

**Tarrant County Medical Examiner  
and Forensic Laboratories**

**Laboratory Services Handbook**



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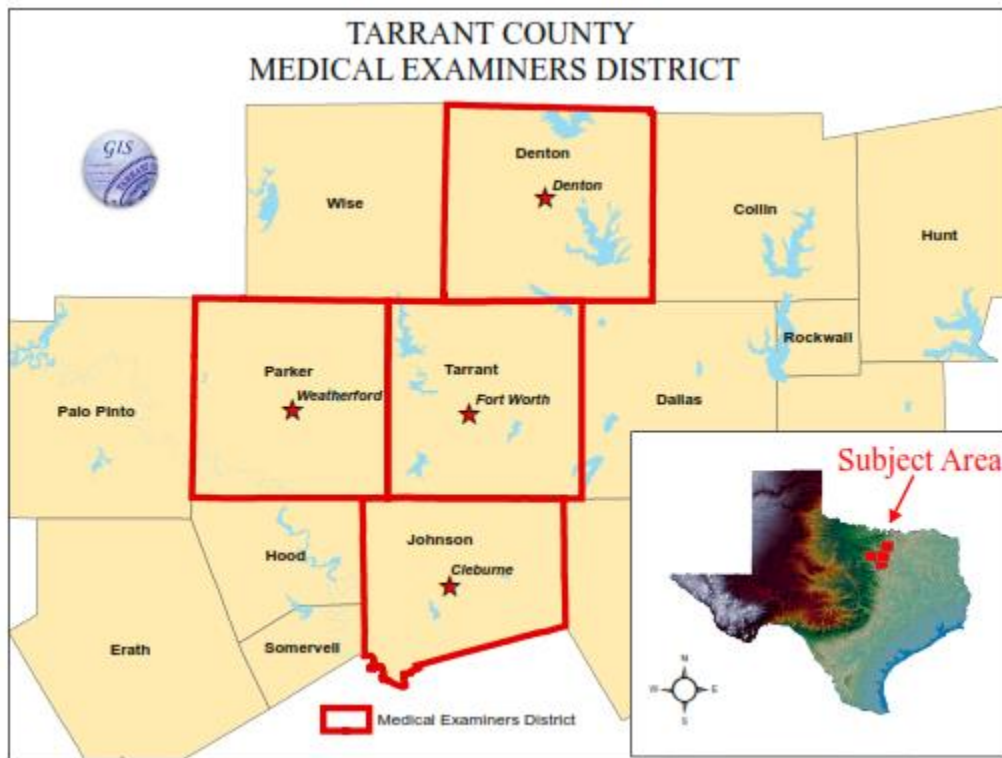
## INTRODUCTION

The Tarrant County Office of Chief Medical Examiner (TCME) is a regional medical examiner's facility located in Fort Worth, TX. The four county Medical Examiner's District represents a core population of approximately three million citizens. The office has a staff of board certified forensic pathologists, an around-the-clock investigative staff, and a full complement of forensic laboratory services. The Forensic Laboratories are divided into Criminalistics and Toxicology sections.

The facility provides laboratory examinations to support Medical Examiner autopsy services within the Medical Examiner District, as well as fee-for-service laboratory analysis in response to law enforcement, attorney, or other requests from both within-District and non-District entities across Texas or the United States. Texas Government Code 411.0205 requires that specific forensic testing of evidence is conducted in an accredited laboratory in order for testimony to be admissible in Texas courts. The Forensic Laboratories are accredited by the American Society of Crime Laboratory Directors – Laboratory Accreditation Board (ASCLD-LAB) and the Texas Forensic Science Commission (FSC). A description of the state accreditation program may be found on the Texas FSC website: <http://www.fsc.texas.gov/texas-forensic-science-commission-crime-laboratory-accreditation-program>.

The Laboratory Services Handbook is designed to acquaint law enforcement and other personnel with the services offered by the Forensic Laboratories, and to assist in the proper submission of evidence. We will work with submitters to protect the integrity of all evidence and to ensure the reliability of all examinations conducted.

**Any defense requests for DNA examination must be initiated with a court order for testing.**



## GENERAL POLICIES

Laboratory accreditation standards emphasize service to the customer, and throughout this document, the requestor or submitting agency may be referred to as “customer.”

The Forensic Laboratories value communication and cooperation with customers in an effort to provide the highest quality of service. The laboratory staff may communicate with the customer at any point in the examination process in order to clarify service requests, obtain information on the nature/source of the evidence, suggest modifications to requests based on the anticipated probative value of the requested analysis or examination, provide clarification of results and interpretations, or for other questions that arise. Customers may also contact the laboratory staff for any questions or clarifications before, during, or after the examination process. A listing of contact information is found below:

### Physical Address:

Tarrant County Medical Examiner  
200 Feliks Gwozdz Place  
Fort Worth, TX 76104

### Main Contact Information:

**Phone 817-920-5700**  
Laboratory Fax: 817-920-5719  
**Laboratory Secretary: x 8335**  
Evidence Department: x 8357  
Business Manager: x 8331

### Criminalistics Laboratory:

Laboratory Director: x 8370  
Quality Manager x 8360  
DNA Laboratory: x 8518  
Firearms Laboratory: x 8520  
Latent Prints Laboratory: x 8385  
Trace Evidence Laboratory: x 8521

### Toxicology Laboratory:

Chief Toxicologist: x 8396  
Quality Manager x 8360  
Forensic Toxicology: x 8514  
Drug Chemistry: x 8517  
Breath Alcohol: x 8386

Any submission of physical evidence by a customer serves as a “request” for laboratory services. The initiation of a submission/external chain of custody form along with the evidence represents the contract for testing between the customer and the TCME. Specific requests for examinations to be conducted on individual items of evidence can be indicated in the appropriate area on the submission/external chain of custody form, or submitted on separate documentation generated by the customer.

An initial review of the packaged evidence and laboratory requests will be made by the Evidence Custodian to ensure that the submission/external chain of custody form is completed in full and contains all required information. At this time, the TCME will tender a response to the request by assigning a case number and determining laboratory assignments for analysis.

Service requests may require an additional review by the assigned analyst, in consultation with the submitting agency, to obtain additional information and to discuss the limitations, timeframe, or resources available for testing and to determine that the needs of the customer can be met. The customer will be informed if the laboratory is unable to meet their needs.

It is the responsibility of the customer to effectively communicate any special service requests, court deadlines, or time constraints for analysis. If the laboratory cannot complete the analysis in the requested time frame, the customer will be notified before examination commences. Delays in routine casework will not typically result in communication with the customer. Should a significant delay occur, laboratory management may choose to communicate with the affected customers.

If the laboratory believes that the evidence is not suitable for testing due to its condition, or a requested analysis is of limited value, the laboratory has the discretion to refuse testing and to determine the most probative tests to perform in response to a service request. The laboratory report will indicate which items were not tested in this scenario.

All testing will be performed using methods accepted by the forensic community and meeting the requirements of the laboratory's accrediting body and the needs of the customer. TCME reserves the right to determine the most appropriate methods to be used to fulfill the service request in the analysis and examination of evidence, and to provide the most probative information concerning that request. Prior to testing, the customer will **not** normally be informed of the specific methods to be used; those methods are available for review by the customer upon request.

When analyzing single exhibits that contain multiple units (pills, tablets, baggies, etc.), a statistically valid sampling plan may be used to analyze a portion of the units from that exhibit. The use of the sampling plan allows the reporting of results as representative of the entire exhibit. A reference to the sampling plan used will appear on the appropriate laboratory report.

It may be necessary for analysts to collect samples from items of evidence in order to properly preserve or analyze that evidence (cuttings, lifts, swabbings, scrapings, test fires, etc.). These samples may be retained by the laboratory, or may be returned to the customer as dictated by laboratory procedure. The disposition of all evidence generated by the laboratories will be communicated to the customer.

In order to maintain the integrity of the evidence, the confidentiality of all results, and security within the facility, customers are not routinely permitted to witness the examination of evidence. Laboratory staff is available to the customer upon request to discuss potential testing or any results or conclusions.

