appropriately identify biological fluids with biohazard labels, for the safety of all persons who will handle this evidence.

5. Plastic: Plastic has several obvious advantages: it has great strength for its weight and transparent plastic allows for inspection of the enclosed contents. However, there are several disadvantages. Water vapor does not freely pass through plastic. Most evidence is adversely affected by prolonged exposure to water: steel will rust, cardboard or paper may decompose, biological materials (e.g. blood stains) are destroyed, and natural clothing materials (leather, wool, cotton) can mold and degrade. Some vapors other than water can pass through plastic, and, therefore, may allow sought-after samples to escape. Plastic is acceptable, however, for items that you are certain are dry, or for short term transport of wet items from a scene for appropriate packaging/drying.
    a. Plastic Bags: These are available in a variety of sizes and can be used to package a few types of evidence. Plastic bags are seldom recommended for packaging evidence, except in the case of certain types of drug evidence.
    Refer to the Controlled Substances subsection under "Specific Evidence Handling" for more information regarding the use of plastic bags
    b. Plastic Sharps Containers: These are available in a variety of sizes. Hypodermic needles and/or knives can be placed in sharps containers. However, consideration should be taken when deciding what packaging to use for sharp objects. If questions arise about this topic, please contact crime lab personnel.
    c. Heat Sealed Bags: The heat sealing method partially melts the plastic packaging and fuses it together. Some sealers emboss an identifiable mark on the seal. Use an indelible marker to write your initials across the seal, if this method is utilized. This demonstrates that the package was not opened and then resealed.

F. Sealing and Labeling Evidence: Evidence is considered properly sealed when the evidence inside is protected from loss, contamination, or deleterious change, and any attempt to remove the items would be noticed. Throughout this handbook, the phrase, "please use proper evidence sealing techniques" refers to all of the guidelines listed here.

Tamper evident tapes are commonly used so that any attempt to remove them will result in destruction of the tape. Traditionally, the security feature is created by a combination of a tenacious adhesive and a low tensile strength backing. Some tapes change color, have words that develop when disturbed, or fluoresce under alternate light. These tapes are available in long rolls and individual strips; they can be purchased through any forensic

supply company.

1. Basic Techniques for Proper Evidence Sealing:
    a. Use tamper evident evidence tape to seal all evidence containers.
    b. Staples, clear tape, paper clips, or anything other than evidence tape does not constitute proper sealing.
    c. The open flaps of envelopes must be sealed with evidence tape, and each strip of tape must be initialed. The collector must initial or sign across the junction of the tape and the container as illustrated below using an indelible pen/marker. Intact manufacturer seals do not need to be resealed with evidence tape.
    d. Bottles and jars must be capped tightly to avoid leakage, and then sealed with evidence tape. The tape must extend across the container/lid junction in at least one area. If the bottle is packaged inside another container, it is acceptable to only seal the outer container with evidence tape.
    e. Package all containers securely to avoid leakage, tearing, or the sifting of evidence through cracks or small openings. Consider a double packaging process to protect trace evidence from being lost in a larger outer container.
    f. Containerization and sealing are unnecessary for large items such as furniture, doors, windows, and automotive components which cannot be packaged and sealed in a practical manner. In such cases, the area of the item that has forensic importance should be covered and clearly marked.

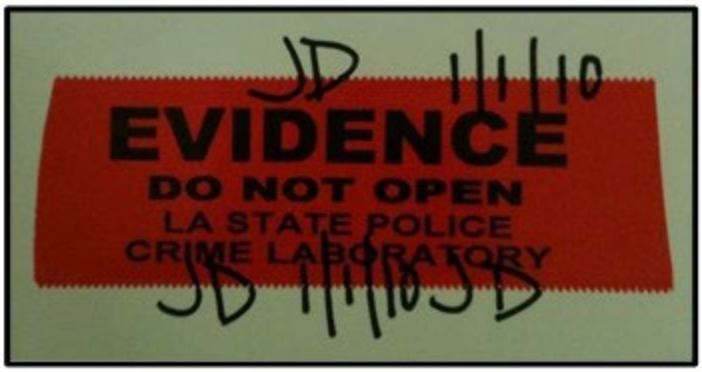
2. Other Information to Consider:
    a. Tamper evident tapes provide a seal that, when breached, is obvious that the seal has been tampered with. Always perform a quality check before using a new roll of tape. Each brand of tape used should also be tested in this manner.
    b. Some evidence tapes will not adhere under cold conditions.
    c. Evidence tape should not be placed on top of packaging tape in a manner that only covers such tape, but should be placed in a way that creates a tamper evident seal.

3. Basic Techniques for Proper Evidence Labeling: Be sure to include as much information as possible about each item collected; below is the minimum amount of information needed for each piece of evidence.

An indelible pen/marker should be used when entering this information on the outside of properly sealed evidence

    a. Name or initials of collector, written across the junction of the tape and envelope (see photo below)
    b. Date/Time of collection
    c. Where in the crime scene the evidence was found
    d. Source of item/name of subject: If collected from a person, label using the person's name, rather than only "suspect" or "victim"

e. Brief description of the item (i.e. identifying features like color, number of items, make/model/serial number, etc.)



Case information for each item of evidence submitted to the LSP Crime Laboratory must be submitted electronically via JusticeTrax Portal (herein referred to as Portal), or must be accompanied by a completed Laboratory Submittal Form (DPSSP 4606). This form is located at http://www.lsp.org/crimelab_forms.html under the FORMS tab and is labeled Lab Evidence Submittal Form.

SPECIFIC EVIDENCE HANDLING

The following sections will offer specific details regarding the different units of the Louisiana State Police Crime Laboratory, as well as the various evidence types handled by each unit.

Subsequent segments of this manual will discuss certain types of analysis not performed by the Crime Lab, but such evidence is worthy of mention for informational purposes, as analysis of these types of evidence can be performed by other labs. If questions arise, please contact the laboratory for clarification or additional information.

A Short Introduction to Forensic Evidence Handling:

It would be impossible to list all the objects that could conceivably be useful in solving a crime. Every crime scene should be treated on an individual basis, with its own history, conditions, and complexities. Below is a list of items whose scientific examination is likely to yield significant results in ascertaining the nature and circumstances of a crime.

Being familiar with the recognition, collection, and analysis of physical evidence, as well at the LSP Crime Laboratory's capabilities to process this evidence, will allow you to make the best decisions when determining what to collect from the scene and what to submit t for analysis.

CONTROLLED SUBSTANCES UNIT

Many substances are analyzed by forensic scientists at the Crime Lab to determine the presence or absence of controlled dangerous substances in plant materials, powders, liquids, capsules, and tablets. A controlled dangerous substance is a drug, substance, or immediate precursor in Schedules I-V of R.S. 40:964 of the Louisiana Criminal Code. For a current list of controlled dangerous substances, consult an updated copy of Title 40 or visit the Louisiana State Legislature website (http://www.legis.la.gov/Legis/Law.aspx?d=98877). Forensic Scientists may also advise law enforcement personnel in assessing, processing, and collecting evidence at clandestine drug laboratories. Additionally, analysts, with specialized training in this area, will alert law enforcement personnel to the most current drug trends.

Federal, state, and local agencies share responsibility for enforcing the nation's drug laws, although most arrests are made by state and local authorities. In 2012 the Federal Bureau of Investigation's Uniform Crime Reports (UCR) estimated that there were about 1,552,432 state and local arrests for drug abuse violations in the United States.

According to the UCR, drug abuse violations are defined as state and/or local offenses relating to the unlawful possession, sale, use, growing, manufacturing, and making of narcotic drugs including opium or cocaine and their derivatives, marijuana, synthetic narcotics, and dangerous non-narcotic drugs such as barbiturates. More than four-fifths of drug violation arrests are for possession.

Cautionary Rules When Collecting Suspected Drug Substances:

These precautions may be mentioned several times throughout this section; however, because of their importance to the health and safety of the investigating officer(s), these points cannot be overemphasized.

- Never taste any material suspected of containing drugs, chemicals, or poisons. Treat all powders, pills and crystalline substances as if they are fentanyl. Have Narcan (aka naloxone) available, and wear a protective eye shield, lab coat, & a particulate filtering mask if available. Open evidence in a ductless fume hood, if possible. K9 officers are not immune to exposure; therefore, use Narcan and call their vet immediately after an exposure.

- Never smell materials suspected of containing drugs, chemicals, or poisons. Fentanyl compounds are extremely dangerous if inhaled, and may cause loss of consciousness and even death.

- Do not handle drug evidence more than is absolutely necessary. After drugs have been handled, wash hands thoroughly and as soon as possible. Wear nitrile gloves (latex will not prevent an accidental exposure) as many compounds are absorbed through the skin, such as LSD and fentanyl.

- Handle all chemical materials with care. They may be highly flammable, poisonous, caustic, or explosive.

- Use particular care in searching a person who is suspected of having drugs, an automobile suspected of containing drugs, or any area where it is possible that hypodermic syringes or makeshift needles may be hidden. Even slight pricks in the skin from such needles can be dangerous if the drug user has a communicable disease, such as infectious hepatitis or HIV. If the skin is punctured, wash the area with soap and water and seek appropriate medical attention. Wear puncture resistant gloves under your nitrile gloves for sharps or syringes.

A. **Evidence Analysis**: Qualitative tests are performed to determine the presence of controlled substances. The following are the most common types of samples sent to the laboratory for forensic analysis:
   1. Powders, Crystalline and Rock-like substances
   2. Pharmaceutical Items (Tablets, Capsules, Patches, Sublingual Film)
   3. Vegetable Material
   4. Illicit/Counterfeit Tablets
   5. Liquids
   6. Vape Cartridges
   7. Edible products

B. **Collection of Drug Evidence:** Proper collection, packaging, storage, and submission of drug evidence help ensure the integrity of the evidence for forensic analysis. Each type of evidence requires specific handling precautions that need to be followed before submitting to the laboratory for analysis.
   For faster and more efficient analysis:
   - Minimize the layers of evidence packaging.
   - Combine like drugs in the same envelopes.
   - Use approximate counts and weights on the evidence packaging, or record on the Submittal Form or in Portal.
   - Submit a sample of the seized suspected controlled dangerous substance(s) if there are no weight thresholds for prosecution (check with the applicable DA's Office before doing this). Weight thresholds currently exist for marijuana, THC, synthetic cannabinoids, heroin, fentanyl, methamphetamine, cocaine, and all Schedule I and II Controlled Dangerous Substances.
   - Synthetic cannabinoids ("mojo" or "incense"), synthetic cathinones ("bath salts"), vaping cartridges, factory prepared edible products, and factory sealed drugs (e.g. cough syrup, blister packs of pills or anabolic steroids): **Submit ONE (1) packet/cartridge/bottle/blister pack of each kind/brand/flavor/same packaging.**

   The LSP Crime Lab is continuing to provide more efficient analysis for seized drug analysis. By agencies triaging the evidence BEFORE submitting, the drug unit can drastically decrease the turnaround time of drug analyses. Also, certain items require prior approval and special packaging due to safety concerns with these items. In order to provide safe, timely analysis LSPCL requires the following guidelines be met.

   THE BELOW ITEMS SHALL BE ACCEPTED FOR DRUG ANALYSIS IF IT IS THE

ONLY ITEM IN THE CASE. WHEN THESE ITEMS ARE IN COMBINATION WITH NON-RESIDUE EXHIBITS, THEY SHALL BE REFUSED.

- **Seeds**
- **Residues and/or gleanings** found on or in items such as clear plastic bags, pouches, smoking devices, pipes, scales, spoons, straws, plates, bowls, bottles, cups, knives, razor blades, safety pins, push rods, mirrors, etc.

DO NOT SUBMIT FOR CONTROLLED SUBSTANCE ANALYSIS:

- **Loose powders contained in an evidence envelope or bag without being contained in a clear plastic bag first**
- Field test kits (including those with broken ampules) and field test wipes (aka NIK wipes)
- Empty plastic bags, bottles, and containers
- Factory Rolled cigarettes and cigars
- Paraphernalia such as scales, rolling papers, rolling machines, roach clips, cigarette lighters, etc.
- Currency, including coins and paper money
- Over the counter (OTC) drugs that are not controlled, such as Aspirin (acetylsalicylic acid), Tylenol (acetaminophen), Advil (ibuprofen), Aleve (naproxen), Guaifenesin, Phenylephrine, Vivarin (caffeine), cough and cold medicines.*
- Prescription medicines that are not controlled such as antibiotics, heart medications, Viagra, etc.*

The above section refers only to narcotics testing of these items. These items may be submitted for other types of testing (ex. prints, DNA).

** These items may be submitted on a case-by-case basis if case details warrant their testing. Call the Narcotics Unit supervisor for inquiries.*

Submission Guidelines for Marijuana and Other Controlled Dangerous Substance Evidence:
No more than ten (10) exhibits submitted per case:

- Prioritize the top 10 exhibits if you have more than that.
- Examples of exhibits:
  - Multiple bags, containers, bottles, etc. that are consistent in packaging appearance and suspected drug contained within. Examples of one (1) exhibit: "Five (5) clear plastic bags each containing a crystalline substance." "Three (3) amber glass bottles with the same label each containing a liquid." "Seven (7) small round plastic containers each containing suspected marijuana."
  - Pharmaceuticals with the same shape and logo are considered one (1) exhibit.
  - Items that are not consistent in appearance but contain the same suspected drug are considered separate exhibits. E.g. "One (1) blue ziplock bag, one (1) knotted clear plastic bag and one (1) plastic straw each containing suspected heroin." This is an example of three (3) exhibits.
  - Pharmaceuticals and illicitly made tablets ("ecstasy" pills) that are different in color, shape and/or logo are considered different exhibits.

Contact Drug Unit Supervisor Bridgett Mack at (225) 925-6507 (Bridgett.Mack@la.gov) or Chemistry Manager Rebecca Chiasson at (225) 925-4379 (Rebecca.Chiasson@la.gov) with questions.

1. **Powders & Crystalline/Rock-Like Material**: Cocaine, cocaine base (crack), methamphetamine, and heroin are controlled substances usually seen in a powdered or chunky/rock-like form. These drugs are commonly encountered in colors ranging from white to tan to brown. Cocaine is sometimes seen as compressed bricks of white to off-white powder (kilo bricks), with logo marking and multiple layers of tape and plastic packaging.

2. **Pharmaceuticals**: Pharmaceutical tablets, capsules, and patches can frequently be identified through their markings (imprint codes). An officer may consult references such as the Physicians' Desk Reference, the Drug Identification Bible, or www.drugs.com.

    a. This type of evidence should not be removed from the original containers in which they are found. Preserve any bottles, cans, boxes, envelopes, or wrappers connected with the evidence (information found on any outside labels may be helpful to lab analysts).

    b. Each package should be itemized, counted (approximate tablet counts are acceptable), and listed on the submittal form (or recorded in Portal).