The Forensic Laboratories encourage feedback concerning the services provided. Customers are encouraged to complete a Customer Satisfaction Survey should they feel the need to communicate, comment, or suggest improvements to laboratory services. A Customer Satisfaction Survey is included with each mailed laboratory report, but is also available in the Evidence Department or can be provided upon request of the Business Manager.

A fee schedule detailing the cost of all laboratory services can be obtained by contacting the Business Manager at 817-920-5700, x 8331.

## General Information – Evidence Submission

All evidence intended for analysis should be submitted to the laboratories through the TCME Evidence Department. The entrance to the Evidence Department is located on the west side of the facility; parking for Evidence drop-off is available on Saint Louis Ave. immediately to the west of the building. The hours of operation for evidence submission are Monday through Friday, 9 am to 4 pm. The TCME facility follows the Tarrant County Holiday schedule, which can be accessed at <http://www.tarrantcounty.com>

Evidence may be submitted in-person or by a parcel service such as United Parcel Service (UPS), Federal Express (FedEx), or certified United States mail. When submitting evidence via a parcel service, please ensure that a memo detailing the submitted evidence and requested analysis is affixed to the outside of the sealed submission box or envelope so that the Evidence Department can access the documentation without breaking the evidence seals. Any evidence submitted in this fashion must be clearly marked: **Attention: Evidence Department.**

Evidence associated with a Sexual Assault should also be submitted with the appropriate Certification of Investigation form, available from the Evidence Custodian. Sexual Assault Kits are routinely retrieved by TCME staff from secured lockboxes at three local area hospitals. When kits are received in this manner, the investigating agency of record will be contacted to obtain authorization to process the kit evidence; if a response has not been received from the agency within 30 days of the first contact, the kit will be returned to the agency unworked. The kit may be resubmitted with a request for examination should examination be required. Alternately, agencies may also submit blanket authorizations to TCME for testing of all kits routinely retrieved in this manner.

Best practices for packaging of evidence include the following:

- Package all evidence and seal the container to prevent loss, cross-transfer, contamination, or deleterious change
- If at all possible, wet evidence (e.g., bloody clothing) should be dried prior to submission. The evidence should be maintained in a secured area and protected from heat, direct sunlight, and contamination during the drying process.
- If the submission of wet evidence cannot be avoided, contact the appropriate laboratory section directly to discuss packaging procedures prior to submission
- Package items separately and avoid comingling items to prevent cross-contamination
- Use a biohazard label when biological material is present
- Use butcher paper for wrapping evidence or for padding in the evidence container
- Use paper bags, manila envelopes, cardboard boxes, and similar porous materials; the use of plastic bags is strongly discouraged
- Seal the package in such a manner that opening it causes obvious damage or alteration to the container or its seal
- Each package should be sealed with evidence tape or heat seals; if possible do not use staples. Mark across the seal with the sealer's identification and the date.
- Unload and make safe all firearms; place all firearms submitted into a cardboard gun box if at all possible.
- Label items and containers according to your agency policy and procedures.

## LABORATORY SERVICES

**Specialized sections of the Crime Laboratory** include DNA/Forensic Biology, Firearms and Toolmarks, Latent Prints, and Trace Evidence. These services are also supported by a Forensic Photography section.

Categories of testing for the individual sections include:

### DNA/Forensic Biology

Body Fluid Identification (Serology)

Nuclear DNA analysis, including both autosomal (STR) and Y-STR analysis

### Firearms/Toolmarks

Firearms

Toolmarks

Distance Determination

Serial Number Restoration

Fracture Match/Physical Fit

### Latent Prints:

Latent Print Processing

Latent Print Comparisons

### Trace Evidence:

Primer Gunshot Residue Analysis (GSR)

General Trace Evidence Collection (Bodies, vehicles, clothing, bedding, etc.)

Hair Screening for Suitability of DNA Analysis

**Specialized sections of the Toxicology Laboratory** include Forensic Toxicology, Drug Chemistry, and Breath Alcohol.

Categories of testing for the individual sections include:

### Forensic Toxicology:

Human Performance Toxicology (typically DWI or Sexual Assault investigations)

Post-mortem Forensic Toxicology

### Drug Chemistry:

Controlled Substances

General Chemical Testing

### Breath Alcohol:

Calibration of Breath Alcohol Measuring Instruments

More detailed information concerning specific laboratory services can be found in the sections that follow.



## DNA/FORENSIC BIOLOGY

### General Information

The TCME DNA/Forensic Biology laboratory provides serological case screening for the presence of blood and semen as well as STR-based DNA testing from probative evidence items submitted from criminal and other official investigations. Examinations and analyses performed will be based on factors such as the type of case submitted, the probative nature of the evidence item(s), and the quantity and/or quality of biological material detected. Consultation with the submitter and/or applicable District Attorney's Office may be necessary in determining the number of items/samples tested and/or granting permission for the consumption of evidence/sample when only a limited quantity of biological material is present.

Successful DNA results are dependent on the quantity and/or quality of the biological material. Factors such as extreme environmental conditions to which the material has been exposed, substrate on which the material is found, and the exposure of the sample area to multiple individuals may affect DNA results and should be considered prior to submitting evidence for processing. For example, unless injured and possibly bleeding, interpretable DNA profiles from a suspect(s)/handler are **typically not** obtained from items such as:

- Door knobs/handles, vehicle door handles, gear shifts and console knobs
- Cartridges, ammunition and fired projectiles
- Fingerprints / "oily" smudges
- Victim clothing / pockets "rifled" through by a suspect to remove or search for items

Interpretable DNA profiles are **more likely** to be obtained from items such as:

- Blood or semen stains
- Saliva sources (cans, bottles, chewed gum, cigarette butts, straws etc...)
- Oral contact areas (bite marks, neck/breast swabs etc...)
- Envelope flaps/stamps (if licked type)
- Epithelial cell sources – to determine wearer (hats, gloves, bandanas, clothing etc...)
- Condoms – to associate to both wearer and / or victim
- Weapons – to determine handler (gun grips, knife handles etc...)
- Ligatures
- Hair with root material

### Safety Considerations

- At a minimum, latex, nitrile or other non-porous polymer gloves must be worn when recovering and packaging biological evidence. Additional personal protective equipment such as eye protection, face masks, head/hair covering, and lab coats may be beneficial for personal safety and to avoid contamination of the evidence.

- All biological stains and reference samples should be treated as a biohazard (Universal Bloodborne Pathogen Precautions). These samples could potentially expose the handler to HIV, Hepatitis B and C, or other pathogens.
- Liquid blood/urine samples must be packaged in a manner which minimizes the possibility of breakage. The container cap/ tube septa must also be securely sealed to minimize the possibility of leakage during transport.

### **Collection – General**

The use of proper collection and evidence handling procedures reduces the possibility of the introduction of extraneous DNA and degradation of DNA. The following guidelines should be followed:

- Care must be taken to avoid the inadvertent mixing of reference standards with questioned samples (example: known reference buccal swabs and swabs from crime scenes).
- Package individual items of clothing from the same person in separate clean unused containers, preferably sacks or cardboard boxes.
- Do not package evidence items from different individuals in the same containers (example: suspect's clothing with victim's clothing).
- Wear gloves and change them often or when they become soiled. When handling items that are heavily blood stained/soiled, gloves should be changed between every item collected / packaged.
- If biological evidence is going to be collected with a pair of forceps or tweezers, the forceps/tweezers should be cleaned with an approximately 10% solution of bleach (or other decontaminating solution such as "DNA-Off") followed by de-ionized water prior to use and between each item collected.
- Avoid talking, coughing, or sneezing over the unpackaged evidence if a disposable face mask is not worn during collection.

### **Preservation and Packaging**

- Paper packaging such as sacks, envelopes and cardboard boxes are recommended to minimize the possibility of degradation of biological material. Plastic packaging, however, is acceptable for liquid blood tubes and urine containers.
- For large or bulky packages (bedding, shotguns etc...) it is permissible to use clear packaging tape to completely seal the package followed by pieces of evidence tape in selected areas.
- Clearly mark contents on outer packaging including location of recovery (example: "bloodstain from broken glass at point of entry")
- When packaging, do not use masking tape and use a minimum number of staples, if necessary.
- Place a piece of tamper resistant evidence tape across the seal. Initial and date the seal.