3. **Marijuana and other Vegetable Material**: Marijuana contains the controlled substance delta-9-tetrahydrocannabinol, commonly known as THC. Synthetic cannabinoids are also present in vegetable material form that is submitted for analysis, and are controlled in Schedule I.

    a. Marijuana, in any form, should be air-dried thoroughly before it is submitted to the Crime Lab. Large amounts of fresh or wet plant material can ferment and become moldy, which will destroy the evidence.

    b. Dry, loose vegetable material should be placed in sealed paper or plastic bags.

    c. Partially burned vegetable material should be packaged in either sealed envelopes or plastic bags.

    d. Live plants should be removed from the container with the roots intact. Plants must be submitted with leaves, stems, and roots intact and still connected. Package the plants in paper bags or boxes. NEVER PUT FRESH PLANTS INTO PLASTIC BAGS.

    e. Seeds should be placed in a small envelope. Care should be taken to prevent crushing, as seeds must be grown into a plant before analysis can be performed. Seeds will only be grown at the discretion of the Crime Laboratory and submitting agency.

    f. Mushrooms must be removed from the original container, stored in paper and delivered to LSPCL as soon as possible. Mushrooms should be dried if possible. The controlled substance in mushrooms (psilocin and/or psilocybin) cannot be detected until the mushrooms are fully grown. Therefore, suspected mushroom spores should not be submitted.

4. **Illicit Tablets**: Illicit tablets often contain many types of controlled substances, and they appear in many colors with various logos. These tablets are commonly referred to as "ecstasy." Ecstasy tablets have traditionally contained methylenedioxymethamphetamine

(MDMA); however, more recently they commonly contain methamphetamine. Laboratory analysis has found other controlled substances such as 3,4-methylenedioxymethamphetamine (MDA), benzypiperazine (BZP), cathinones, ketamine, PCP, and GHB, often in combination with MDMA and other adulterants. Laboratory analysis can determine the specific controlled substance(s) present.

5. **Liquids**: Phencyclidine (PCP), gamma-hydroxybutyric acid (GHB), codeine cough syrup, and anabolic steroids are controlled substances usually seen in liquid form. Steroids usually are available in pharmaceutical preparations with labels often in a foreign language.
   a. Liquids should be placed in clean glass or plastic bottles with screw caps.
   b. Submit the liquid containers in a plastic bag to prevent leaking.
   c. Place in a box, seal, and mark "FRAGILE" if in a glass container.
   d. Suspected PCP must be packaged in "kapak" bags or sealed in a hard plastic bucket with the bottom covered in vermiculite, with the bottle of liquid secured in the vermiculite and sealed. PCP must receive prior approval from the Chemistry Manager or Drug Unit Supervisor.

6. **Fentanyl and Fentanyl Analogs**: Working with controlled substances and unknown materials presents officers with a certain level of hazards and risks. Evidence may be encountered that increases this level of hazard and risk, such as fentanyl and fentanyl analogs. Officers should be aware of these hazards and use the appropriate PPE when necessary. This should include the use of fume hoods, gloves, face shields, and other PPE while working with the material. A supply of NARCAN® (naloxone HCl) should be available in the event of an accidental exposure. 911 must be called when naloxone is administered because the victim may need additional doses. Naloxone is available for FREE through the AG's office https://www.ag.state.la.us/Article/2408.
   a. When to use NARCAN® (naloxone HCl) Nasal Spray:
      i. Suspect opioid exposure
      ii. Individual is unresponsive to voice or touch
      iii. Breathing is slow or stopped
      iv. Individual is making gasping or snoring sounds
      v. Fingertips or lips are blue or purple
      vi. Respiratory and central nervous system depressant
   b. How to use NARCAN®:
      i. Lay individual on their back
      ii. Retrieve NARCAN® (naloxone HCl) Nasal Spray
      iii. Hold container with thumb under the plunger
      iv. Tilt the individual's head back slightly
      v. Insert tip in nostril
      vi. Press the plunger one time
      vii. Turn the individual on their side, put hands under head, bend upper leg forward
      viii. Call 911 and stay with the individual
      ix. If the individual is not responsive after 2-3 minutes, repeat NARCAN® administration with a new dispenser in the other nostril
      x. Visit www.narcan.com for additional information and instructions

7. **Drug Paraphernalia**: The term "drug paraphernalia" means anything primarily intended or designed for use in manufacturing, concealing, ingesting, or otherwise introducing into the human body a controlled substance. Possession of these items is unlawful under Louisiana law. DO NOT SUBMIT paraphernalia for controlled substance analysis unless it is the ONLY item in the case.

   Syringes: Due to safety concerns, syringes **SHALL** be addressed in the following manner:
   - **DO NOT REPACKAGE CONTENTS OF SYRINGE INTO ANOTHER CONTAINER**
   - **SYRINGES MUST BE PACKAGED IN BIOHAZARD STICK PROOF CONTAINERS; CONTAINERS MUST BE SEALED ON BOTH ENDS.**
   - **ALL SYRINGES MUST BE SUBMITTED IN CLEAR EVIDENCE PACKAGING TO ENSURE PROPER SAFE PACKAGING**
   - **Syringes must be the only item in the case**
   - **Syringes must have prior approval and written approval (initials) on the submittal form (or as recorded in the case record) by the Chemistry Manager or Drug Unit Supervisor**
   - **Live person cases must have a letter or email from the DA's office stating they need the syringe to be analyzed to move forward with prosecution**
   - **ANY deviation from the above listed criteria is cause for rejection of the case or evidence item**

C. **Latent Prints/DNA on Drug Packaging Materials**: When it is anticipated that latent print examination or DNA testing will be needed on drug packaging, these items should be handled as little as possible (do not repackage drugs or apply evidence tape directly onto the materials on which prints or DNA is requested). Indicate on the lab submittal form (or in Portal), at the time of submittal, that latent prints and/or DNA analysis is requested in addition to drug analysis.

D. **Large Drug Seizures**:
   1. Determine if a crime scene team is needed for assistance in fingerprinting, photographing, and sampling large seizure of drugs at the scene.
   2. If large amounts of drugs are seized (i.e. large marijuana or cocaine bundles, several hundred packets of suspected bath salts or synthetic cannabinoids), contact the Narcotics Unit supervisor so that an appointment may be made for a drug analyst to obtain a total weight and to sample the evidence.

E. **Clandestine Laboratories**: A clandestine lab is defined by the DEA as an illicit operation consisting of a sufficient combination of apparatus and chemicals that either has been or could be used in the manufacture or synthesis of controlled substances. Such labs range from makeshift operations to highly sophisticated and technologically advanced facilities, some of which are mobile. The health and environmental safety concerns will vary with the type of drug being manufactured and production method being utilized.

   Because of the danger of explosions, fire, and toxic chemical exposure, a clandestine lab must never be processed or dismantled without the aid of a member of a Hazardous Material team or a DEA chemist who has been trained and certified in this area. Visit the Louisiana State

Police Hazardous Material and Explosives Control Unit (HAZMAT) website at http://www.lsp.org/hazmat.html for more information.

General Information & Safety Precautions: Clandestine labs can be set up anywhere, even in vehicles. These laboratories are often hidden in remote areas, may contain sophisticated surveillance equipment, and may be booby-trapped to prevent intruders and law enforcement personnel from entering as well as to destroy any evidence should the facility be discovered. Operations also vary in degrees of sophistication from individual operators to organized groups.

According to the DEA, more clandestine drug labs are being seized than ever before; this increase is attributed to the availability of chemicals and information about manufacturing processes, as well as the ease of the manufacturing processes, low production costs, and high profits from the drugs.

Extreme care and caution should be used whenever investigating or processing a clandestine lab site. The substances used in the production of controlled substances may be caustic, carcinogenic, explosive, or flammable. Personnel engaged in clandestine drug laboratory investigations and seizures should have specialized training and personal protective equipment. Clandestine drug labs may also involve the removal and proper destruction of large quantities of hazardous toxic chemicals. The disposal of these chemicals is strictly regulated by state and federal environmental protection agencies.

Miscellaneous Drug Information:

1. Drugs are categorized both legally and pharmacologically. Legally, drugs are listed and classified based on their medical use and potential for abuse and dependency. The "highest" schedule is Schedule I, indicating drugs that have no accepted medical use and a high potential for abuse and dependency. The "lowest" schedule of drugs is Schedule V, indicating drugs that require a prescription but have a very low potential for abuse.
2. The LSPCL Drug Unit has the right of refusal, meaning that if a case is improperly packaged or if the evidence is compromised, decayed, or consumed the case can be returned unanalyzed. The evidence may be resubmitted at a later date if the situation can be resolved.

On August 1, 2021, Act 247 went into effect after Governor J.B. Edwards signed HB 652. Act 247 reduces the penalty for conviction of possession of marijuana (14 grams or less) and items that contain THC (delta-9-tetrahydrocannabinol), e.g. oil, vapes, edibles, wax, etc. The maximum penalty for anyone convicted of misdemeanor marijuana or THC possession (14 grams or less) will be $100.00.

The LSP Crime Laboratory conducted an analysis and determined that it is not cost effective to Louisiana taxpayers to continue to accept and analyze marijuana and other items containing THC when the amount is 14 grams or less. Therefore, effective August 1, 2021, the LSP Crime Laboratory no longer accepts or conducts analysis on misdemeanor marijuana and/or THC charges where the suspected marijuana or THC is less than 14 grams. When necessary for the fair administration of justice, evaluation of requests from law enforcement agencies and/or prosecutors for misdemeanor marijuana analysis will be done on a case-by-case basis. These requests must have prior approval for submission from the LSPCL chemistry manager.

Certain circumstances allow for an exemption from this new policy:

- *If marijuana and/or THC under 14 grams is seized relative to a more serious charge, (e.g.*

possession with a firearm, PWITD, juvenile in possession, contraband in a correctional facility, DWI, sexual assault, homicide, etc.), this evidence will be allowed to be submitted to the lab for testing as per the current drug unit testing policy.

TOXICOLOGY UNIT

Forensic Toxicology is the scientific area which identifies alcohol and/or other drugs in biological specimens which may cause impairment. The most commonly submitted cases to the LSP Crime Lab toxicology unit are blood alcohol concentration (BAC), identification and/or quantification of drugs (TOX), and identification of drugs in urine (TOX). For confirmatory lists of all substances tested for, contact the LSP Crime Lab Toxicology unit.

The Toxicology Unit routinely analyzes blood/urine relating to DWI (impaired driving), drug facilitated sexual assault, death investigations, and officer involved shootings.

The LSP Crime Laboratory Toxicology unit oversees the blood alcohol and toxicology program within the state, with the responsibility of permitting laboratories that analyze blood/urine samples for use in Louisiana Courts of Law. Individual labs must attain ISO/IEC 17025 accreditation AND apply for a permit to the LSP Crime Laboratory. For a list of permitted laboratories, contact the LSP Crime Lab Toxicology unit.

The LSP Crime Laboratory Toxicology unit is responsible for approving and providing blood/urine collection kits for live individuals (BU-0LA) and blood/urine collection kits for deceased individuals (PM-0LA). Kits are available to all Louisiana law enforcement agencies free of charge and are available at the DPS warehouse (225-385-6008). For a list of approved kits, contact the LSP Crime Lab Toxicology unit.

Louisiana state law currently allows for two types of tests to determine ethyl alcohol levels in the human body: breath and blood. Louisiana's breath testing program is overseen by the LSP Applied Technology section (225-925-6128). Please contact LSP Applied Technology with questions regarding breath testing equipment such as the Intoxilyzer 9000. Blood can be submitted to the LSPCL Toxicology unit to quantify the amount of ethyl alcohol in that sample.

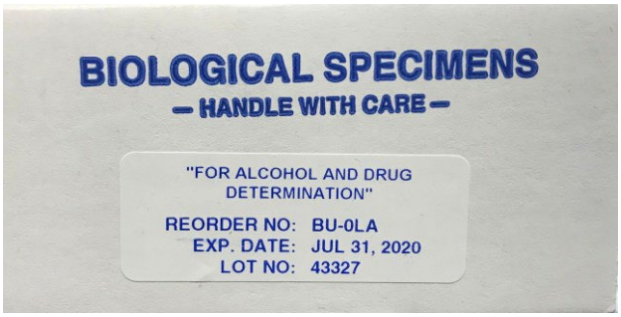
Blood alcohol and/or toxicology requests:

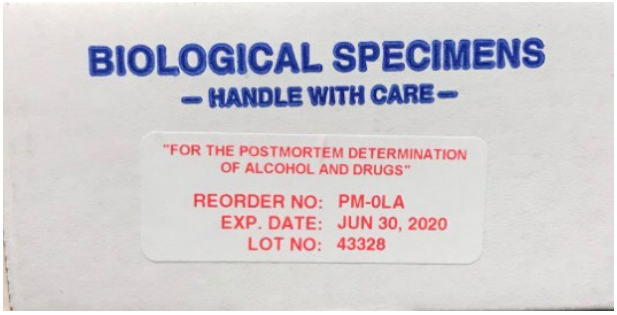
A. A request for any toxicological analysis should include:
    1. In a DWI investigation, the officer should include the individual's physical state and results of any tests conducted to determine impairment. Information that may narrow the drug possibilities may also be helpful.
    2. A list of all drugs found in the possession of the subject.

B. Specimens needed:
    1. DWI Investigation: Even if an individual has submitted to a breath test, blood and/or urine samples may be collected. **Blood is considered the Gold Standard for toxicology testing.**
    2. Death Investigation: Blood and urine
    3. Sexual Assault: Blood and urine

C. The approved BA/TOX kit **MUST** be used for preserving blood for blood alcohol analysis and/or for preserving blood and urine for toxicological analysis.

Make sure the kit you are using is NOT EXPIRED!





D. Minimum sample volumes:
   1. The minimum amount of urine needed for analysis is approximately 10mL.
   2. The minimum amount of blood needed for analysis is approximately 20mL (2 full tubes)

E. All samples **MUST** be collected in the appropriate containers provided in the blood alcohol kit and only from that one kit using **ONLY** the contents of that kit.

F. Guidelines that **MUST** be adhered to when collecting blood or urine specimens for submittal to the Crime Lab for forensic toxicological analysis:
   1. Kit numbers found on the outside of kits, urine collection container, and both blood vials **MUST** match. Additional stickers are provided in the kit to label all related documents.
   2. If inconsistencies are detected by an officer before a sample is collected, discard the entire kit.
   3. If such inconsistencies are detected once the specimen is submitted to the lab, analysis may not be able to be conducted and/or a discrepancy will be reported to the case officer.
   4. Kits **MUST** be used **BEFORE** their expiration date.
   5. Evidence tape, opaque labels, or tapes of any kind **MUST NOT** be placed over a kit's expiration date. Please be aware of location of the kit expiration date so that labels or opaque tape are not inadvertently placed in a manner that prevents the expiration date from being seen once the kits has been utilized.