- Avoid the excessive use of evidence tape. Evidence tape should be used to detect tampering, not as the sole sealing device.
- Wet stains/clothing should always be air dried at room temperature before packaging to avoid degradation of biological material. If this is not possible, the laboratory should be consulted prior to submission of the item(s).
- Avoid storage of biological evidence in sunlight, high temperatures and/or humidity before submission to the laboratory. If possible, store packaged items in a cool, dry area.
- If possible, all firearms must be unloaded prior to submission. If this is not possible, you must inform the evidence custodian of the firearm's loaded condition upon submission. A TCME qualified firearms examiner should be consulted to assist in the disarming of the firearm prior to release to the evidence custodian and/or DNA/Biology section. Alternatively, the firearms examiner may elect to receive the item directly and then release to the DNA/Biology section after it is rendered safe to handle.
- Do not cover or wrap knife blades and/or handles in tape if these areas are being requested for serology or DNA examinations or testing.
- If the exact location of evidentiary DNA on an item is important, wrap the item in clean paper and roll it up on itself prior to placing in outer packaging in order to prevent transfer of evidence from one location on the item to another location.
- For TCME item tracking purposes, each item should be submitted as a separate package instead of combining several sealed packages inside an outer sealed package such as a sack or box. An outer **unsealed** convenience package such as an envelope, sack, or box may be used for ease of transport; however, it is recommended that each item within the convenience package be sealed individually.

### Collection of Evidentiary Samples

- Visible wet stains of possible probative value that may not be visible after drying (example: semen stain on bedding or clothing) should be circled with a permanent marker to aid in directing the analyst to the area of interest.
- Some stains from non-absorptive surfaces such as on wall paneling, flooring, car parts, glass, plastic etc. can be lifted using sterile swab(s) wetted with a minimum amount of sterile or de-ionized water. The swabs should be wet but not over saturated or dripping.
- If sufficient stain is available, two swabs should be collected together from the area so that an approximate equal staining of each swab is obtained. One swab is acceptable if only a limited quantity of stain is available.
- After transport to an adequate facility, if collected in the field, the swabs should be air dried and placed in a paper sleeve, swab end first. Label the outside of the paper sleeve, as well as outside packaging, with the recovery location and other relevant chain of custody information.
- Swabs should be collected **only** with sterile (if available) or de-ionized water. **Do not** use saline, Lactated Ringers or any other buffered solution. These types of solutions may inhibit recovery and amplification of the DNA.

- Scrapings from dried stains are not recommended. Swabbing is the preferred method of collection of dried stains from non-absorbent surfaces. Scrapings from dried stains can flake and become static making the particles very difficult to isolate.
- Be mindful of contamination when collecting minimum quantity blood stains from areas that have been processed with black fingerprint powder. The inadvertent introduction of extraneous DNA from previously processed blood stained items or crime scenes may be possible if the same black powder batch, container, or brushes were utilized in previously processed items or crime scenes.
- Individual cuttings may be collected and submitted from stains or areas of interest from large items such as walls, car seats and carpet.
- Document the location of recovery of all evidentiary items with enough detail as to aid the analyst in selecting the most probative items that require examination or DNA testing (e.g., victim's bed, suspect's residence, dumpster in flight path one block from crime scene, front porch of burglarized residence) This information is requested with submission of all evidentiary items and is required for determining eligibility of DNA profiler prior to entry into the Combined DNA Index System (CODIS), see also the section on Submission of Biological Evidence.

### Sexual Assault Evidence

- Sexual assault evidence collection kits (SAK) should only be collected by a qualified Sexual Assault Nurse Examiner (SANE) or other qualified individual trained in the recovery and packaging of sexual assault evidence. In addition, a completed *Physical and Sexual Abuse Medical Protocol* or other acceptable hospital sexual assault examination document is required with submission to the TCME Office. This document contains the necessary information the laboratory requires in order to enter the case into the TCME Lab Management Information System (LIMS) and proceed with serological or DNA testing.
- If a male suspect is apprehended within a relatively short time period of the reported incident and it is reasonable to assume that he has not bathed or showered, two penile swabs should be collected together (not one at a time) using sterile (if available) or de-ionized water to lift possible epithelial cells originating from the victim. Follow packaging guidelines outlined below in the "Collection of Reference Sample" section.
- Currently, TCME sexual assault evidence collection kits (SAKs) are provided to John Peter Smith Hospital, Texas Health Harris Methodist Hospital, and Cook Children's Hospital in Fort Worth and contain the necessary components requested by the laboratory for testing. These SAKs are deposited in a locked drop box at the hospital and are retrieved by TCME staff on a routine basis. If a TCME SAK is not utilized, and depending on assault details, the following sealed items are generally required:
  - Two buccal swabs from victim – or EDTA blood tube if incapacitated
  - Four vaginal swabs and one vaginal smear
  - Two vulvar swabs
  - Four oral swabs and one oral smear

- Four anal swabs and one anal smear
- Two peri-anal swabs
- Oral contact swabs (area clearly documented on envelope)
- Swabs or stains collected from body surfaces should be collected **only** with sterile (if available) or de-ionized water. **Do not** use saline, Lactated Ringers or any other buffered solution. These types of solutions may inhibit recovery and amplification of the DNA.
- Although refrigeration is not required, the SAK should be submitted to the TCME evidence custodian as soon as possible if it contains liquid samples such as blood and urine. Liquid blood specimens **should not** be frozen prior to submission. Avoid storing SAKs in sunlight, high temperatures or humidity; if possible, store in a cool, dry area.
- In addition to the SAK, some smaller clothing items, such as under garments, may be received via the hospital locked drop box. Processing of these items, as well as additional items submitted via the evidence custodian, will be dependent upon the provided case details and results of the SAK screening.
- Blood and/or urine samples submitted with the SAK will be released to the TCME evidence custodian for release to the Toxicology section if that testing is requested.
- Sexual Assault cases in which there is a report of touching/fondling only are typically not candidates for autosomal DNA testing for the purpose of CODIS entry (i.e. unknown suspect). However, depending upon the offense details, these types of cases may be candidates for Y-STR testing (refer to scope of services below) and require the submission of known buccal swabs prior to testing.

### Collection of Known Reference Samples

When possible, buccal swab collection is the preferred sampling method for DNA testing.

- Wear gloves during the collection and packaging process.
- Collect either two or four swabs from each victim, suspect or elimination individual.
- Open the sterile swab package and have the individual swab the inside cheek of the mouth with each swab collected, followed by additional swabbing of the other cheek.
- Prior to packaging, it is preferable to air dry the swabs, while ensuring that the swabs do not contact any other surface before inserting the swabs back into the swab package. Package all swabs collected (right and left cheek) from one individual together in the same paper swab sleeve/package. Although acceptable, it is not required to package right and left cheek swabs separately.
  - It is permissible; however, to package without air drying by inserting, swab end first, back into the sleeve of the swab package.
- Label the paper sleeve with the name of the individual and package the swab package in an envelope also labeled with the donor's name and other relevant chain of custody information. Seal the envelope with evidence tape, and initial and date the seal.
- Never place swab packages (paper sleeves) from more than one individual in the same envelope.

- If an individual is incapacitated for some reason and buccal swab collection is not possible, a purple top (EDTA) tube should be collected and submitted. If toxicology testing is needed, a grey top tube is also requested.
- Liquid blood specimens should be refrigerated until submission to the laboratory, if possible.
- If known, information of suspected blood transfusions of the individual should be provided to the laboratory.

### Scope of Services ([Please also see Appendix A: DNA Laboratory Case Acceptance Policy](#))

The following services may be requested when submitting evidence for serological screening or DNA examination:

- Presence of blood and/or semen
- Presence of human DNA
- Comparison of questioned and known DNA profiles
- DNA testing for entry into the **CO**mbined **DNA** Index System – no suspect cases
- Examination of items / collection of samples for preservation and possible future testing

In addition to nuclear (autosomal) STR - PCR based testing, the TCME Office DNA laboratory also offers Y-STR testing for the **detection of male DNA**. Y-STR testing is appropriate in cases in which there is a minimal quantity of male DNA in the presence of a high concentration of female DNA. This testing targets genetic locations only on the Y- chromosome, producing a Y-STR profile (haplotype) which makes interpretation of the non-victim component more likely. Examples may include:

- Male DNA from bloodstained fingernails from a female victim, with the assumption that the majority, if not all, of the blood is from the victim.
- Male DNA from contact areas from specimens collected from female body parts.
- Male DNA from vasectomized (or very low sperm producing) individuals collected from female victims. This may be the required testing option when prostatic antigen (P30), a component of semen, has been detected but spermatozoa have not been identified.
- Low Concentrations of male DNA detected from sexual assault cases involving touching/fondling (female victim/male suspect).

The DNA laboratory currently does not offer mitochondrial DNA (mtDNA) testing or paternity testing.

A serology laboratory report will be issued outlining the items received, items examined, and the results of any presumptive and confirmatory testing conducted. A DNA laboratory report will contain the items received, samples collected, items tested, and the results/conclusions including comparisons to known samples submitted. Additionally, statistical data is reported to support reported associations, and CODIS entry statements (if applicable) will be included. When eligibility and minimum data requirements are met, DNA profiles can be searched at local, state and national levels for the purpose of generating investigative leads.

## Submission of Biological Evidence

- For bulky items, such as bedding, mattresses, car seats, doors, section of walls etc., please consult with the laboratory (817-920-5700 x8518) to discuss testing requests and options before submission to the TCME Office.
- If a large number of items are delivered to the evidence department for serology or DNA testing requests, the evidence department will generally request the submitter to remain at the TCME Office while the laboratory is contacted to discuss which items are the most suitable or probative for testing. It is therefore **highly recommended** that the DNA/Forensic Biology section is contacted to discuss testing requests **prior** to the submission of items.
- Items selected for testing will be based on the probative nature of the item, the analyst's experience, knowledge and training and if necessary, consultation with the submitter or applicable District Attorney's Office.
- **All** relevant known reference specimens (buccal swabs) are normally required before DNA testing can be started including any elimination individuals and consensual partners in sexual assault offenses. This will substantially assist in the completion of testing, comparison of DNA profiles and final reporting in a timely manner. Reference specimens (or additional reference specimens) submitted after DNA testing has been started on the evidentiary items may significantly extend the time of case completion and delay final reporting.
- When submitting evidentiary items that may generate DNA profiles eligible for CODIS entry or "no suspect" unsolved cases specifically for the purpose of CODIS entry, the following information is required and can be communicated in memo format or by providing a copy of the offense report along with the evidence:
  - Verification that a crime was committed.
  - How are the item(s) / sample(s) associated with the offense?
  - **Specifically**, where was the item recovered in relation to the crime scene?
  - Have the victim(s)/owner(s) been interviewed to eliminate them as potential DNA contributors (when applicable)?
  - Is there a reasonable assumption based on the investigation that the item / DNA can be associated to the perpetrator? Explain.
  - Investigator name, phone & fax numbers, mailing & and e-mail addresses.  
This is required information in the event of a CODIS match.

Failure to submit this information may require the analyst to contact the submitting agency and may delay processing of items.
- If a suspect name is available and a request is made for DNA testing, known buccal swabs from the suspect are normally required for comparison. Direct comparison to a specific individual known to have a DNA profile in the State Offender Database is not possible. However, eligible DNA profiles developed from evidentiary items can be uploaded into CODIS to be search against local and state casework databases as well as state and national convicted offender databases for the purpose of generating **investigative leads** only.

- Agencies will be notified of all CODIS matches of possible investigative value (case-to-case, case to Offender, and case to Arrestee).

### **CODIS Procedures – Offender/Arrestee Hits**

Should a confirmed match occur between an evidentiary DNA profile (source previously unknown or unconfirmed) and an Arrestee or Convicted Offender profile (state or national) the following protocol is routinely followed:

- The agency investigator is notified (phone or e-mail) that a match has occurred and the current agency contact information (investigator name, address, phone & fax) is verified.
- The DNA laboratory will notify the Convicted Offender laboratory (state or national) that confirmation of the individual's profile is requested and submit the required documentation. The offender (State) laboratory will confirm the offender (or arrestee) DNA profile and issue a letter which includes the name of the individual as well as other identifying information. This letter will be forwarded to the agency investigator by either the Texas DPS Offender laboratory or the TCME DNA laboratory.
- Confirmation requests are made for all matches in which the source of the profile is unknown or has not been confirmed in-house, such as instances when only a suspect name is provided with the submission and a buccal specimen from that individual has not been submitted. The confirmation request shall be made with the State lab regardless of the investigation status or the offense statute of limitation.
- If necessary, the CODIS Offender Report with the individual's name can then be used for probable cause to obtain a search warrant for the purpose of securing a known buccal specimen from the individual. The CODIS match and offender's name alone cannot be used for indictment and / or trial purposes.
- After obtaining a buccal specimen from the individual, it should be submitted to the TCME DNA laboratory (with the corresponding crime lab number) for in-house verification. A report will be issued including statistical data to support the association. This report can then be used for indictment and/or trial purposes.

### **CODIS Procedures – Case-to-Case Matches**

- Should a confirmed CODIS match occur between evidentiary DNA profiles from different offenses (either within or between agencies), the TCME submitting agency(s) assigned investigator will be contacted and provided the match and offense information for their offense(s). In addition, they will be provided with the offense and investigator contact information for the corresponding matching DNA profile, so that the law enforcement investigators can contact each other. This information will be provided to each involved agency for their records and possible investigative purposes, regardless of whether the offense(s) is solved or unsolved.



## **Policy on DNA Analysis of Hairs**

The laboratory will perform DNA analysis only on hairs which meet all of the following acceptance criteria:

- Hairs must be microscopically characterized with a suitable root identified by a qualified trace analyst or hair examiner prior to DNA analyses;
- Hairs must be microscopically compared to all available known reference hairs (victim, suspect, elimination, etc.) prior to DNA analyses. Exceptions will be made only with documented approval of the submitting agency and/or applicable District Attorney's office. In these instances, the requestor shall be notified that should the analysis not produce a profile of value, that hair will no longer be suitable for subsequent microscopic examination.
- Hairs previously mounted for microscopic examination purposes must be demounted by a qualified trace analyst or hair examiner prior to submission to the TCME DNA/Forensic Biology laboratory. Only un-mounted hairs will be accepted for DNA analysis.
- See Hair Evaluation for DNA Analysis in the Trace Evidence section of this manual for details.

## **FIREARM/TOOLMARK LABORATORY**

### **Scope of Services**

The following general services may be requested when submitting evidence to the Firearm & Toolmark Section:

- Firearm examinations and function testing, including overall and barrel length measurements
- Ammunition or ammunition component examinations and microscopic comparisons
- Restoration of obliterated serial numbers
- Determination of shooting distance based on the presence of gunpowder residues or shot pellet spread
- Toolmark examinations (bolt cutters, pry bar, knives etc.) and microscopic comparisons
- Fracture matching / physical fit
- Production of test exemplars for preservation and possible future testing

A detailed laboratory report will be issued outlining the results and conclusions related to the items received and tested. Upon request, the examiners will meet with law enforcement agents and attorneys to discuss crime scene details and services that could be performed to aid the investigation.