G. Blood collection precautions and guidelines:
   1. Precautions when collecting blood for blood alcohol concentration and/or toxicology:
      a. Labeling accuracy is of the utmost importance. Labeling errors are very common but very avoidable, so please check and re-check your specimen collections to ensure all information is accurate and as detailed as necessary before submittal.
      b. Make sure that vials/tubes of blood and the paperwork inside your evidence envelope are labeled with the **EXACT** same information: e.g. kit numbers, name of subject (first and last), date of blood draw, etc.
      c. Make sure to use biohazard labels in appropriate places to indicate the enclosed evidence is biological in nature.

d. BU-0LA kits are for **LIVE** persons only.

e. PM-0LA kits are for **DECEASED** persons only.

f. **DO NOT USE** a PM-0LA kit on a live person.

2. Blood collection guidelines:

   a. The proper collection and submission of specimens for toxicological analyses is of great importance if analytical results are to be accurate and their subsequent interpretation is to be scientifically sound and useful in court. These guidelines can apply equally to investigations by Medical Examiners / Coroners and to investigations by law enforcement agencies.

   b. For the purposes of blood alcohol analysis for potential DWI prosecution, only those blood alcohol kits approved by the Louisiana Department of Public Safety and Corrections may be utilized for such collections.

   c. BA/TOX kits are provided free of charge by LSP, for all state law enforcement agencies. Substituting any portion of these kits or use of another kit may invalidate the test results for legal purposes.

   d. Blood may only be drawn by a physician, registered nurse, or qualified technician. Each qualified technician must be certified by an accredited licensing agency as a certified phlebotomist.

   e. Read the instructions found inside the BA/TOX kit.

   f. All information from the blood collection should be recorded on the Investigating Officer's Report found inside the kits, along with the signature of the subject in the allotted space on the consent form.

   g. The blood draw **MUST** be witnessed by a police officer, whose name must be entered on the Investigating Officer's Report.

   h. Immediately following the collection, the blood vials **MUST** be slowly inverted several times; this is done so that the blood will completely mix with the chemicals in the vials that prevent coagulation of blood and inhibit the growth of microorganisms capable of producing alcohol.

   i. The Investigating Officer's Report should be as complete as possible. Remember to include the name and the title of the person taking the samples.

   j. The chain of possession section should be completed if the samples change hands at any time. This will ensure the evidence's integrity is preserved at all times.

   k. Adhesive seals found in the kit must be filled in with appropriate information. Seals are to be used to secure the stoppers to each vial and the sample box.

   l. Syringes must **NOT** be included and/or returned in the kit. Dispose of these properly at the facility where the blood sample is collected.

   m. If delivery to the Crime Lab is not immediate, the kit must be placed in a secured location (i.e. locked storage area) within twenty-four (24) hours of the collection. Temporary room temperature storage is allowed for blood samples; however, **refrigeration is highly recommended**.

NEVER EXPOSE KITS TO HIGH TEMPERATURE.

DO NOT LEAVE KITS IN YOUR UNIT FOR ANY LENGTH OF TIME.

n. Kit(s) must be submitted to the Crime Laboratory within ten (10) days after their initial collection. A completed Laboratory Submittal Form (DPSSP 4606) must accompany the kit(s), or they must be submitted via Portal.

o. In addition to the items indicated on the forms to be filled in, include the driver's license number of the subject, the state the driver's license was issued in, date of birth, and the state computer number found on the accident report. Also, indicate if the subject is deceased.

p. Sealed BA/TOX kits may be submitted to the LSPCL via Registered Mail (USPS), FedEx, UPS, etc. When mailing, please make sure the absorbent pad is placed in the box holding the sample blood vials, and place that box inside the plastic bag. This can then be placed inside the cardboard shipping container.

q. The completed submittal form (if used) should also be placed in the cardboard box. Another alternative is to place both the cardboard box and the form in a large mailing envelope.

r. When BA/TOX kits are received at the Crime Lab, they are handled in the standard procedure of evidence submitted to the lab.

s. **LSP Kits**-In accordance with the rules and regulations for blood alcohol and toxicological analysis, kits may be destroyed after one (1) year after analysis. Photocopies of the inner kit box along with the specimen containers (labels showing) should be made. The original of the consent form and blood collector's report may be retained. LSP kits associated with fatal injury crashes are kept for five (5) years post analysis then destroyed unless a court order prevents destruction.

t. **Non-LSP Kits**- All non LSP kits are returned to the agency post analysis unless a court order mandates their retention at LSPCL.

H. Urine collection precautions and guidelines:

1. Precautions when collecting urine for toxicology:

a. Labeling accuracy is of the utmost importance. Labeling errors are very common but very avoidable, so please check and re-check your specimen collections to ensure all information is accurate and as detailed as necessary before submittal.

b. Make sure that the container of urine and the paperwork inside your evidence envelope are labeled with the EXACT same information: e.g. kit numbers, name of subject (first and last), date of collection, etc.

c. Make sure to use biohazard labels in appropriate places to indicate the enclosed evidence is biological in nature.

d. Completely remove the safety seal from the urine collection bottle and **DISCARD**. If you leave it on the container, urine will leak out.

2. Urine collection guidelines:

a. The proper collection and submission of specimens for toxicological analyses is of great importance if analytical results are to be accurate and their subsequent

interpretation is to be scientifically sound and, therefore, useful in court. These guidelines can apply equally to investigations by Medical Examiners / Coroners and to investigation by law enforcement agencies.

b. For the purposes of urine analysis for potential DWI prosecution, only those blood/urine collection kits approved by the Louisiana Department of Public Safety and Corrections may be utilized for such collections.

c. BA/TOX kits are provided free of charge by LSP, for all state law enforcement agencies. Substituting any portion of these kits or use of another kit may invalidate the test results for legal purposes.

d. Urine collection **MUST** be witnessed by a law enforcement officer. Female/male officers may be needed to facilitate a proper witnessing.

e. Read the instructions found inside the BA/TOX kit.

f. All information from the specimen collection should be recorded on the Investigating Officer's Report found inside the kits, along with the signature of the subject in the allotted space on the consent form.

g. The urine collection MUST be witnessed by a police officer, whose name must be entered on the Investigating Officer's Report.

h. Immediately following the collection, secure the lid on the container to finger tight.

i. The Investigating Officer's Report should be as complete as possible. Remember to include the name and the title of the person taking the samples.

j. The chain of possession section should be completed if the samples change hands at any time. This will ensure the evidence's integrity is preserved at all times.

k. Adhesive seals found in the kit must be filled in with appropriate information. Seals are to be used to secure the top of the container.

l. Syringes **MUST NOT** be included and/or returned in the kit. Dispose of these properly at the facility where the urine sample is collected.

m. If delivery to the Crime Lab is not immediate, the kit must be placed in a secured location (i.e. locked storage area) within twenty-four (24) hours of the collection. Temporary room temperature storage is allowed for blood samples; however, **refrigeration is highly recommended**.

NEVER EXPOSE KITS TO HIGH TEMPERATURE.

DO NOT LEAVE KITS IN YOUR UNIT FOR ANY LENGTH OF TIME.

n. Kit(s) must be submitted to the Crime Laboratory within ten (10) days after their initial collection. A completed Laboratory Submittal Form (DPSSP 4606) must accompany the kit(s), or they must be submitted via Portal.

o. In addition to the items indicated on the forms to be filled in, include the driver's license number of the subject, the state the driver's license was issued in, date of birth, and the state computer number found on the accident report. Also, indicate if the subject is deceased.

p. Sealed BA/TOX kits may be submitted to the LSPCL via Registered Mail (USPS), FedEx, UPS, etc. When mailing urine, place the plastic bag around the urine container

before sealing. This can then be placed inside the cardboard shipping container.

q. The completed submittal form (if used) should be placed in the cardboard box. Another alternative is to place both the cardboard box and the form in a large mailing envelope.

r. When BA/TOX kits are received at the Crime Lab, they are handled in the standard procedure of evidence submitted to the lab.

s. **LSP Kits**-In accordance with the rules and regulations for blood alcohol and toxicological analysis, kits may be destroyed after one (1) year after analysis. Photocopies of the inner kit box along with the specimen containers (labels showing) should be made. The original of the consent form and blood collector's report may be retained. LSP kits associated with fatal injury crashes are kept for five (5) years post analysis then destroyed unless a court order prevents destruction.

t. **Non-LSP Kits**- All non-LSP kits are returned to the agency post analysis unless a court order mandates their retention at LSPCL.

DNA UNIT

The Forensic DNA Unit performs STR DNA and Y-STR DNA analysis. The lab now utilizes probabilistic genotyping technology (TrueAllele). The following guidance is being offered due to advancements in DNA technology and further restrictions on DNA evidence submissions; see DNA Unit Evidence Submission Policy. This information is not intended to cover every scenario. If questions remain, please contact the DNA Unit at (225) 925-7791.

DNA testing has advanced the field of forensic science; however, there are still some limitations to be aware of:

- Casual contact may or may not transfer enough DNA for analysis
- DNA can be removed by washing, bleaching, or other activities
- DNA analysis cannot determine when/how the DNA was deposited on an item
- Certain environmental factors such as heat, moisture, and light can degrade or destroy DNA

The following is recommended to prevent contamination:

- Wear proper protective clothing, including gloves, mask/face shield, disposable lab jacket, or other disposable items that cover clothing/shoes
- Do not handle any items without gloves
- Change gloves after handling each item
- Avoid handling evidence where DNA may be deposited
- Do not talk, cough, smoke, dip, chew gum, spit or sneeze, etc. on or near DNA evidence
- Each item of evidence should be packaged and labeled separately; one item should be placed in each envelope/bag

General DNA Submission Information

- All DNA evidence items must have the Request for Scientific Analysis Form (or be submitted via Portal) and DNA Evidence Supplemental Form
- DNA collections should always be air-dried and sealed in paper packaging **(no plastic)**
- Packages that contain items with biological fluids should have biohazard labels
- Any applicable reference samples (i.e. victim, suspect, eliminations, etc.) must be submitted to the lab
- An evidence item is defined as one piece of evidence (i.e. one swab or one shirt) and should be packaged separately
- If multiple evidence items are in one package, then the total number of items in the package equals the total number of items of evidence (i.e. a shirt, a pair of pants, and a hat packaged together equals three items of evidence)
- If items are to be analyzed for both Prints and DNA, the print processing should be done before swabbing for DNA (with limited exceptions).

DNA Collection Guidance

Kits used for arrestee and convicted offender collections should not be used to collect evidence or reference samples.

Bodily Fluids (blood, saliva as evidence, seminal fluid, feces, etc.)

- If the bodily fluid is wet, use one sterile swab to collect it

- If the bodily fluid has already dried, use a sterile swab moistened with sterile water to collect the sample
- If an item cannot be removed or is extremely large, a swab or a removal of the bodily fluid should be taken
- Items with bodily fluids should be dry prior to packaging
- The preferred evidence for a sexual assault is a kit taken by a Sexual Assault Nurse Examiner (SANE) in a hospital setting

Contact DNA

- Contact DNA should be collected using a sterile swab moistened with sterile water
- ***Firearms***
    - For Priority 1 cases, one swab should be taken from the surfaces of the firearm and one swab should be taken from the magazine and cartridges
    - For Priority 2 cases, one swab should be taken from the surfaces of the firearm only
- ***Vehicles***
    - One swab should be taken from areas of known contact within a single continuous event
    - It is not recommended to swab exterior areas of the vehicle unless there is relevant case specific information
    - Example #1: A vehicle stolen by a suspect which was later discovered abandoned in a field. One swab should be taken from the steering wheel, gear shift, and the interior driver's door handle because all three areas are touched for the operation of the vehicle in the commission of the crime
    - Example #2: A car was broken into. A gun was stolen from the passenger side glove box and money was stolen from the center console. One swab should be taken from the passenger side glove box and center console because these areas are touched during the commission of the crime
- ***Crime scene***
    - One swab should be taken from areas of known contact within a single continuous event
    - It is not recommended to swab areas of high traffic
    - Example #1: A residential burglary in which the suspect stole a firearm from the master bedroom nightstand and jewelry from the jewelry box in the master bedroom. One swab should be taken from both areas together as these items are confirmed to be touched during the commission of the crime.
    - Example #2: A residential burglary in which the victim discovered all the kitchen cabinets were opened upon returning home. One swab should be taken from the opened kitchen cabinets.
    - Example #3: A convenience store is robbed. The suspect enters through the left front door and jumps over the counter before opening the cash register, stealing the money. It is not recommended to swab the left front door handle or the counter (areas of high traffic); however, one swab should be taken from the cash register till and button to open the till.

- ***Items not native to Crime Scene***
    - Example #1: At the scene of a home invasion the victim discloses that a screwdriver and wrench do not belong to them. One swab should be taken from both the screw driver and wrench.
    - Example #2: At the scene of a burglary, two gloves are found together. One swab should be taken from the inside of the gloves.
- ***Clothing***
    - One swab should be taken from all areas of contact by the person of interest.
    - Example #1: During the commission of a robbery, the suspect rifled through the front left and right pockets of the victim's pants. One swab should be taken from both front pockets together.

Unidentified Human Remains (Bones)

- All unidentified human remains cases involving bones should be submitted to Louisiana State University Forensic Anthropology and Computer Enhancement Services (FACES) Lab; see Louisiana Revised Statute 15:658.

Reference Samples

- Collect reference samples from victim(s), suspect(s), or others who may have come into contact with the item to be tested
- Buccal (oral) swabs are preferred for DNA reference samples
- If collecting a liquid blood sample, it should be placed in a tube containing a preservative and anticoagulant (purple top tubes)

CODIS DNA UNIT

The Louisiana State Police Crime Laboratory (LSPCL) participates in the **C**o**D**NA **I**ndexing **S**ystem (**CODIS**), which is maintained by the **F**ederal **B**ureau of **I**nvestigation (**FBI**). This allows for searching of qualifying samples within the **S**tate **D**NA **I**ndexing **S**ystem (**SDIS**), as well as across the nation via the **N**ational **D**NA **I**ndexing **S**ystem (**NDIS**). These databases allow the searching of forensic samples against each other in an attempt to link cases. Forensic samples are also searched against offenders' samples in an attempt to link an offender to crime scene evidence. When cases are linked to one another, this is termed a "hit."

Offender DNA samples should be submitted to the LSPCL for CODIS database entry and maintenance. Offender samples maintained in the database are not intended for court purposes but only for searching and supplying investigative leads. These DNA samples, submitted for the purposes of entry into the Louisiana SDIS, are **NOT** considered evidence samples and do not take the place of a suspect reference sample in forensic cases. Offender DNA Collection kits should **NOT** be used for forensic case reference samples, the collection of DNA at a crime scene, or in any other manner. If reference samples are submitted using these kits, they may be rejected by the Crime Lab.