**Items for examination****Possible determinations**

Bullet

- Caliber
- General Rifling Characteristics
- Potential make / model of firearm
- Type of firearm designed for use
- Possible design and manufacturer of ammunition

Cartridge case/shotshell

- Caliber / Gauge
- Potential make/model of firearm
- Type of firearm designed for use
- Possible design and manufacturer of ammunition

Fired bullet and/or cartridge case PLUS a firearm

- See bullet and cartridge case (above)
- If fired from the recovered firearm

Multiple bullets and/or cartridge cases and NO firearm

- See bullet & cartridge case (above)
- If fired from one or multiple firearms

Shot pellets and shot wad(s)  
Buckshot and slugs

- Size and composition of pellets and buckshot
- Gauge of slug
- Gauge of wad
- Possible to determine design style and the manufacturer
- May be possible to determine the size of the pellets loaded in the wad
- Possible to compare plastic wads to shotguns

Clothing or other objects PLUS firearm and ammunition

- Bracketed range of distance from muzzle of firearm to target

Firearm

- General condition and functionality
- Amount of force required to pull the trigger
- Test fire to obtain exemplars for comparison (test exemplars returned as evidence)
- Restoration of obliterated serial numbers
- Document safety features, alterations and/or modifications such as barrel and overall length

Unfired Cartridges or Shotshells	<ul style="list-style-type: none"> <li>· Caliber/Gauge</li> <li>· Design similarities to other ammunition submitted in case</li> <li>· Suitable for use</li> <li>· Whether the ammunition has marks of value for comparison</li> <li>· Possible to determine whether it was cycled through the action of a particular firearm</li> </ul>
Evidence bearing toolmark PLUS tool	<ul style="list-style-type: none"> <li>· Determine if tool produced the questioned toolmark</li> </ul>
Evidence bearing toolmark and NO tool	<ul style="list-style-type: none"> <li>· Possible to determine type or class of tool that made the mark</li> </ul>

## Firearm Examinations

Firearm examinations are requested on any fired evidence and/or any firearm related evidence when the primary concern is to determine whether or not a particular firearm was used in the commission of a crime. Commonly submitted items include pistols, revolvers, shotguns, rifles etc. Commonly submitted objects for comparison include bullets, cartridge cases, shotshells, pellets, wads, cartridges etc.

To ensure the safe handling, storage and submission of firearms, these steps and safety tips should be followed:

- Package and submit an unloaded firearm. It is your responsibility to render the firearm safe prior to delivering it to the TCME facility.
- If possible, label the outer package with a phrase such as “weapon secured”, “rendered safe” or “firearm unloaded” as a visual aid for the laboratory staff handling the package prior to its arrival.
- If you must submit a loaded firearm, the Evidence Department personnel accepting the evidence must be notified of its loaded condition. Calling the Firearm Section (817-920-5700 x8520) ahead of your arrival will allow an examiner to be prepared to aid you with unloading the firearm.
- Under no circumstance should a loaded firearm be submitted via certified mail or any other shipping service.
- At a minimum, latex, nitrile or other non-porous polymer gloves must be worn when recovering and packaging evidence that is soiled with body fluids. Additional personal protective equipment may be beneficial for personal safety and to avoid contamination of the evidence.
- Firearms with suspected blood or “blow back” should be labeled as “Biohazard”
- All biological material should be treated as a biohazard. Biological material could potentially expose the handler to HIV, Hepatitis B and C, or other pathogens.
- Do not insert metal (such as a wire tag) into the firearm barrel or action.
- If your agency requires the action to be locked open, plastic zip ties are recommended.
- When submitting auto-loading firearms such as pistols, shotguns and rifles, a plastic zip tie inserted through the magazine well and out the ejection port will allow all analysts to verify that that firearm is unloaded.

- When submitting revolvers, a plastic zip tie loosely attached through one chamber of the cylinder will keep the cylinder from closing. This will allow all analysts to verify the firearm is unloaded.

## **Collection**

Marking of firearms prior to laboratory submission should utilize ink, rather than scribing or other marking methods.

Scribing bullets, cartridge cases and ammunition is strongly discouraged. Additional marks added during the collection process may overwrite the microscopic marks or patterns needed for the comparison analysis. If your agency requires the object to be marked, using ink only is recommended practice.

If there is any possibility that your agency will request DNA, latent print processing or trace evidence collection from a firearm or firearm related items, each individual who collects, handles, or unloads the item must wear a clean pair of gloves and minimally handle the surfaces of that item. Remember that when handling items that are blood stained or soiled, gloves should be changed between every item collected and packaged.

Biological fluids can and do rapidly rust firearms. Rusted barrels typically cannot be identified back to fired bullets. Therefore, it is important that you notify the firearm section upon submission of a firearm that is “covered in blood” or “heavily soiled with blood”.

If a firearm is recovered in water, it must remain submerged in water due to the oxidation process that causes rust when previously wet metal is exposed to air. It is recommend that the item be placed in a large heat sealed envelope, mop bucket, Styrofoam cooler, a length of PVC pipe with end caps, or other suitable water tight container. It is imperative that the firearm be examined immediately at this point. Call the Firearm Section (817-920-5700 x 8520) ahead of your arrival and an examiner will be prepared to aid you with this submittal.

## **Preservation and packaging**

Paper packaging such as brown paper bags, manila envelopes, small cardboard boxes and cardboard gun boxes (handgun and long gun sizes) are recommended. Plastic packaging is not recommended for firearms or bloody/wet objects.

Select a package strong and large enough to support your evidence. For example, do not place a heavy large frame revolver in a small paper bag.

Please minimize your outer and inner packaging. It is not necessary for each cartridge removed from a magazine be placed in a singular package. It is also not necessary for a magazine to be submitted in a container separate from the pistol.

Specimens collected in the hospital (example: bullets, shot pellets, and other fired components) should be air dried prior to sealing the plastic hospital specimen container.

Do not insert metal (such as a wire tag) into the firearm barrel or action.

It is acceptable to keep the firearm action closed. However, if your agency requires the action to

be locked open, use plastic zip tie inserted through the magazine well and the ejection port. This will allow the action to be closed while ensuring the firearm is not loaded.

Agency evidence tags should be attached loosely to the firearm's trigger guard.

It is not necessary to remove the cartridges loaded in a magazine. Simply remove the magazine from the firearm and secure any loose unfired cartridges from the chamber of the firearm. Visually inspect that the firearm is unloaded.

Clearly list the contents on outer packaging including location of recovery (example: *cartridge case recovered from under the couch*). If using outer and inner packages, label each package with description.

For large or bulky packages (clothing, shotguns etc...) cover the to-be-sealed edges with packing or fiber tape. Then place a piece of evidence tape over a few selected areas and appropriately initial and date the seal.

When sealing the package, use fiber packing tape or a strong clear packing tape with a seal of tamper resistant evidence tape across the packing tape. Affix Biohazard or Hazardous Material labels on the container if appropriate.

Masking, painters, autoclave and electrical tapes and not considered an acceptable form of tape seal.

Avoid the excessive use of evidence tape. Evidence tape should be used to detect tampering, not as the sole sealing device.

### **Toolmark Examinations**

Toolmark examinations are requested to determine if a toolmark was produced by a particular tool. Commonly submitted tools include bolt cutters, knives, pry bars and screwdrivers. Commonly submitted objects for comparison include chain links, victim's cartilage, copper pipes and pad locks.

Tools have individual characteristics from the manufacturing process and from use and abuse. These unique marks can be imparted from a hard object (tool) to a softer object leaving a toolmark. These toolmarks may be suitable for comparison purposes and can thereby be identified to, or eliminated from, a particular tool.

To ensure the safe handling, storage and submission of tools, these steps and safety tips should be followed:

- Items such as knives or other tools should be packaged in a puncture proof container such as a cardboard box. It may be necessary to use a minimum number of plastic zip ties to secure the item within the cardboard box. Label the package as containing a sharp object.
- At a minimum, latex, nitrile or other non-porous polymer gloves must be worn when recovering and packaging evidence that is soiled with body fluids. Additional personal protective equipment may be beneficial for personal safety and to avoid

- contamination of the evidence.
- Tools (e.g. knives) coated or stained with suspected blood should be labeled as “Biohazard”
- All biological material should be treated as a biohazard. Biological material could potentially expose the handler to HIV, Hepatitis B and C, or other pathogens.

## Collection

Marking of toolmark evidence prior to laboratory submission should utilize ink, rather than scribing or other marking methods. Additional marks added during the collection process may overwrite the microscopic marks or patterns needed for comparison.

If there is any possibility that your agency will request DNA, latent print processing or trace evidence collection from toolmark evidence, each individual who collects or handles the evidence must wear a clean pair of gloves and minimally handle the affected surfaces of that item. Remember when handling items that are blood stained / soiled, gloves should be changed between every item collected / packaged.

## Preservation and packaging

Tools and objects bearing toolmarks must be minimally handled to avoid loss or destruction of evidence.

Do not allow the tool to be placed in contact with or packaged with the object bearing the toolmark.

Please package one tool per package.

If there is potential for trace evidence to be on the tip or cutting surfaces of the tool, such as paint transfer or copper residue on bolt cutter jaws, then these tools should be secured inside a box with a minimum number of plastic zip ties to limit the movement of the item within the box.

Evidence must be clearly labeled as to what is the actual questioned mark or area of interest.

Label and diagram the orientation of the questioned mark. For Example: *“from interior door, above door knob”*

Items such as knives and other heavy tools should be packaged in a puncture proof container such as a cardboard box. It is highly recommended that they are secured within the box using plastic zip ties.

Label the package as containing a sharp object and indicate the direction the blade is pointing.

Clearly list the contents on outer packaging including location of recovery (example: *bolt cutters recovered from toolbox*). If using outer and inner packages, label each package with the description.

If it is not possible or practical to submit the evidence toolmark, then a cast of the mark should be submitted. Insert a labeling tag on the back side of the cast for marking purposes. The cast should be completely air dried prior to packaging. Diagrams, labels and crime scene

photographs should be submitted with the casts. Packaging should be sufficiently large that the questioned mark is not in contact with the paper or cardboard. Prior to laboratory submission, the cast should be stored in a cool, dry area and not subjected to heat or direct sunlight.

### **Distance Determinations**

The deposition of gunshot residue on evidence such as clothing varies with the distance from the muzzle of the firearm to the target. Patterns of gunshot residue or pellet spread can be duplicated using the questioned firearm and ammunition.

The firearm, the ammunition used, and crime scene photographs are all required for submission in a distance determination case. The target (e.g., victim's clothing, object that has been shot) are commonly submitted for comparison purposes.

For the detection of Gunshot Primer Residues from a suspected shooter's hands, refer to the Trace Evidence section of this document.

### **Collection**

Handling of clothing items should be done carefully and at a minimum in order to avoid movement of the gunpowder particles on the garment.

Wet or blood stained clothing should always be air dried flat and at room temperature before packaging.

Marking of these items may be accomplished without affecting the analysis however it is recommended that marks are made in ink and on an area of the garment far removed from the area in question.

It is necessary to conduct distance determination testing on similar materials for comparison. Therefore, if the object is unusual in nature (Example: Upholstery of a car seat), then it will be necessary to perform distance testing on similar material. Collection of standard material may be necessary.

Collect and submit as much of the same, or similar, ammunition from the suspect or scene for distance determination testing.

### **Preservation and packaging**

Clothing items to be examined for gun powder residue should always be air dried flat and at room temperature before packaging.

Avoid folding or crumpling the item while packaging. Place a clean piece of white paper over the suspected bullet hole(s). Fold the clothing item in a manner that keeps the bullet hole(s) flat. All attempts should be made to keep the gun powder pattern flat. Flat boxes, such as an unused pizza box or similar, are recommended when possible.

Package the remaining air dried clothing items separately in sufficiently large paper packaging. The contents that are not to be examined may then be packaged in one box and labeled.

Emergency personnel cuts should be diagramed or described on the package. Do not attempt to reassemble the item using tape, staples or by any other means.

Clearly list the contents on outer packaging including location of recovery (example: *John Doe's shirt recovered from emergency room floor*). If using outer and inner packages, label each package with the description.

## **NIBIN**

### **The TCME Firearm Section does not make entries into the NIBIN Database.**

NIBIN is a national database of digital images of cartridge cases (predominately) and bullets (rarely). Images are acquired, stored and compared to other images stored in the database within a predetermined region of the state/country. The purpose of the system is to link otherwise unrelated firearm offenses.

### **NIBIN does not eliminate the need for a forensic evaluation or examination of the evidence.**

Firearms submitted for examination will be test fired (if possible). Those test fired exemplars will be returned to the submitting agency, packaged with the firearm and listed on the Chain of Custody as a sub-item of the firearm. Test fired exemplars created during the TCME examination process may be subsequently submitted to an agency in the region that utilizes the NIBIN database system.

A NIBIN "Hit" occurs when cartridge case images from two separate incidents or crimes are associated. When a prospective association is made by a NIBIN technician or firearm examiner, the physical evidence must be submitted for comparison in order to confirm or eliminate the association.

The microscopic comparison work is typically performed by the laboratory that worked the linked case with the highest criminal charge. For example: Lab A performs function test on pistol and Lab B has cartridge cases from a Homicide scene. Lab B will perform verification work regarding the NIBIN association.

### **Serial Number Restoration**

Obliterated and/or altered serial numbers can sometimes be restored. Even partial information such as characters or numbers may be critical information when investigating original ownership of a firearm.

Submitting agencies should not attempt to alter the serial number or disassemble the firearm.

### **Fracture match / Physical fit**

Two or more rigid objects (wood, pool cue stick, bullet jacket fragments) may be examined either through physical, optical, or microscopic means, to determine whether or not those objects were formerly a single unit.

If submitting items from two different locations, they must be packaged separately. (For example: A sawed off shotgun recovered at the crime scene and a search warrant reveals a sawed off piece of steel, resembling a shotgun barrel, in the suspect's workshop.)

If submitting items from the same location, care should be taken in packaging the items to avoid



loss, damage or destruction of evidence. (For example: Broken pieces of a pool cue stick are recovered in the bar beside the victim.)

## **Collection**

All collection considerations listed in the previous firearm and toolmark sections of this document should be followed.

## **LATENT PRINTS**

Fingerprints are the most commonly known form of personal identification. The term "fingerprint" is a generic term used to describe friction ridge skin, which is found on the fingers, the palms of the hands, and on the soles of the feet. Friction ridge details may be transferred to another object during contact, resulting in latent prints. These latent prints may be compared with the finger, palm, or sole impressions that are collected from subjects during the investigation. Latent print analysis and comparison is performed daily by the Latent Print Laboratory of the Tarrant County Medical Examiner's Office to assist law enforcement agencies in the identification of subjects in criminal cases.

### **Scope of Services**

The Latent Print Laboratory provides the following services:

- Examination of evidence submitted by law enforcement agencies.
- Examination of human remains for the presence of latent prints and patent prints.
- Physical, chemical, and forensic light source examination of evidence and of human remains to develop latent prints.
- Analysis of latent prints and comparison with known fingerprint records.
- Search of latent prints against fingerprint databases using the Automated Fingerprint Identification System (A.F.I.S.).

### **Collection**

Latent prints may be destroyed by excessive handling or by improper packaging of the evidence. Special precautions and care must be taken in order to maximize the evidentiary value of latent prints. If the submitting agency has knowledge regarding any unusual conditions to which the evidentiary item has been exposed it should be provided to the laboratory. Additional information may be helpful, if known, including the handling of the item or special substrate conditions.

If an evidentiary item is submitted for latent print development procedures, the latent print examiner will determine the suitable processing techniques, processing sequence, and preservation methods needed to maximize the evidentiary value. A visual examination for visible friction ridge impressions will be conducted prior to any latent print development procedures.

The TCME Latent Print Laboratory will only use approved development processes, which may include visual analysis, fluorescence examination, physical processing, and chemical processing,

depending on the types of substrates encountered. These substrates include porous, non-porous, and adhesive surfaces, and those items contaminated with biological or chemical substances.

If an evidentiary item is processed by the requesting agency, or their agents, prior to its submission to the Latent Print Laboratory, information regarding those processing techniques should be indicated on the submission form. This will assist the Latent Print Laboratory in the analysis of the submitted items.