Louisiana state law requires the taking of DNA from all individuals either arrested for or convicted of a qualifying felony or misdemeanor offense (LA RS 15:609). DNA Collection supplies are provided to intake facilities at no cost to law enforcement agencies. Please consult with the Accessioning Unit ***(225-925-7070)*** if you have questions or to procure DNA collection supplies.

Provided upon request to law enforcement agencies, arrestee and convicted offender DNA collection kits are shipped in sets of 50, and each kit possesses a unique barcode identification number. Each arrestee DNA collection kit contains instructions for use, gloves for the collector's protection, two collection swabs, an evidence envelope to enclose the subject's DNA swabs, and two small barcode stickers, all marked with duplicated identifying numbers. The kit is contained within a postage-paid manila envelope that is used for returning the collected DNA sample and all necessary paperwork to the LSPCL via the United States Postal Service.

Once opening a kit for usage, the collector should ensure EXACT matches on the above noted barcode numbers.

Instructions for the collection of Arrestee and Convicted Offender samples are included in each collection kit. If questions arise, please contact the LSPCL Accessioning Unit Supervisor for assistance ***(225-925-4161)***.

Familial DNA Searches

The Louisiana State Police Crime Laboratory can provide Familial Searching capabilities to Law Enforcement Agencies.

The concept of Familial Searching is based upon the genetic principle that close biological relatives, especially first degree relatives such as parent/offspring or full siblings, will share some similarities in their DNA profiles. When a search of an unsolved forensic evidence DNA profile against the CODIS database does not yield a direct match, a familial search may provide alternative investigative leads. This alternative approach searches the database for possible relatives of the donor of the evidence DNA profile. Statistics are used to rank the likelihood that familial DNA

matches are true relatives of the donor of the forensic evidence profile in question. By definition, a Familial Search results in candidates that are not direct matches to the evidence, but may provide an investigative lead to law enforcement in cases where other leads have been exhausted.

Because of the tremendous amount of time and effort that is involved with each Familial Search, a potential case must demonstrate the occurrence of an offense that is:

- violent, causing serious injury or death; or one that has significant public safety concerns; and
- has not been solved by traditional methods of investigation; and
- all investigative leads have been exhausted by the investigating agency.

In addition, evidence in the case must have yielded a complete single-source or deduced single source male DNA profile, along with the associated complete Y-STR DNA results.

If your agency has a cold case that meets the above listed criteria, or you have any questions about the eligibility of one of your cases, please contact the CODIS DNA Unit ***(225-925-7791)*** for consultation regarding the Familial Search process.

Rapid DNA

Rapid DNA is a term used to describe the fully automated (hands free) process of developing a DNA profile from a reference sample buccal (cheek) swab without human intervention. For the past few years, the LSPCL has been working with the FBI and other states to develop a Rapid DNA program with the goal of integrating Rapid DNA into the booking environment. Once implemented at an approved booking station, lawfully-owed DNA samples collected from qualifying arrestees at booking will have their DNA profiles generated by a CODIS-approved Rapid DNA instrument and searched in CODIS in as little as ninety minutes. Any positive CODIS search results will be communicated automatically to the investigating and booking agencies while the arrestee is still in police custody.

While we are continuing to make strides towards that goal, the LSPCL is aware that some law enforcement agencies may be considering procurement of Rapid DNA technology for usage in analyzing crime scene samples. The LSPCL recognizes that the scientifically responsible use of Rapid DNA technology can help investigate crimes, prosecute the guilty, and exonerate the innocent. Law enforcement partners considering procurement of Rapid DNA technology should be aware that its usage might affect the suitability of a crime scene sample for subsequent testing by an accredited forensic laboratory.

- If using a Rapid DNA instrument to process samples of low-level biological material (such as touch DNA), the samples may be consumed or significantly decreased, thereby reducing the amount of sample provided to the accredited crime laboratory for testing. Collecting two swabs instead of one may not solve this problem, since the small amount of available DNA is spread over more surface area, making it less likely results will be obtained.

- Additional sample handling to collect evidence for Rapid DNA instruments increases the risk of DNA contamination, which can affect the ability of an accredited crime laboratory to provide DNA results and testimony.

- Results from Rapid DNA instruments may differ from those of an accredited crime laboratory due to differences in testing, such as testing two different portions of a crime scene sample or the number of loci tested. Traditional crime laboratory DNA testing instruments are more sensitive than Rapid DNA instruments currently on the market, and it is possible that an accredited crime laboratory can develop DNA profiles from evidence that Rapid DNA instruments cannot.

- The results obtained from crime scene samples are often mixtures of more than one contributor, which requires review and interpretation by a qualified forensic DNA analyst. LSPCL analysts cannot consult on or review the results of Rapid DNA testing.

- Evidence profiles generated by a Rapid DNA instrument do not qualify for entry into or searching of the CODIS database.

Because Rapid DNA technology is a relatively new approach to crime fighting, it has not been subjected to courtroom scrutiny. Any agency considering procurement of a Rapid DNA instrument should discuss with their local District Attorney what types of cases might be considered for prosecution, and the associated challenges with presenting evidence developed with new scientific technologies. LSPCL analysts cannot consult on or testify to results obtained from a Rapid DNA instrument, nor can they compare results generated in the laboratory with results generated from a Rapid DNA instrument.

DNA profiles generated in Rapid DNA instruments within Louisiana are not eligible for entry into CODIS. CODIS is an essential crime-fighting tool containing more than twenty million DNA profiles, and diversion of cases away from CODIS for local databases can reduce law enforcement opportunities to solve crime. The LSPCL cannot provide a copy of DNA data in CODIS to law enforcement for searching and comparison to DNA profiles generated on a Rapid DNA instrument. The LSPCL cannot search Rapid DNA profiles generated by law enforcement in CODIS.

If your agency has any questions regarding the usage of Rapid DNA technology for crime scene applications, please contact the CODIS DNA Unit at ***225-925-7791*** or crimelab@la.gov.

For additional information regarding Rapid DNA, including position statements from the Scientific Working Group on DNA Analysis Methods, the National District Attorneys Association, and the American Society of Crime Laboratory Directors, please visit lsp.org/crimelab_rapid_dna.html.

PHYSICAL EVIDENCE

Items of physical evidence encompass any items related to a crime scene that can assist in solving the crime that occurred. The Physical Evidence Unit of the Crime Lab is divided into three sections—Latent Prints, Firearms, and Crime Scene— and performs forensic analysis in the following disciplines:

Firearms Unit
Firearm Analysis
Serial Number Restoration
Distance Determination
Test fire / Function Check
NIBIN Database Entry
Tool Mark Analysis

Latents Unit
Print Comparison
FIS/NGI Database Entry
Fire Debris Analysis
Shoeprint/Tire Track Analysis
Identification of Deceased/Unknown Individuals

Crime Scene Unit
Crime Scene Processing
Vehicle Examination
Fracture Comparison
Bloodstain Pattern Analysis
Trajectory Analysis
Print Processing
Indented Writing Analysis

There are two types of evidence that can be examined: individualizing evidence and class evidence. Individualizing evidence is evidence that can be identified to a specific person, a specific gun, or a specific item. Class evidence is evidence that can be categorized by classes and similarity of characteristics, not identified to a specific entity or item. Below are examples of each type of evidence:

Individualizing Evidence
Fingerprints (AFIS)
Firearms (NIBIN)
DNA (CODIS)
Fracture Matches
Shoeprints
Fingernails – torn

Class Evidence
Paint
Fibers
Hairs (no root)
Glass

Collecting evidence:

Following are the Physical Evidence disciplines in which testing is performed, with descriptions, collection guidelines, etc. For more specific information about any of these analyses, please contact the appropriate Unit Supervisor or Manager.

CRIME SCENE UNIT

The Louisiana State Police Crime Lab Crime Scene Team responds to major crime scenes statewide and has at least three crime scene personnel on call 24/7. Areas of processing include ***documentation (photography/video), evidence collection, fingerprint processing, trajectory analysis (structures/vehicles), shoe and tire documentation and collection, latent blood enhancement, and bloodstain pattern analysis.***
Below are instructions for requesting a CSI Team response to a scene or vehicle exam.

Requesting the LSP CSI Team for a Scene:

- When requesting the assistance of the LSP Crime Scene Unit, please call ***Louisiana State Police Troop A at 225-925-6536 (or any LSP Troop), the LSPCL Crime Scene Unit at 225-925-6016, or the LSPCL CSI Supervisor at 225-603-8917***.
- Let the CSI Primary know as many details regarding the scene as possible to ensure that they bring the proper resources to adequately process the scene.
- Ensure that any search warrants necessary to process/collect evidence are in place prior to the LSP CSI's arrival on scene.
- Crime Lab personnel have to meet at the lab prior to heading to the scene to obtain the necessary reagents and equipment, so scene response time may be delayed.

Requesting the LSP CSI Team for a Vehicle Exam:

- If requesting to submit a vehicle to the Crime Lab for processing, please call the ***main Crime Lab number at 225-925-6216, the LSPCL Crime Scene Unit at 225-925-6016, or the CSI Supervisor at 225-925-4272*** - to arrange submission of the vehicle to the lab.
- If requesting for the CSI Team to come process a vehicle at a facility, please call the ***CSI Supervisor –225-925-4272 or 225-603-8917*** - to set up a date and time to process the vehicle.
- Let the CSI Supervisor know as many details regarding the vehicle as possible.
- Ensure that any search warrants necessary to process the vehicle and collect evidence from the vehicle are in place ***prior*** to the LSPCL CSI's arrival.

If you need immediate assistance with a crime scene or vehicle examination, please call the Crime Scene Supervisor: Michele Smith – 225-603-8917 / 225-925-4272.

Below are general crime scene processing and evidence handling guidelines.

Probative Evidence at a Crime Scene:

- DNA Evidence:
  - Blood, Contact, Semen, Saliva, Urine, Other Bodily Fluids
- Physical Evidence:
  - Items touched by suspect or victim can be processed for fingerprints or DNA
  - Weapons/Tools (cartridge cases, bullets, crowbar, hammer, etc.)
  - Fractured/Broken Items (hit and run vehicle debris, broken glass/door from point of entry, etc.)

- Controlled Substance Evidence:
  - Drugs (tablets, powder, crystalline substance, rock-like substance, etc.)
  - Drug Paraphernalia (pipes, syringes, scales, packaging materials, etc.)
  - Plants and vegetable material
- Toxicology Evidence:
  - Blood and Urine Kits (DWI, hit and runs)

Crime Scene Processing / Documentation / Evidence Collection

General Evidence Handling:

- Physical evidence is any object which can provide a link between a crime scene, victim(s), and/or suspect(s). The proper handling of evidence is crucial in any investigation, often determining whether or not a case can be solved or successfully adjudicated.
- In any investigation, the validity of information derived from examination of the physical evidence depends upon the care with which evidence has been handled. If evidence has been improperly collected, handled, documented, or stored, its value may be destroyed and no amount of laboratory work will be of assistance.
- If handled properly, the likelihood that useful information can be obtained from the evidence is increased.

Scene Processing/Documentation:

- Evidence recognition is an acquired skill, improved and refined over the course of an officer's career. Education and experience will improve this skill.
- By making themselves aware of the functions of the LSP Crime Lab and what analyses the Crime Lab or other labs can perform, officers can determine what items at a scene hold the best evidentiary value.
- Understanding all types of evidence and what questions they may potentially answer will aid tremendously in the reconstruction of a crime.
- Legally: If evidence associated with a crime scene is not properly collected or documented, this may present complications when tried in court.
- Scientifically: Incorrect or incomplete crime scene documentation can impede the forensic analysis process, resulting in little or no assistance in solving your case.

Photographing Evidence:

When documenting a crime scene using photography, make sure to capture a sufficient number and type of photos to properly and completely document the scene and items of evidentiary value. Keep in mind the following guidelines when photographing a crime scene.

Note: a crime scene photography class is highly recommended; for more information on photography training, please contact the LSPCL Crime Scene unit.

- Composition of the frame
- General over-all photos of the scene
- Evidence Establishing/Mid-Range photos (relationship of a piece of evidence to other

evidence items and/or location in the scene)
- Close-up photos (filling the frame with that one piece of evidence or specific area)
- Photos should "flow" together if possible (leading into one another to tell a story)

Collection/Preservation of Scene Evidence:

- The general rule is to submit the evidence in the same condition as when collected. Exceptions are noted throughout this manual. (E.g. some evidence must be dried, refrigerated, or frozen).
- Care should be exercised when collecting all evidence. This section provides general guidelines for handling evidence during collection.
- Evidence should not be collected until the whole crime scene has been documented (unless transient evidence will potentially be lost if not immediately collected). First responders should ensure the scene remains secure until trained crime scene response personnel arrive.

If any uncertainties arise regarding how to document, collect, package, or preserve evidence, please call Crime Lab personnel for instructions or on-site assistance.

LA State Police crime scene investigators are on call 24 hours a day, 7 days a week for this purpose.

A. Use personal protective equipment (PPE) to prevent contamination of both personnel and the scene.

B. Remain aware of your and others' movements in and around the crime scene. Even slight changes could impede forensic analysis.

C. With some types of evidence, known comparison samples (references) are necessary.

D. ***Labeling evidence accurately is of the utmost importance.*** Labeling errors, inconsistencies, and oversights tend to be one of the most frequently encountered, yet avoidable, challenges for forensic analysts.

E. Identify and protect fragile and/or perishable evidence (e.g. consider climate conditions, crowds/hostile environments). Ensure that all evidence that may be compromised is immediately documented, photographed, and collected.

F. Some items must be thoroughly dried before packaging (DNA swabs, bloody clothing, plants, etc.) After drying, these types of evidence are best stored in clean paper containers. Plastic containers should NEVER be used for long-term storage of biological fluids or fresh vegetable material.

G. Packaging: Use appropriately sized containers to package your evidence securely and properly. Avoid folding or stuffing larger items into smaller containers or packaging smaller items in very large packages (unless secured to the package). For more information on specific packaging, please see the sections for General Evidence Handling and/or other guidelines under the Specific Evidence Handling sections.

Collecting Fracture Comparison Evidence:

These examinations/comparisons are conducted in an attempt to establish a common origin between two or more pieces of evidence. For example: A broken turn signal lens fragment from a hit and run scene may be positively matched to piece remaining on the suspect vehicle, placing that vehicle at the crime scene. The examination may be conducted in a fashion similar to putting together a jigsaw puzzle or may require tedious examination under a microscope.

A. A few types of evidence encountered in this category are:
   1. Glass fragments (headlights, mirror pieces, etc.)
   2. Plastic fragments (vehicle lens or grille pieces, packaging materials)
   3. Tape (masking, duct, electrical)
   4. Fiberglass (especially in vehicle front and rear ends)
   5. Cloth (torn sheets, garment pieces)
   6. Wire (cut, broken, pulled apart)
   7. Metal (chrome trim on auto/broken chain links)
   8. Paper
   9. Fingernails

B. Many times a fracture comparison is incidental to the original request for analysis. However, since a fracture match is just as unique as a fingerprint match, the investigator should always collect evidence with this in mind.