All latent prints that are determined to be “of value” by the Latent Print Laboratory will be documented and preserved by tape lifts, digital photography, or digital scanning. The TCME Latent Print Laboratory defines a latent print “of value” as having sufficient clarity and sufficient friction ridge details for a conclusion to be reached. Conclusions that may be reached and reported for suitable latent prints include:

- Identification – the latent print(s) and the known prints share a common source.
- Exclusion – the latent print(s) and the known prints do not share a common source.
- Inconclusive – insufficient clarity or details, or no known exemplars, to determine an identification or exclusion.

Preserved suitable latent prints may be compared to submitted known exemplars or those on file that are located by the Latent Print Laboratory staff. Comparisons will be limited to those requested by the submitting agency. The agency may be contacted by the Latent Print Laboratory to discuss additional exemplars needed or additional services, such as an A.F.I.S. search.

### **Safety Considerations**

Anytime a crime scene is searched, or a potential evidentiary item is handled, Universal Precautions should be followed to ensure the safety of the individual from exposure to possible blood borne pathogens or hazardous chemicals. The proper use of protective gloves and eye protection may greatly decrease the risk of an accidental exposure to these substances. Special care should be given to the proper packaging of any evidence that is contaminated. Biohazard labels should be used and prominently displayed on the exterior packaging.

Bladed items such as knives, razor blades, broken glass, and syringes should be handled with special care and packaged to prevent accidental injury or exposure to sharp edges.

Any firearm that is submitted should be cleared and rendered “safe” prior to submission. If a firearm cannot be rendered “safe” the Latent Print Laboratory should be consulted prior to the submission of the evidentiary item in question.

Any evidence that is submitted for latent print development should be handled in such a way that it will prevent the accidental destruction of any latent prints. Protective gloves should be worn and the item should be handled by any textured areas as much as possible.

### **Latent Prints Lifted with Powders**

In many cases, an item that is large or permanently fixed may be dusted with latent print powder and any developed latent prints lifted, and affixed to a latent lift card. These latent lifts may be submitted to the Latent Print Laboratory for examination.

Whenever possible, only one (1) tape lift of developed latent prints should be affixed to each latent lift card. An arrow should be drawn on the front of the lift card to indicate the upward orientation of the latent lift (see Figure 1):



**Figure 1**

The correct and accurate documentation of the latent print lift is crucial to the analysis process. Information on the back of the latent lift card should include the following:

- Agency Case Number
- Date
- Name, initials, or badge number of individual making the lift
- Location from which lift was collected
- Diagram of the object the lift was taken from, showing an “x” at the location of the lift (see Figure 2)

DATE: 06/17/2011 TIME: 1735 hrs  
 OFFENSE: Burglary  
 LOCATION: 1234 Main St.

---

LIFTED BY: U.S. Wolf ID: 478  
 DATE: 06/17/2011 TIME: 1803 hrs  
 OBJECT LIFT MADE FROM  
Bottle

---

LICENSE: \_\_\_\_\_ STATE: \_\_\_\_\_  
 VIN: \_\_\_\_\_

---

DIAGRAM:




Figure 2

Whenever possible, the individual collecting the latent lift should try to avoid leaving their own fingerprint impressions on the underside (adhesive side) of the tape. If this occurs, the individual should place their initials over their own fingerprint impression:



Figure 3

## Collecting Known Friction Ridge Exemplars

Clearly recorded and fully rolled inked finger and palm impression exemplars should be submitted as evidence (with proper chain of custody) for comparison with any latent print evidence if they are available. If the finger and palm impression exemplars are not available, the investigator should provide the name, race, sex, and date of birth of the suspect and/or victim to assist in the location of records. Additional information such as driver's license numbers, identification numbers, and social security numbers may be of assistance. In addition, the Texas State Identification number (SID #) of the subject should be provided if it is known.

### Fingerprints / 10-Print Cards

A properly inked and rolled 10-print card should have all ten fingers rolled, nail-to-nail and with the pattern area represented. Simultaneous impressions should be recorded at a 45-degree angle at the bottom of the card (see Figure 4):

The form is a standard 10-print card used for fingerprint collection. It includes a header section for personal information (TIN, DATE OF ARREST, DPS NO., FBI NO., CONTRIBUTOR ORI, OUT OF COUNTY?), a middle section for identification (NAME, DATE OF BIRTH, PLACE OF BIRTH, SEX, RACE, ETH., HGT., WGT., SOCIAL SECURITY NO., SCARS, MARKS, TATTOOS, AMPUTATIONS, LICENSE NO., etc.), and a bottom section for offense details (TRIS, SOC, DOMESTIC VIOLENCE OFFENSE?, OFFENSE CODE, OFFENSE, LEVEL & DEGREE, FELONY, MISDEMEANOR, DATE OF OFFENSE, WARRANT HOLDER ORI). The bottom section also contains ten individual fingerprint impressions (1-10) and three simultaneous impressions (LEFT FOUR FINGERS TAKEN SIMULTANEOUSLY, L. THUMB, R. THUMB, RIGHT FOUR FINGERS TAKEN SIMULTANEOUSLY).

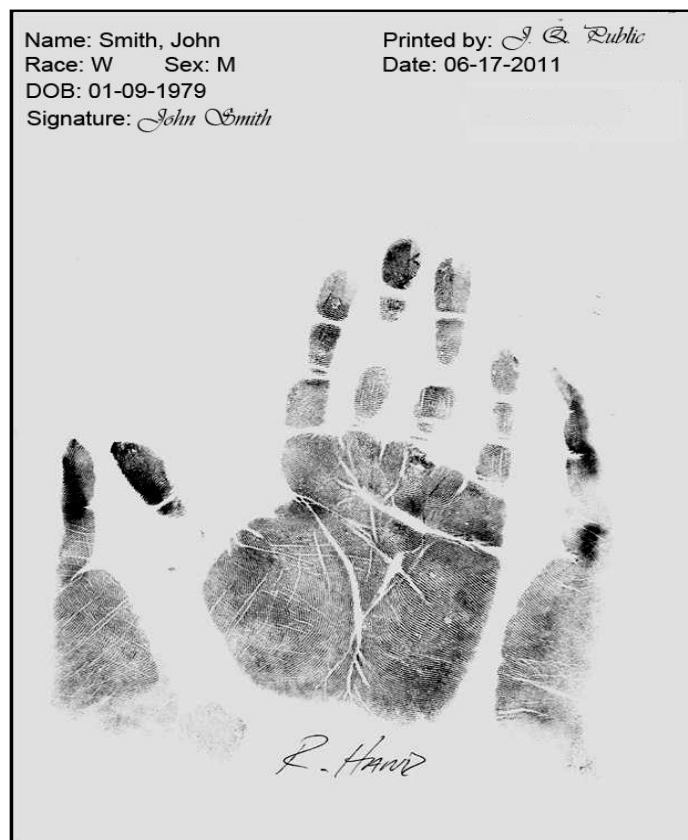
Figure 4

Documentation that should be present on the fingerprint exemplars includes:

- Name of person printed
- Race, Sex, and Date of Birth
- Signature of person printed
- Signature or initials of person collecting the prints
- Date subject was printed

### Palm Prints

Palm prints may be submitted as evidence on a Palm Print Card or on a blank sheet of paper. These impressions should be completely rolled, from the wrist crease to the tip of fingers. Additional impressions of the thenar area (the thumb side) and the hypothenar area (also known as the writer's palm) should be present (see Figure 5):



**Figure 5**

Documentation that should be present on the palm print exemplars includes:

- Name of person printed
- Race, Sex, and Date of Birth
- Signature of person printed
- Signature or initials of person collecting the prints
- Date subject was printed