C. When adequately sized fragments of plastic lenses are recovered from a vehicle or crime scene, attempts should be made to have them identified by local auto dismantlers or new vehicle parts department employees.

D. In the case of cut wire (or similar material), mark the end of the wire material which was cut by an agency representative during evidence collection, indicating that this is a cut produced by a known tool. This provides information to the Crime Lab as to which end of the material is to be compared.

Collecting Indented Writing Evidence:

Indented writing analysis attempts to develop marks (indentions) which are left on a surface (usually paper) underneath the one on which visible writing was placed. Such indentions are caused by pressure exerted on the paper by the writing instrument. Indented writing has proven to be a very valuable type of evidence which can remain long after the original document has been lost or destroyed.

A. The best ways to handle evidence of this type are as follows:
   1. Remember the possibility of latent prints and handle accordingly.
   2. Handle as little as possible and only on the edges.
   3. This examination must be done before the surface is processed for latent prints.
   4. If the indented writing is on a paper surface, do not fold. Place document unfolded in a manila envelope.
   5. Be sure to initial and date the evidence label BEFORE the document is placed inside the envelope.
   6. Take care that nothing is place on the envelope that will either make new indentions or destroy the existing ones.
   7. The type of analysis request for these cases is “Indented Writing.” Please specify this, so that latent print processing will not be done first.

Other Physical Evidence Information:

Many items of evidence at a scene can be collected for types of analysis not performed by LSP Crime Lab. Below are some types of evidence analysis that may be performed by other labs, and general information on proper collection/documentation methods of these evidence types.

Collecting Glass Evidence:

Glass is encountered in several types of crime scenes. Some common instances are windows broken in vehicle or home / business burglaries, or headlights in a hit and run. Also, bottles or other glass objects may break and leave fragments in pockets or on garments or shoes of suspects in these types of crimes. Glass taken from a broken window at a burglary may be compared with glass fragments found on a suspect's body or clothing; glass from a broken windshield may be compared with pieces of glass found on a hit-and-run victim's body or to glass found at the scene. These types of cases involve comparison of the glass samples to determine if they could have a common origin. With larger pieces of glass, it may be possible to physically fit the pieces together (fracture match). However, glass analysis only allows for comparison of class characteristics in most cases, not individual characteristics; therefore, an ID to a specific window, headlight, etc cannot be done (except in the case of a fracture match). These examinations require the collection of all glass pieces found.

A. Collection & Packaging of Glass Evidence:
   1. The shoes and clothing of suspects, as well as other objects which may have been contaminated with glass should be collected, marked, and packaged separately to avoid cross contamination. Package each item in paper bags or boxes.
   2. All glass at hit and run scenes should be recovered because more than one type may be present. In addition, if just a few representative samples are saved, individual pieces that could be physically matched may be overlooked. The search should not be limited to just the point of impact since other pieces may drop off at some distance away as the car or individual leaves the crime scene. Glass from different locations should be kept in separate containers.
   3. Place small glass fragments in folded white paper; seal and mark the container. Refer to the section entitled "General Evidence Handling" for paper fold instructions.
   4. Place large glass fragments in paper bags or boxes. Separate individual pieces with paper or tissue to prevent breakage or damage to edges during shipment. Large fragments can be marked with grease pencil, adhesive tape, or other labels, but this is usually not necessary if all are sealed together in a single marked container. When breakage direction determination is requested, it will be necessary to mark each glass piece prior to its removal from the window to designate inside and outside surfaces.

B. Standards for Comparison:
   1. **Windows**: If the evidence glass is large enough for physical matching of broken edges or comparing the fracture lines, surface abrasions, hackle marks, or contamination, collection of the whole broken window is necessary. When physical matching does not appear possible and a broken window is large, the recovery of several samples of the window is

usually satisfactory. Heat hardened or tempered glass is commonly encountered in glass doors and automobile side and rear windows. The well-known diced breakage of this kind of glass into typically small, rectangular beads makes physical matching impractical in most cases. Several pieces should be collected for comparison of physical properties with evidence glass.

2. **Other Glass:** When bottles or other glass objects are broken, recover all remaining glass. For example, glass on shoes of suspects may be compared with broken bottles at crime scenes, or glass found on a murder victim may be compared with a broken bottle used as a weapon.

C. **Value of Glass Comparison:** Glass will have the greatest value as evidence only when fragments from two sources can be physically matched together. When this is possible, a common origin can be conclusively established even when the fragments are quite small. In the case of powdered glass and minute fragments, it can be established that the material is glass and limited comparisons can be conducted. However, conclusive identifications as to common origin usually are not possible. Nevertheless, the latter type of comparisons will establish similarities or differences in samples and thus may prove significant.

D. **Other Glass Studies:** Other studies of glass are sometimes of importance. In the case of broken windows or other glass sheets, it often is possible to determine the side to which the force was applied which resulted in breakage. When multiple fractures are present in glass, it also may be possible in some instances to prove the sequence of shots through glass when consecutive bullets penetrate glass from one or both sides. In all such instances, it is essential to have all remaining glass in a window, as well as fragments which broke and fell to the ground, available for study/examination.

Collecting Fibers:

Much like glass, fiber comparison only allows for comparison of class characteristics in most cases, not individual characteristics; therefore, an ID to a specific jacket, carpet, etc cannot be done. Results of fiber comparisons are used as circumstantial evidence to corroborate testimony or other evidence.

A. Types of Fibers:
   1. Animal (Wool)
   2. Vegetable (Cotton)
   3. Synthetics (Nylon, etc.)
   4. Mineral (Fiberglass, etc.)

B. Determinations can be made as to whether unknown fibers are of the same type, color, or blend, along with any other unique microscopic characteristics, as known samples.

C. Collection may involve preserving a single thread to cutting a 6- inch section from a carpet, rug, etc. Samples must be collected and packaged in separate packages in a manner which will prevent contamination.

D. Known or reference samples for comparison must be obtained and packaged to prevent contamination.

E. Samples may be collected by physically "picking" them off a surface, vacuuming, or adhesive lifting.

Collecting Explosives Residue:

Residues of explosives are materials left at the scene of an explosion. This may include unexploded devices or small particles left in soil, wood, glass, etc.

A. When explosives are found: Call the Bomb Squad from your agency or the LA State Police HAZ MAT Unit in Baton Rouge. (The LA State Police troop nearest to you can be contacted for assistance in contacting the HAZ MAT Unit). Army EOD teams are also available for deactivation of bombs, but they should be used as a last resort. LSP personnel can be contacted at 225-925-6113 or 1-877-925- 6595 (TESS/Right to Know hotline).

B. Collecting Explosives Residue:
   1. Before any evidence is collected, photographs of the scene should be taken. All evidence should be collected by a person wearing gloves so as not to destroy any fingerprint evidence.
   2. The first objective in the collection of explosives residues is to locate the area of origin of the blast. At this site, swab samples should be taken. Each swab is packaged individually in a tube, sealed, and labeled with location, date, time, and name of collector.
   3. Loose soil and debris should be collected for examination for explosives residue. These samples should be placed in clean metal paint cans, sealed, labeled, and taped closed. Do not use paper bags. Collect approximately two full cans of soil from the crater area.
   4. The total area to be searched is determined by establishing the origin of the blast and the farthest point from that origin where debris may be found. This entire area must be searched. Be sure to search not only the ground but also rooftops, trees, and anywhere that fragments could possibly be lodged. You will be searching for components of the device.

FIREARMS UNIT

A. General Information

The Firearms Unit is responsible for the examination of firearms, fired ammunition components, ammunition, tools, and related evidence. A firearm is defined as any weapon (including a starter gun) which will expel a projectile by means of an explosive, or which is designed or may be readily converted to do so. This includes the frame or receiver of any such weapon, any firearm muffler or silencer, or any destructive device.

The Firearms Unit utilizes forensic microscopes to examine evidence and make comparisons, and maintains a firing tank that is used for test firing and related purposes.

The Firearms Unit maintains the BRASSTrax system, which is linked to the National Integrated Ballistics Information Network (NIBIN). NIBIN is a searchable computerized national forensic database of images for the potential association of individual characteristics found on fired cartridge cases. NIBIN is an evidence screening tool that provides possible links between fired specimens from various crime scenes, therefore providing possible links between crimes not previously known by law enforcement to be connected.

It is important, when applicable to your case, that firearms or any related evidence be properly collected for testing and preservation of any elements left behind (e.g. fingerprints, DNA, gunshot residue). The following describes the examinations commonly performed, the evidence you should submit, some information you may see in our reports, and/or some of the information we may need from you to conduct our examinations.

B. Case Acceptance Policy

Safety:

- Firearms evidence submitted to the Lab must be documented as having been properly rendered safe by the submitting agency. If documentation of rendering a firearm safe is not located, a Crime Lab individual who is approved to render a firearms safe may be contacted for assistance or the evidence may be denied submission until the firearm is rendered safe and documentation of such is provided to the Lab. If a firearm cannot be unloaded due to any reason please contact the Firearms Unit directly for further guidance.
- The LSP Crime Lab requires a plastic chamber indicator (Chamber Flag) or plastic cable tie (Zip Tie) through the barrel in all firearms being submitted to the lab.

Please note that exceptions to these policies may be made on a case-by-case basis, at the discretion of the Firearms Unit Supervisor, Criminalistics Manager, or Laboratory Director.

- "RUSH" CASES - Requests for "RUSH" examinations of evidence must have a demonstrable need, such as needing results for warrants, making an imminent arrest, or similar circumstances. Examples of rush cases include:
    - Cases with an immediate threat to the public
    - Any case with an active court date, court order, or special request for analysis
    - Local agreements for priority
    - Officer involved shootings where examinations are essential for decisions on criminal prosecution

- CROSS REFERENCE CASES - Firearms submitted for comparison to evidence in other cases will not be compared unless there is some demonstrable investigative link between the firearm and the evidence in the other case. If such a link is not present, firearms meeting the guidelines for NIBIN entry will be examined, test fired, and "entered" into NIBIN. Non-NIBIN firearms such as revolvers may be compared if a link is present. Non-NIBIN caliber firearms will not be routinely compared if no link is present.

- FIRED CARTRIDGE CASES FOUND IN FIREARM - Fired cartridge cases found in and/or removed from the cylinder of a revolver or from the chamber of other types of firearms will not be routinely examined or compared microscopically.

- TOOL MARKS/FRACTURE MATCH - Before any case involving a tool mark and/or fracture (physical comparison) request is accepted, there must be a suspect tool/known sample (fracture) available that can be linked to a suspect via possession, latent prints, DNA, and/or demonstrable investigative information. If no such tool or link is available, the case will not be accepted. Property crime cases involving tool mark and/or fracture (physical comparison) requests will not be routinely accepted. Such cases with crimes against persons usually will be accepted.

Police Officer Involved Shootings:
The Louisiana State Police Crime Lab performs testing and analysis only as related to criminal investigations.

- Testing and analysis related to potential civil litigation requires Crime Lab Director approval.
- No testing shall begin on OIS's until the case officer coordinates with the Firearms Unit Supervisor; supervisor approval is required prior to acceptance in the laboratory.
- Cases must be clearly identified as an officer involved shooting on the laboratory submittal form or in Portal at the time of submission.
- Police Officer(s) weapon(s) must be submitted with the fired evidence.

NOTE: Firearms recovered at scenes where suicide is the cause of death will not be tested unless it can otherwise be associated with a specific crime or chain of crimes. This also pertains to self-inflicted gunshot wounds where the individual survives. Exceptions to this policy will require approval from the supervisor or their designee.

Function tests of firearms are routinely performed by this laboratory as part of comparison cases or entry into the NIBIN database. Function testing a firearm solely for operability is not performed by the Firearms Unit without communication from the prosecuting authority.

- HUNTING/WILDLIFE related firearm cases will not be routinely accepted unless personal injury is involved.
- ANIMALS - Firearm cases involving crimes against animals will not be routinely accepted.
- SUICIDES - Firearm cases involving suicides, attempted suicides, or murder-suicides will not be routinely accepted.
- NIBIN - Firearms submitted for NIBIN entry only, which do not meet the guidelines for NIBIN entry, will be returned without examination. Firearms and/or fired specimens submitted for NIBIN entry must have been found property, seized, or collected in reference

to a criminal act. Badly rusted, corroded, or non-functional firearms submitted for NIBIN entry only, will not be restored to a functional condition for test firing unless this can be easily accomplished.

- BB GUNS - Pellet guns, BB guns, and/or non-firearm replicas of firearms will not be routinely examined.
- EVIDENCE NOT REQUIRING EXAMINATION - Contributors should only submit evidence that requires examination. Extraneous items that do not require examination but are being submitted merely for the purpose of simplifying the chain of custody should not be submitted. Contributors also should strive to submit all of the evidence that requires examination at one time, if possible.
- NON-STANDARD EXAMINATIONS - Cases with requests for any unusual or non-standard examinations will not be routinely accepted and must be approved by the Firearms Unit Supervisor. Please note that the Firearms unit does not conduct firearm e-traces and/or registration checks.

C. Firearms Examination

Firearms are tools that produce tool marks when the tool (firearm) comes into contact with a cartridge case or bullet. Physical contact between a tool and the surface of an object produces marks not only characteristic of the type of tool used, but marks that may be individual to a single tool. Examples of these types of tool marks are a bullet passing through the barrel of a firearm and/or a cartridge case in contact with the breech face/firing pin of a firearm. In each instance, the working surfaces of the tool can leave their individual characteristics upon the damaged surface of an object. The laboratory can perform the following tests:

- comparison of the questioned bullets or cartridge cases to each other to determine if they were fired in the same firearm
- comparison of test fire samples from a firearm to questioned bullets or cartridge cases
- bullet caliber classification (General Rifling Characteristics)
- shotgun component analysis (shot/pellet size, gauge determination of waddings)
- barrel length determination (altered barrel length)
- drop test analysis (determine if firearm will discharge if dropped)
- serial number restoration
- distance determination (muzzle to object) Note: no analysis performed on shooter clothing or hands
- Firearms Database (SEE BELOW NIBIN SECTION)

Precautions relating to collecting firearms evidence:

A. Do not stick any object in the barrel of the firearm for any reason (with the exception of the aforementioned plastic chamber indicator or zip-tie).
B. Handle each firearm with an abundance of caution, even if all initial appearances indicate the gun is unloaded or the safety switch is active/on. The safety may be faulty or the trigger pull may be very light ("hair trigger"). Place the firearm into a box (preferred), paper bag, or envelope for transporting.
C. Carefully render the firearm SAFE* while still preserving any potential print or DNA evidence on the firearm. This includes removing the cartridge from the chamber of the firearm.
D. Place any bullets/cartridges/cartridge cases in envelopes or bags. Bullets and cartridge cases

should be packaged individually.

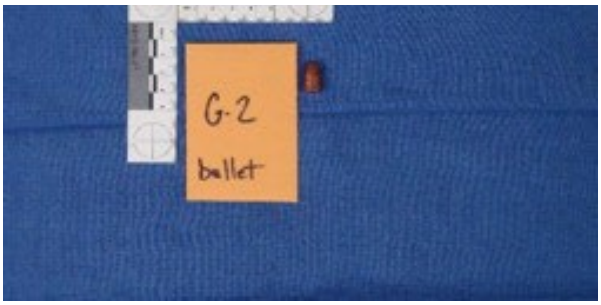
E. You can leave the cartridges in the magazine of the firearm; you do not have to package them separately. The firearm, magazine (removed from the firearm), and cartridges (still in the magazine) can all be packaged together inside a single gun box.

Collection and Packaging: Recommendation of suitable Packaging Materials:

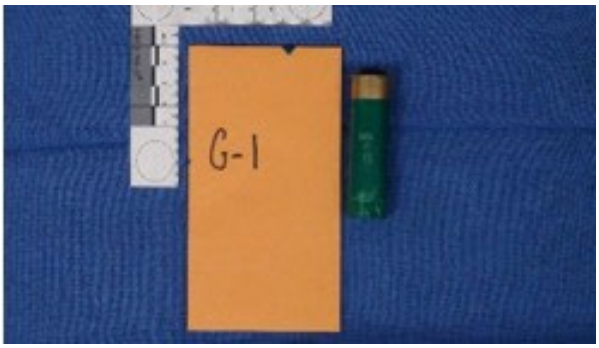
- Manila envelopes (bullets, cartridge cases, etc.)
- Cardboard box (firearms and sharps)

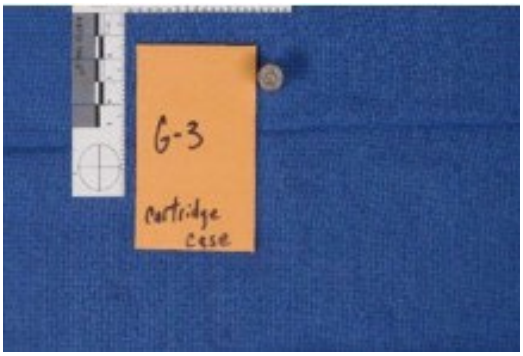
1. Fired Bullets, Fragments, Pellets, and Wadding:
   a. Do not use forceps or other sharp instruments to remove bullets, as they may further damage the evidence. Bullets from bodies should not be packaged before rinsing off blood and tissue since body fluids will be corrosive to the bullet. Gently rinse the bullets/fragments/pellets/wadding under running water and air-dry them prior to packaging.

   b. Use a separate container for each bullet. Pellets from the same area may be packaged in the same container. If a projectile is embedded in wood or some other material, remove it using extreme care. If it cannot be removed without damaging it, then carefully cut out the whole area around it and submit it to the laboratory with the projectile in place. Do not clean or change the condition of items recovered from the scene. Investigators should not mark fired bullets, fragments, pellets, and wadding for identification due to the danger of damaging individual characteristics used for comparison. Package each item separately in an appropriate-sized container, and label and seal the container. Pellets may be packaged together if they were found in the same location. Do not seal wet exhibits in plastic before they are thoroughly air-dried. Do not use glass containers for the packaging of exhibits due to potential injury to personnel from breakage.



2. Fired Cartridge Cases and Shotshells:
   a. Do not mark the cartridge cases and shotshells. Place each exhibit in a suitable container, mark the container, and seal it. All exhibits may be placed inside a single outer package for ease of submission.

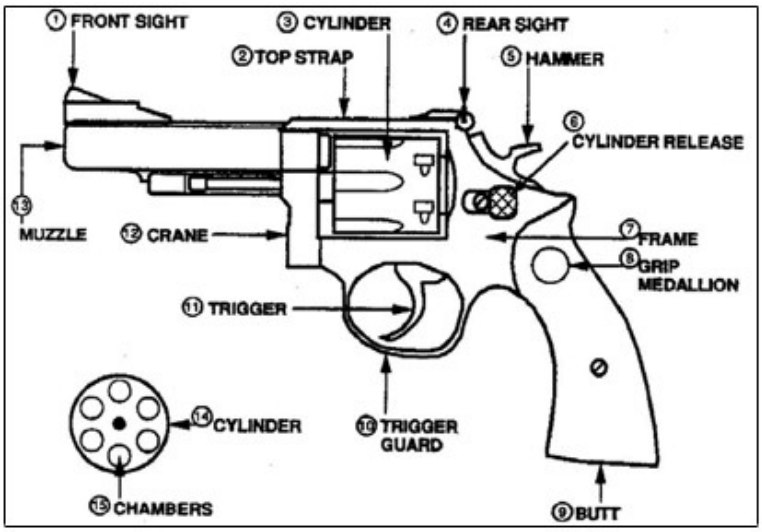




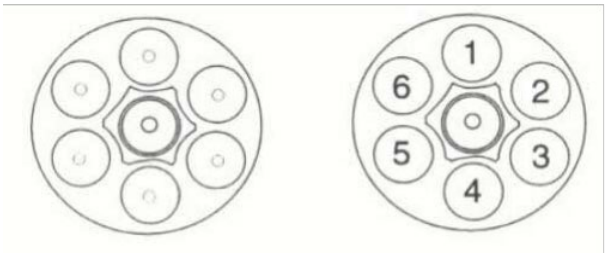
3. Unfired Cartridges or Shotshells:
   a. Collect from the crime scene any cartridges/shotshells of the same brand and type in case the laboratory requests them for testing and distance determinations. Only submit these upon the request of the laboratory. Do not mark the unfired cartridges or shotshells. Seal them all in appropriate containers and mark the containers (unfired cartridges of the same caliber may be packaged together).

4. Firearms:
   a. Record the condition of the firearm before you handle it (i.e., position of hammer, safety, slide, cylinder, jammed, etc.). The primary concerns when packaging a firearm are rendering it safe and the preservation of the evidence including blood, trace evidence, and latent prints that may be present. Handle the firearm carefully to avoid loss of trace evidence or latent prints. Additionally, if DNA analysis is being requested, a facial mask and gloves should be worn while handling to prevent contamination. DNA and fingerprint analysis must be completed prior to submission to the Firearms unit. Do not clean, dry fire, test fire, take apart, or work the action, except to unload. Never place any object in the barrel (plastic tie straps used to demonstrate that the firearm is unloaded are the exception). Unload carefully and record the position of the cartridge cases and unfired cartridges/shotshells as you remove them. Any evidence firearm with possible blood or body fluids should be air-dried, then packaged in a cardboard box labeled with a "BIOHAZARD" label.

      i. Revolvers: A firearm with a cylinder having several chambers arranged to rotate around an axis; it can be discharged successively by the same firing mechanism.



(a) Before opening the cylinder, mark each side of the cylinder at the top strap with a sharpie pen, being careful not to destroy latent prints or trace evidence. Open the cylinder and draw a diagram or photograph the back view indicating which chamber was under the hammer. On the diagram, number each chamber and identify the cartridge/cartridge case in it by the head stamp and whether or not there is a firing pin impression. Remove each cartridge/cartridge case and place it in a manila envelope numbered to correspond with the chamber from which the cartridge/cartridge case was removed. Fired cartridge cases found in and/or removed from the cylinder of a revolver will not be routinely examined or compared microscopically.



ii. Pistols or Rifles with Detachable Magazines:

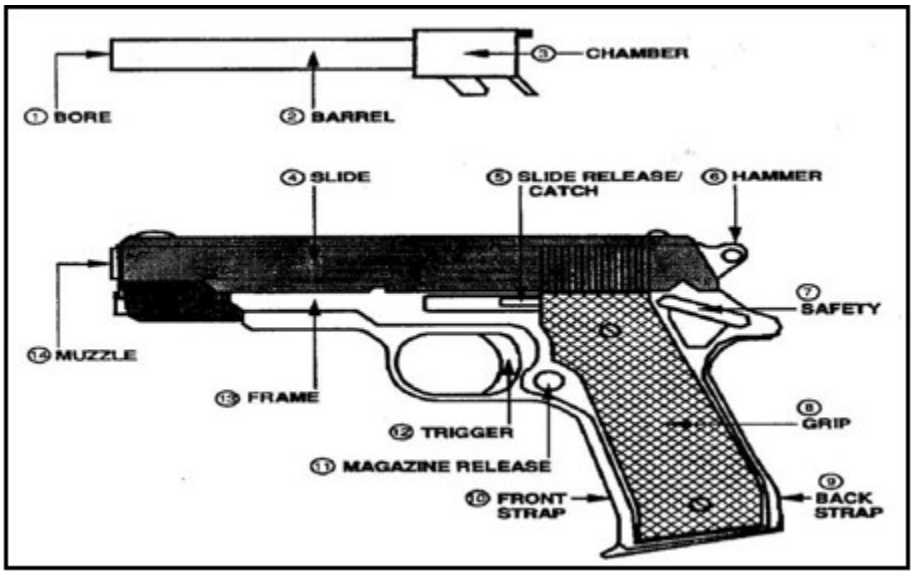
(a) A repeating firearm requiring a separate pull of the trigger for each shot fired, and which uses the energy of discharge to perform a portion of the operating or firing cycle.

(b) Magazine: A container for cartridges which has a spring and follower. The magazine serves to provide a new cartridge for loading into the chamber of a pistol during the firing cycle.

(c) Clip: A detachable metal frame or box, which contains cartridges and serves to facilitate the loading of an internal magazine.

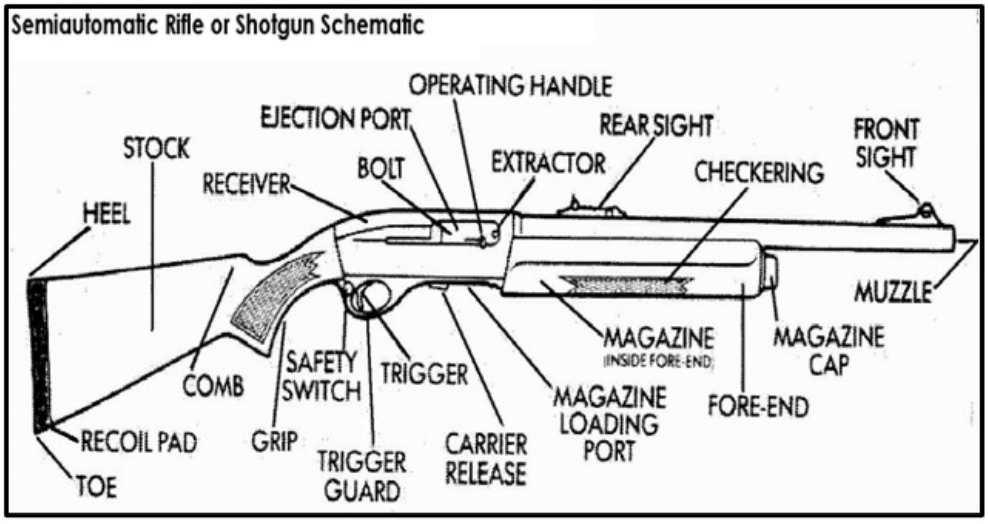
(d) Remove the magazine and leave the cartridges in it. Place in a manila envelope or other container. Remove the cartridge/cartridge case from the chamber (if

present), place it in an envelope or other container, and mark the container. ALWAYS submit the magazine and the cartridges/cartridge cases that have been removed from the firearm's chamber and/or magazine.



iii. Derringers:
   (a) Note which barrel each cartridge/cartridge case came from. Remove each cartridge/cartridge case and place in an appropriately marked container.

iv. Rifles and Shotguns with Fixed Magazines:
   (a) Do not cycle the cartridges/shotshells through the action if you can avoid it. Unload the firearm the same way it is loaded. Remove the cartridge/shotshell from the chamber, package separately, and mark the package. Remove the remaining cartridges/shotshells, which can be packaged together.



D. Special Requirements:

1. If a firearm cannot be unloaded or there are special circumstances, call the laboratory and have a firearm examiner tell you how to proceed. Call the Firearms Unit prior to your arrival if you must bring a loaded gun into the laboratory. Boldly mark the package with the words: **WARNING: LOADED FIREARM.**
2. If the firearm is found in freshwater, immediately immerse it in the same water in a suitable container, such as a Rubbermaid container. Caution: Corrosion may occur if a wet firearm remains exposed to air for even a short period of time. If the firearm is found in saltwater, immediately submerge in vegetable oil or other water displacing lubricant. Submit the firearm to the laboratory as soon as possible.

E. Distance Determination (Clothing for Gunpowder Residue):

When fired, a mixture of burned and unburned gunpowder and vaporized primer material is expelled out the firearm's muzzle along with the bullet or shot pellets and wad(s). This gunshot residue may indicate how far away the muzzle of a firearm was from the entry site at the moment of discharge.

1. Note the sequence and condition of the clothing, i.e., T-shirt under flannel shirt, shirt unbuttoned, etc. Collect all clothing containing suspected bullet holes. Submit only outermost garment. Handle carefully so as not to displace or remove any gunshot residue. Air dry clothing on a clean piece of paper. When dry, place another piece of paper on top and fold for placement in a paper bag and seal. Mark the paper bag for identification. Package each item of clothing separately to avoid cross-contamination. Provide information as to the number and location of bullet holes in the body. If possible, collect and submit ammunition of the same type used in the crime (e.g. ammunition from the firearm's magazine, unused ammunition from a box at the scene, etc.).

NOTE: The suspect's clothing will not be routinely accepted for gunshot residue analysis. Approval of the Firearm Section Supervisor is necessary. Call the laboratory for information when submitting other types of items with a suspected bullet hole.

F. Serial Number Restoration:

The obliteration of serial numbers and manufacturer's marks is often done to prevent tracing ownership of articles. The laboratory uses mechanical and chemical processes that may restore the original marking in whole or in part.

1. Package the evidence in a manner that will protect the area where the serial number has been obliterated. Contact the laboratory prior to delivering large items or if you have a question about an item to restore.
2. NO attempt should be made to restore the serial number prior to submitting it to the laboratory for serial number restoration.

G. NIBIN (National Integrated Ballistics Information Network):

In the past, firearm examiners were greatly limited in their ability to associate fired components from separate incidents unless an investigative lead was developed to warrant a comparison of the evidence. NIBIN is a database-driven multimedia imaging system designed for imaging the markings made by the firearm on fired components to increase the effectiveness of the forensic firearm examiner. Using NIBIN, examiners are able to search unsolved case files, store classification data and images, and simulate a comparison microscope for comparing fired cartridge cases and shotshells. This technology enables the firearm examiner to connect otherwise unrelated shooting events in the same city and/or between two different cities. In addition, by comparing test-fired cartridge cases and shotshells from confiscated firearms, an examiner can establish a connection to a specific firearm that may also tie it to a specific suspect resulting in the complete resolution of an unsolved shooting event.

1. Capabilities include:
   a. Digital image capturing of fired cartridge cases and shotshells that meet imaging criteria through a software program known as "BRASSTrax"
   b. Sharing database information with other crime laboratories, both state and nationwide, if requested
   c. Automated search and retrieval of unsolved case images and fired standards

2. AGENCY TEST FIRE PROGRAM
    a. The agency test fires the firearm and submits test fires for entry into NIBIN.
    b. Large submitters of test fires may contact the Firearms Section Supervisor for training to have their agency representative enter into NIBIN.

3. NIBIN ELIGIBLE CALIBERS: (NOTE: Exceptions can be made by the firearms supervisor)
    - 380 Auto
    - 9mm
    - 357 Sig
    - 40 S&W/10mm Auto
    - 45 Auto
    - 223 Rem/5.56 NATO (5.56x45mm)
    - 7.62x39mm
    - 5.7x28 mm
    - 300 Blackout (300 BLK)
    - 308 Win (7.62x51mm NATO; AR style firearms only)

4. WHAT IS NOT IMAGED IN NIBIN: The following guns/evidence are not suitable for entry into the NIBIN database and are not accepted:
    - Bullets/projectiles of any caliber
    - Shotguns
    - Derringers
    - Antique firearms
    - Black powder firearms
    - "BB" guns
    - Weapons purchased in a "Buy-Back" or "Guns for Cash" program

Note: Effective March 1, 2022, the Louisiana State Police Crime Laboratory no longer swabs firearms for DNA where the submission is exclusively for NIBIN entry.

H. Tool Marks (TM):

Tool Marks are impressions or marks produced when a tool comes into contact with an object; the tool is generally the harder of the two objects. Physical contact between a tool and the surface of an object produces marks not only characteristic of the type of tool used, but marks that may be unique to a single tool. Examples would include a screwdriver used to pry open a cash box, a crowbar used on a steel door frame, a pair of bolt cutters used on a chain link fence, or a pair of wire cutters or pruning shears used on copper power lines. In each instance, the working edges of the tools can leave their individual characteristics upon the damaged surface of an object.

The laboratory can perform comparison of the questioned tool mark to a suspect tool to determine if the tool did, could have, or did not make the questioned tool mark.

1. Collection and Packaging: (Recommendation of suitable Packaging Materials)
    a. Manila envelopes (casts and/or small objects)
    b. Cardboard box (large tools and sharps)

2. Tool mark from the Crime Scene
    a. Do not try to "fit" anything into the tool mark, as this will damage the individual characteristics that may be present.
    b. Take an overall photograph of the item containing the tool mark and the item's surroundings. Whenever possible, submit the item containing the tool mark. Place your identifying mark in an area away from the tool mark. If the object is too small to mark, i.e., a broken screwdriver tip, or if you have casts, put them in appropriately sized containers and label the containers.
    c. Package the tool mark in such a way that it will not be damaged or contaminated. Package and seal the whole item, when possible, and package each item separately. If the item is too large, cover the tool mark area with cardboard to protect it. Never place tape directly over the tool mark.
    d. For items that are too large or otherwise impractical to submit, two (2) casts of each tool mark should be collected and may be submitted. Call the laboratory for assistance on casting tool marks.

3. Suspect Tool
    a. Handle carefully to avoid damage and loss or contamination of trace evidence. Do not attempt to determine if a found tool "fits" in the tool mark. This may alter or obliterate the tool mark and trace evidence may be lost or added.
    b. Do not clean the suspect tool. Put your identifying marks in an area away from the working edges of the tool or on the packaging.
    c. Package the tool to prevent the loss of trace evidence and to protect the working edges from damage. The working edges may be wrapped with paper and the paper secured to the shaft of the tool with tape. Do not put tape directly on the working edges.
    d. Package each tool separately. Do not put the tool in the same container as the objects displaying the tool mark.
    e. When possible, submit only the tool that exhibits class characteristics similar to those of the questioned tool mark. If in doubt, call the lab for assistance.

I. Laboratory Submission Form:

Each request for forensic examination must include a Louisiana State Police Crime Lab Evidence Submission Form, or must be submitted via Portal.

- Please include the description of evidence being submitted and number of items (Example: five (5) cartridge cases, one (1) Ruger pistol, two (2) bullets)
- Select FA/TM from Examination Request Code section
- Additional Examination Requested section should include a category
    - FIREARMS EXAMINATION

        - GENERAL COMAPARISON
        - BARREL LENGTH
        - DROP TEST ANALYSIS***
    - NIBIN
    - SERIAL NUMBER RESTORATION
    - DISTANCE DETERMINATION***
    - TOOL MARKS***
    - FRACTURE COMPAIRSON***

***Note: Examinations that are not routinely performed may require additional information.

J. DO's and DON'Ts Appendix:

1. Firearms
    a. DO record the serial number, make, and caliber of the firearm for identification before sending. DO place the firearm in a sturdy box and secure or package it to prevent shifting, mark UNLOADED on box.
    b. DO place any unfired cartridges/shotshells that have been removed from the firearm in a separate sealed container. This container may be packaged in with the firearm. Boxes must be used for packaging firearms. Paper bags tend to rip and firearms should never be tightly wrapped in paper. (NOTE: unfired cartridges are not necessary for NIBIN only requests)
    c. DO call the laboratory ahead of time if a loaded firearm must be submitted. Mark the packaging with: **WARNING: LOADED FIREARM.**
    d. Do label evidence containing suspected blood or body fluids with a BIOHAZARD sticker or warning label.
    e. DO submit the cartridge magazines with the pistols and rifles.
    f. DON'T place any object in the barrel (plastic tie straps used to show that the firearm is unloaded are the exception).
    g. DON'T clean the bore, chamber, or cylinder before submitting the firearm.
    h. DON'T take the firearm apart or test-fire before submitting to the laboratory.
    i. DON'T submit cases involving crimes against animals unless a gun is submitted and approved by the Firearm Section Supervisor.
    j. DON'T submit replica guns, BB guns, and pellet guns unless the submission is approved by the Firearm Section Supervisor.
    k. DON'T attempt to restore the serial number of a firearm prior to submitting it to the laboratory.

3. Fired Bullets
    a. DO submit all fired bullets and fragments recovered.
    b. DO gently rinse and air dry projectiles removed from victims.
    c. DON'T clean fired bullets from crime scenes.
    d. DON'T wrap fired bullets, fragments, etc., in cotton or tissue paper.
    e. DON'T place identification marks on bullets as this could destroy marks made by the firearm.
    f. DON'T put bullets in glass containers.
    g. DON'T touch fired bullets without examination gloves.

4. Fired Cartridge Cases/Shot shells
    a. DO mark the envelope for identification.
    b. DO place each fired cartridge case/shotshell in a separate envelope.
    c. DON'T mark fired cartridge cases/shotshells.
    d. DON'T place marks of identification on the primer end of fired cartridge cases/shotshells.

5. Unfired Ammunition
    a. DO try to recover any ammunition of the same brand and type for test firing and comparison purposes (not necessary for NIBIN only cases).
    b. DO mark the envelope for identification.
    c. DON'T mark ammunition unless removing from magazine or chamber.

6. Serial Number Restoration
    a. DO protect the area where the serial number has been obliterated.
    b. DO contact the laboratory prior to submitting any large items.
    c. DON'T attempt to restore any serial number prior to submitting to the laboratory.

7. Clothing Analysis for Gunpowder
    a. DO note the sequence of the clothing, i.e. T-shirt under open flannel shirt.
    b. DO only submit the outermost garment worn, i.e. no boxer shorts if jeans are outer garment.
    c. DO handle carefully to preserve any gunshot residue around suspected bullet holes.
    d. DO contact Firearm Section Supervisor if there are multiple bullets holes in a garment.
    e. DO completely air dry clothing prior to submission.
    f. DO package in white butcher paper and brown paper bag.
    g. DO mark the paper bag for identification.
    h. DON'T package clothing in plastic even after air drying.
    i. DON'T submit suspect's clothing for Gunpowder analysis without prior approval from the Firearm Section Supervisor.

8. Tool Marks
    a. DO protect all areas of tools that may contain trace evidence with plastic bags or other wrappings.
    b. DO submit the entire object with the tool mark to the laboratory if possible. If not, photograph the mark in its location, and then remove the damaged area for submission to the laboratory.
    c. DO, for items that are too large or otherwise impractical to submit, collect two (2) casts of each tool mark (both may not initially be submitted). Call the laboratory for assistance on casting tool marks.
    d. DON'T attempt to "fit" a tool into the evidence damaged tool mark.
    e. DON'T use the suspect tool for any reason.
    f. DON'T submit tool marks involving property crimes without prior approval from the Firearm Section Supervisor.

LATENT PRINTS

The Crime Lab processes evidence for prints in the lab and at crime scenes. There are many reagents available for processing evidence at a scene, but the most common is fingerprint powder. Items can be processed by officers at a scene, or collected and submitted to the Crime Lab for lab analysis. When prints are recovered, they are forwarded to print comparison analysts for examination.

Friction ridge impressions can be organized into two categories—latent and patent prints. Latent prints require some method of physical or chemical enhancement to be seen. The processes used to recover latent prints are determined by the type and condition of the surface of the object upon which the prints have been deposited. Patent prints are those that can be seen without any enhancement, such as a greasy or a bloody print, or three dimensional prints, such as those found in gum, putty, or paint.

There are a few important considerations for making processing and collection decisions about evidence at a scene. However, the most important thing to remember is that prints are very fragile, so all items should be examined, processed, and packaged with utmost care. Careful evaluation of the scene and knowledge of your processing capabilities will determine the course of action taken at each scene.

Items can be submitted to the lab and processed for prints. Items submitted for print processing can also be submitted for DNA or other analyses, and the collection/testing methods can be done simultaneously.

Be sure to request ALL desired analyses on the submittal form or in Portal at the time of submission. It may be too late once the processing has begun to go back and request additional analysis.

Print Processing:

A. Identify what objects may be suitable for print processing
   1. Disturbed or out of place items—which items were likely to have been handled?
   2. Items not belonging to victim (or suspect)
   3. Points of entry/exit at a scene (doors, door frames, windows, window screens, door knobs, tools used to gain entry, etc.)
   4. Points of attack (areas where items have been disturbed, damaged, or removed)
   5. Other items that may be of evidentiary value—will prints on the object be probative to the investigation?
   6. Once it is determined what items are to be processed for prints, any fragile or transient evidence should be handled first.

B. Handling of Objects
   1. Wear personal protective equipment (PPE) before and during collection and processing.
      a) Gloves
      b) Mask (for items with a DNA request)
   2. Handle objects with care (with gloved hands) by touching edges, corners, or other surfaces that are too small for prints or unsuitable for prints (such as textured surfaces of gun grips).
   3. Gloves should be utilized with care. Prints are fragile and can easily be wiped off of a

surface or damaged, even if gloves are worn.

4. Extreme care should be exercised when handling tape or other items with exposed sticky surfaces.
    a. Prevent handling of loose ends or other exposed sticky surfaces.
    b. Leave the tape intact on the item, whenever possible. If it is necessary to remove from a person, cut the tape in an area that is away from the end of the tape and do not separate layers. You may stick the adhesive side to a clean acetate sheet (page protector). The tape can be placed in a suitably sized box for transport.

C. Decide which processing method will work best.
    1. Porous vs nonporous items
    2. Bloody vs non-bloody items
    3. Light vs dark colored items
    4. Large vs small items

D. Decide which items should be processed at the scene, and which items should be processed at the lab.
    1. Do you have the reagents and equipment necessary to best process items at the scene?
    2. Will processing for prints likely destroy other evidence that may be present? Does the item need more than one type of analysis (prints, drugs, DNA, etc.)?
    3. Do you have the proper evidence collection and packaging equipment necessary to adequately preserve the item for lab analysis?
        a. Ensure that your vehicle is stocked with proper evidence collection/documentation equipment
            a) Multiple sizes of envelopes, bags, sharps containers, etc.
            b) Labeling utensils, rulers, evidence markers, etc.
        b. Some items may be too large to collect (couch, bed, wall, etc.) and should be processed at the scene, or a sample of the item may be collected/removed for analysis (example: area of a floor with bloody shoeprints)

E. Use appropriate packaging for the specific item
    1. Ensure items do not move around too much in the packaging and potentially rub off any prints.
    2. Ensure items aren't too tightly packed-rubbing against the packaging or each other.
    3. Too small or too large of an evidence package is not the best for preserving the prints and/or DNA on the item.
    4. Paper packages (envelopes or bags) are usually best.

As noted above, the majority of scene processing by officers will likely be with fingerprint powder. Basic dusting and lifting techniques are described below. The most important thing to do for developing good evidence handling, dusting, and preservation techniques is PRACTICE!!!

E. Dusting techniques
    1. Use fiberglass or feather brushes for all non-magnetic powders—any other type of brush may damage fragile prints.
    2. Magnetic brushes must be used for magnetic powder.
    3. On large surfaces, use broad, sweeping strokes to apply powder and locate ridge detail in

prints.
4. Follow up with smaller circular strokes to work powder onto all sides of the developing print and to get rid of excess powder.
5. Shining a flashlight at an oblique angle will aid in locating prints during processing.
6. When dusting, you should not "spin" the brush, "poke" at the surface, or brush too hard—this will damage or completely erase prints that are very faint or fragile.

F. Photography techniques
1. Photograph before doing anything else to the print!!
2. Always use a ruler in the photos. Make sure the ruler is in the same plane (position and height) as the print that is being photographed.
3. Get a close-up photograph of the print with the ruler included. Fill the frame with the print being captured.
4. Make sure the photo is in focus before lifting the print.
5. Ensure the camera is parallel to the surface/print being photographed. Otherwise, the print may be distorted.
6. Be sure to have the proper lighting conditions (side lighting, ALS, etc.).
7. After taking the photo, review it to ensure the print is as clear in the photo as it is on the object.

G. Lifting techniques
1. Hinge lifters, lift tape and lift backs (preferably clear backs), or gel lifters may be used.
   a. Clear lift backs are preferred to allow for additional contrast if needed
2. Wear gloves and avoid unnecessary handling, as even gloved hands can destroy prints.
3. When lifting on curved surfaces, remember that the tape will only bend in one plane at a time.
4. Hold the tape or lifter in such a way that it doesn't flop over and stick to itself or other items.
5. Avoid or eliminate bubbles and creases in the tape when lifting and when adhering to lift backs.
   a. Large bubbles may be eliminated by pricking (not slicing) the bubble with a scalpel or other sharp point and then "squeezing" the air out of the bubble.
6. Adhering tape to lift backs
   a. Do not stick tape to index cards, evidence envelopes, or other coarse-grained paper.
   b. Adhere the lift to a (preferably clear) lift back—do not fold the tape back onto itself as a backing.
   c. DO NOT lift prints that have been processed with superglue only—the adhesive on the lift tape will dissolve the print.

Print Comparisons:

Analysts in the print comparison discipline receive prints from outside agencies, as well as prints recovered from cases processed by the Crime Lab. Side by side comparison is made between the unidentified print and reference prints from victims, suspects, officers, or other individuals who may have touched the evidence on which prints were developed. Analysts also utilize the state AFIS (Automated Fingerprint Identification System) and federal NGI (Next Generation Identification) systems to search unidentified prints against the repository of all known

fingerprints and palm prints in these databases.

When submitting evidence for print processing or print comparison, the following information must be included on the submittal form or in Portal (or in other submitted paperwork):

A. Name, race, sex, date of birth, and State Identification Number (SID #, if applicable) of all victims, suspects, and elimination individuals

B. Reference finger AND palm prints for any victims, suspects, or other individuals who may have touched the evidence
   1. A SID number may be submitted in lieu of reference prints if officers have verified that both finger and palm prints of an individual are in AFIS.
   2. If the evidence is from a business burglary, high-traffic area, etc., reference prints may not be necessary. This information should be stated on the submittal form or in Portal.
   3. Both inked and live scan prints are sufficient for comparison purposes, as long as the prints are clear.

Submission criteria may be waived on a case-by-case basis by the Latents Unit Supervisor or Manager.

C. Guidelines for taking good reference prints:
   1. Roll the finger "nail to nail". The resulting fingerprint should be square-like in shape with no smears. Palms should be rolled from the wrist bracelet (crease at bottom of hand) to fingertips, ensuring that all ridge detail is present and there are no voids in the print.
   2. Maintain constant, even pressure throughout the roll.
   3. Inked prints: Do not use too much ink. Excess ink makes the prints blotchy, smudged, and unclear.
   4. Livescan prints: make sure to clean the glass before rolling each finger.
   5. Label all reference prints with the individual's name, and label each finger (right index, left thumb, etc.) as you take them.

D. Tips for taking good reference prints on individuals with "difficult" prints:
   1. Sweaty hands—wipe each finger with an alcohol swab before inking and rolling. This should remove excess sweat and allow ink to stick to the finger.
   2. Poor ridge detail—construction workers, some office workers, and elderly individuals may have very poor ridge detail or flat ridges. Have them hold an ice cube for approximately 1 minute, or use a purchased "ridge builder" to plump up ridges before rolling.
   3. Dry hands—apply a small amount of lotion to the hands and rub in completely. The added moisture should rehydrate ridges enough to take legible prints.
   4. Deceased prints—reference finger and palm prints should be taken from all deceased individuals involved in a case, as their prints may be needed for future comparison requests.
      a. Clean the individual's hands using alcohol swabs.
      b. Use disposable ink strips to ink the hands.
      c. Cut individual strips from a roll of latex tape (1-2" wide), press onto the entire finger, remove, and adhere the tape lift to a clear acetate sheet, page protector, etc. Make sure to label the pieces of tape to indicate where on the hand they came from. Pressing down on the back of the finger joints may assist in straightening the fingers for easier printing. Should inked printing of deceased individuals prove to be too

difficult, a photograph(s) of the (inked or un-inked) palmar side of the hand(s) may be taken instead. Follow the guidance in bullet F of the Print Processing section of this document. You may have to take several photos to fully capture all the ridge detail on the hands (or feet).

AFIS & NGI Databases:

Unidentified prints are routinely searched through AFIS and NGI, if they are of sufficient quality. If suspects or victims are from another state, this should be stated on the submittal form or in Portal so that prints can be searched through NGI.

A. AFIS (Automated Fingerprint Identification System) is the state fingerprint / palm print database. Arrestees, applicants (nurses, concealed carry permits, etc.), law enforcement, and unidentified prints are all housed in this database.
    1. Unidentified prints are searched through this database and may remain in the system if all reference prints have been submitted in a case, and if the print is of sufficient quality.

B. NGI (Next Generation Identification) is the federal fingerprint / palm print database. Criminal, civil, military, applicant, and unidentified finger and palm prints are housed in this database, which is maintained by the FBI.
    1. Unidentified prints may be searched through NGI. They are typically not retained in this system for continued searching.

IMPRESSION COMPARISON

Wherever a crime has been committed, someone has had to enter and exit the scene. In the process, shoeprints and tire tracks (also referred to as track evidence) can be left. These types of impressions are encountered on a wide variety of surfaces and different collection techniques may be utilized. Proper processing of each surface type may result in collection of impressions which can, in some cases, be identified to a specific shoe or tire. Footwear evidence (shoe impressions) can reveal the type and make of a shoe, the path or direction of movement, the approximate or precise size of the shoe, and approximately how many people were traveling in an area. Tire Track Evidence (tire impressions) can reveal the type and make of a tire, the possible size of the tire, the path or direction of movement, and approximately how many tires or vehicles were traveling in an area.

Footwear and tire track comparisons are typically conducted between a questioned impression and known shoe or tire impression. ***It is necessary to submit to the LSP Crime Lab both the questioned impression and the known shoe or tire to conduct a comparison.***

A questioned impression does not need to contain the entire length of the shoe or tire for a comparison analysis to be performed. The most important factor is the quality of the photo/cast/lift, which is dependent on the officer using proper collection/documentation techniques. Additionally, some impressions such as shoeprints in blood can be enhanced using physical methods. Please contact the Crime Lab for assistance with this.

General guidance for collection of track evidence:

A. When photographing track evidence:
   1. ALWAYS have a ruler in the photo. Ensure the ruler is in the same plane as the impression.
   2. Be sure the camera is parallel to the surface of the track evidence being photographed.
   3. Side light the impression from all four sides (top, bottom, left, right) and photograph each (best practice is to use a tripod and the Manual setting on the camera).

B. When lifting track evidence:
   1. If using an Electrostatic Dust Lifter:
      a. Place the Mylar static sheet over the track evidence (black side down)
      b. Attach the negative clamp to the sheet first, then the positive
      c. Turn on the apparatus for a few seconds to create the static charge
      d. Turn off the apparatus
      e. Remove the clamps in the reverse order
      f. Carefully lift the sheet from the surface

      The lift should be packaged "impression side up" in a clean, dry evidence box to protect it from damage. *Note: the static sheet will eventually lose some of its charge, which can cause loss of detail in the impression. The static sheets should be submitted to the lab as soon as possible for capture of this detail before deleterious change occurs.

   2. If using a Gelatin/Adhesive Lifter:
      a. Remove the backer from the adhesive and anchor the adhesive side down directly adjacent to the track evidence.
      b. Using a roller, apply pressure and roll the lifter over the track evidence.
      c. Slowly remove the lifter from the surface and place a clear backer over it to preserve

the impression.

C. When casting track evidence:
   1. Using 2 lbs of dental stone and ~10oz of water, mix to a pancake batter consistency. Slightly more water or dental stone may be added if the consistency is too thick or thin.
   2. Start pouring the mixture just outside the edge of the track evidence, using the volume of the mixture to "push" the remaining mixture over the evidence to avoid any gaps or bubbles.

Shoe Prints:

1. Locating:
   a. Soil, mostly free of vegetation, may retain a good quality three-dimensional impression unless it is too loose, firm, dry, or wet.
   b. A dirty shoe sole may leave a two-dimensional (flat) impression. A faint shoe impression may need additional illumination to be seen. Using oblique lighting techniques will aid in locating faint impressions on many surfaces.
2. Photographing:
   a. Measurements: A scale must be used when photographing or documenting an impression. It is necessary for the scale to be in the same plane (height, ruler angle, etc.) as the bottom of the impression. If the ruler is above or below the impression, accurate measurements cannot be made. In addition, discrepancies in shoe size estimation could occur.
   b. Photography: Close up photos should be taken with an L- ruler. The camera should be positioned so that it is exactly parallel to the impression. Use of a tripod is highly recommended. Side lighting from several different angles with electronic flash or other high intensity light should be utilized. Vary the position of the light source with the camera in the same position, taking a photo in each of the light positions. This will ensure that all details are recorded rather than being partially obscured by shadows. Fill the frame with the shoe impression, making sure the bottom of the impression is in focus.
3. Casting:
   Casting may be used to capture three-dimensional impressions, such as those left in soil. The most common type of casting material is dental stone, which is easily obtained from dental supply companies.
   a. Approximately two pounds of dental stone and 8-12 ounces of water is enough to cast a medium-sized shoe impression. Casting material should be the consistency of pancake batter when pouring, and should be free of clumps.
   b. Casting material should never be poured directly onto the impression. It should be poured next to the impression so that the dental stone flows, or gets "pushed" into the adjacent impression. Pour to approximately 1" thickness and label the cast as it begins to dry (either etched lightly into the surface or with a permanent marker).
   c. Never clean the dirt or debris from the bottom of the cast; dig slightly below the depth of the cast and remove and package the soil and cast together. Once the cast has dried, it should be packaged in a box or paper bag. Casts should be allowed to fully dry for

48 hours before cleaning, and should never be packaged in plastic.

Tire Impressions:
Several measurements can be determined from tire tracks which may aid in an investigation. These include tire width, front wheel stance, rear wheel stance, and wheel base. This data, when coupled with the tread design, can aid in locating or greatly reducing the number of vehicles which may have left the impressions.

1. Vehicles may have more than one brand of tire on the wheels. Ensure that all four tires are photographed and that each tire's information (brand, model, etc.) is documented if a comparison is to be done.
2. Wheelbase measurements can assist in determining vehicle type. At the scene, look for where the vehicle turned, stopped, or changed directions. The tracks that make sharp turns will be the front tire tracks. Wheelbase measurement is made from the leading edge of the front tire to the leading edge of the rear tire. Turns and direction changes will be the best locations for measuring the front and rear stance as well.
3. Photographs of the impression should include no more than 12-14 inches of the tire track. Multiple photographs should be taken along the length of the tire track, overlapping a small portion of the track in each photo, to ensure that the full rotation of the tire has been captured.

4. Casting can be accomplished using the techniques described in the shoe impression section above. Do not cast more than ~1 foot of track as the cast will become heavy and more susceptible to breaking. Several casts can be taken from a single tire track.

FIRE DEBRIS ANALYSIS

The Crime Lab can furnish the fire scene investigator with information relating to the presence and classification of an ignitable liquid at a fire scene. Fire debris analysis cannot determine whether a fire was intentionally set, and cannot identify a specific source of the ignitable liquid residue (ILR). The analysis of debris samples from fire scenes can determine whether an ignitable liquid residue is present. Most labs, like ours, identify only classes of samples and do not "match" samples to each other. The presence and classification of an ignitable liquid, which may be used to start or accelerate the spread of a fire, is determined by analysts using a gas chromatograph/mass spectrometer (GC/MS).

Latent print or DNA examinations may be incorporated in fire debris cases. Unburned or partially burned items may yield identifiable latent prints or DNA profiles if collected properly and submitted for analysis immediately. If collecting evidence for Print and DNA analysis as well, be sure to wear PPE and be mindful of cross-contamination when handling the evidence.

Proper collection and packaging of evidence for fire debris analysis is critical; such debris may contain volatile ignitable liquid residues which can evaporate quickly if packaged improperly.

The State Fire Marshal is an excellent resource for investigating and collecting evidence from fire scenes. An arson investigator should be consulted when processing complex fire scenes or those involving fatalities / serious injury.

A. For fire scenes, the State Fire Marshal's Office should be contacted at 225-925-3647.

B. **Collection**: All equipment used to process fire scenes and collect evidence should be cleaned before each use. This includes tools (shovels, rakes, screens, etc.), clothing (especially shoes), and other items that may come into contact with scene debris.

   1. The lab's analysis equipment is extremely sensitive and may detect ignitable liquid residues carried over from another scene or from cleaning products if items are not properly cleaned. Do not use citrus or lemon scented soap for cleaning.
   2. Whenever possible, use disposable items (such as gloves). Do NOT include gloves used to collect evidence inside of your evidence container, as they can interfere with the lab's analysis.

C. **Packaging**: All fire debris evidence that comes into the laboratory must be packaged in one of the following ways:

   1. Heavy Duty KAPAK or Nylon bag –used for packaging solids and soils. The bags can be cut to size, and should be filled no more than 2/3 full. Liquids and sharp items should never be placed directly inside these bags.
   2. Clean, lined, metal paint cans—used for packaging solids and soils. Unlined cans rust more easily than lined cans, and could result in sample loss or contamination. Cans should be filled no more than 2/3 full. Liquids should never be placed directly inside a metal paint can.
   3. Clean, glass containers – used for packaging liquids. Appropriate glass containers include evidence vials or small glass jars. To prevent breakage, the glass container may be placed inside of another clean container with padding. Only a small amount of liquid is needed

(generally 2-20ml). An alternative is to absorb some of the liquid onto clean gauze or similar material, and then package the gauze inside a clean, metal paint can or KAPAK or Nylon bag.

D. For packaging **solid** evidence:
   1. Clean, lined, metal paint cans
   2. Additionally, the cans could be placed in heat-sealed evidence packaging (Kapak bag or Nylon bag)

   For packing **liquid** evidence:
   1. Clean, glass container (evidence vial or glass jar)—do not package liquid samples in plastic
   2. Seal the vial or glass jar with evidence tape
   3. Package the glass container inside a padded envelope or paint can

   Preserving **soil** samples:
   1. Clean, lined, metal paint can
   2. IMMEDIATELY store the sample in the freezer to minimize bacterial degradation of ignitable liquids in the soil
   3. If a freezer is unavailable, store sample in the refrigerator

E. **Storage**: Samples should be stored in a climate controlled storage facility. Heat will cause ignitable liquid residues in samples to vaporize, expand, and move around inside the container. If the containers are not sealed properly, leak, or fail in some other way, contamination or sample loss may occur.
   1. Soil samples should be immediately stored in the freezer to minimize bacterial degradation of ignitable liquids in the soil.
   2. Large, bulky items such as gas cans, flooring, lumber, etc. may be difficult to package in the recommended containers. It is acceptable to place these items inside paper or plastic bags, provided the agency can get these items to the laboratory quickly so they can be properly packaged as soon as possible.
   3. Comparison samples (same material as test sample, but believed to be free of ignitable liquid) may provide an abundance of information about the test sample, and therefore can be collected when possible. Comparison samples should be stored in the same manner as test samples.

F. ALL samples should be stored in a climate controlled storage area.

NOTE: Regardless of the packaging method used, all containers must be thoroughly sealed so that any ignitable liquids present are not allowed to escape from the sample.

Published by Louisiana Department of Public Safety & Corrections –

Louisiana State Police Crime Laboratory