### Major Case Prints

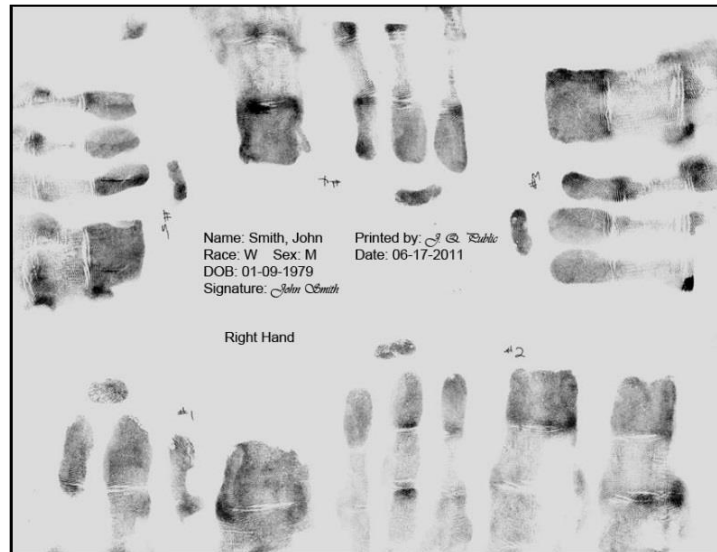
Each finger should be recorded with all of the friction ridge details from the fingertip to the base of the finger. A total of five (5) impressions should be recorded:

- Left side at 45 degrees
- Centerline of the finger
- Right side at 45 degrees
- Entire finger rolled from nail-to-nail
- Tip of the finger (see Figure 6):



**Figure 6**

Special care must be taken to document which hand and finger is represented in each impression. Appropriate markings may include Right Hand or Left Hand, and marking each set of impressions to identify the finger recorded (see Figure 7):



**Figure 7**

Documentation that should be present on the major case print exemplars includes:

- Name of person printed
- Race, Sex, and Date of Birth
- Signature of person printed
- Signature or initials of person collecting the prints
- Date subject was printed

### **Packaging**

Evidentiary items that are non-porous (i.e., guns, knives, bottles, etc.) should be packaged separately, and secured to prevent excessive movement that may destroy any latent prints through abrasion. Whenever possible, these items should not be packed in plastic bags as they may adhere to the surface of the item and damage any potential latent prints present.

Evidentiary items that are porous (i.e., cardboard, paper, cloth) may be packaged together if necessary.

Any items that are wet must be dried thoroughly prior to packaging to avoid mildew, damage to the packaging material, or contamination from “leak-thru”.

If analysis is requested by multiple laboratories (i.e., Latent Prints, DNA, Firearms, Drug Chemistry) it should be clearly marked on the submission form and communicated to the Evidence Department at the time of the submission. In many cases each laboratory included in the request will be consulted to determine the proper sequence of testing or analysis.

Bladed items such as knives, razor blades, broken glass, and syringes should be packaged in appropriate containers and boxes to prevent accidental injury or exposure to sharp edges.

Any evidentiary item that is known or suspected to have been contaminated by biological or chemical substances must be labeled appropriately with biohazard labels.



If an evidentiary item contains liquids that are to be tested, the liquid should be transferred to another container prior to submitting it to the Latent Print Laboratory for analysis. If this is not possible, the item should be sealed to prevent leakage or contamination. Proper documentation of the types of chemicals removed or present must be included with the submission.

Evidence marking is a standard procedure and care should be taken to place any markings so that potential latent prints are not damaged.

Known fingerprint and palm print exemplars may be packaged together in flat envelopes. Care should be taken to ensure that any ink has completely dried prior to packaging.

Additional documents that are submitted with the evidence (i.e., police reports, agency property forms, etc.) should not be included in the packaging with the evidence. These additional documents may be submitted outside of the evidence packaging and will be forwarded to the laboratory along with the evidence if needed.

Ideally, evidence should not be subjected to latent print development processing prior to submittal to the latent print laboratory for processing. Evidence that has been subjected to any latent print development processes, whether chemical or physical, should be documented and provided to the Latent Print Laboratory at the time of submission. The types of development processes must be clearly communicated so that appropriate measures can be taken to maximize the efforts of the laboratory.

## **Digital Images**

It is not uncommon for customers to submit photos of friction ridge impressions. Digital images of friction ridge impressions that are submitted to the Latent Print Laboratory should be submitted on CD-R or DVD-R discs. These should be packaged like any other type of evidence and chain-of-custody must be maintained.

Historically, photographers have been trained to “fill-the-frame” as much as possible with the latent print, being sure to include a scale for reference. With the advent of modern, high-resolution, digital cameras it is acceptable to fill less of the frame when needed as long as the scale is present. Overall, a good quality, well focused image should be taken parallel to the surface on which the print is located. Some guidelines for latent print photography include:

- Any friction ridge impression that is to be used for comparison or identification should be captured in the highest resolution, “lossless” format available (i.e. RAW or TIFF). This means a minimum of 1000ppi (pixels per inch), or higher, resolution when the image is sized 1:1, or by using existing film photographic techniques.
- Grayscale digital imaging (photographs or scans) should be at minimum of 8 bits.
- Color digital imaging (photographs or scans) should be at minimum of 24 bits.

## **Disposition**

All evidentiary items that are received for analysis will be returned to the submitting agency upon completion. This includes any latent print lifts that are collected by the Latent Print Laboratory.

Any latent prints that are only retained via photographs, will be treated as “non-recoverable” evidence.

Any latent prints that are found to be of “no value” for identification are also considered to be of “no value” for an A.F.I.S. search. Under these conditions an A.F.I.S. search will not be conducted with the impressions, even if it is requested by the submitting agency.

In the event that known fingerprint exemplars are needed for comparison it may be noted in the report issued by the Latent Print Laboratory.

## **TRACE EVIDENCE**

The Tarrant County Medical Examiner’s (TCME) Office Trace Evidence staff is committed to providing quality Trace Evidence services to customers. The Trace Evidence staff will ensure the quality of laboratory results through the use of established and approved methods and procedures. The quality system will ensure that Trace Evidence staff performs functions as intended in accordance with exemplary laboratory practices.

### **Scope of Services**

The TCME Trace Evidence laboratory performs primer gunshot residue (GSR) analysis, hair screening and evaluation for DNA analysis, and the collection of evidence from deceased bodies, vehicles, and other types of evidence. Due to the diverse nature of trace evidence and because trace evidence can be readily lost or contaminated by exposure, this laboratory encourages customers to contact a Trace Evidence Examiner to discuss the most effective evidence collection and handling procedures to maintain the integrity of the evidence and to ensure that probative information can be provided as a result of any examinations.

### **Safety Considerations**

Trace evidence is often associated with biological fluids and biohazard materials. Universal Bloodborne Pathogen Precautions must always be observed when applicable. Razor blades, scalpels, knives and broken glass may be encountered in Trace evidence collection. Personal protective equipment such as eye protection, lab coat, and non-porous polymer gloves is recommended when contacting such materials. Firearms are also encountered in trace evidence casework and gun safety must always be applied.

### **Primer Gunshot Residue (GSR)**

Primer Gunshot Residue is composed of antimony, barium and lead, which are components of most primer mixtures. This residue may be deposited on a shooter’s hands, depending on the type, caliber, and condition of the weapon used and the environmental conditions at the time of the shooting.

This type of analysis is done on samples typically obtained from the hands of persons suspected of recently discharging a firearm. The analysis is conducted by SEM-EDS (Scanning Electron Microscopy-Energy Dispersive Spectrometry) which allows for the identification of GSR particles based on morphology and composition.

Gunshot primer residue analysis does not give an indication of the distance from which a firearm is fired (i.e., Distance Determination). Refer to the Firearms and Toolmarks Evidence Collection section for the information and evidence required to determine an approximate distance between clothing and a fired weapon.

Analysis for gunshot primer residue is performed on SEM stubs only. Atomic Absorption (AA) Kits will be returned without analysis. Referrals to the remaining labs in the United States that perform AA analyses will be provided upon request. Instant Shooter Identification (ISId) Kits that do not include SEM stubs will also be returned without analysis.

### **GSR Evidence Collection and Submission**

Submission of case information on a GSR Kit Information Sheet is encouraged. At a minimum, please include the subject's name, the date and time of the incident, and the date and time of collection.

The most important factor in the number of primer GSR particles identified is the activity of the subject between the time of the shooting and the time of collection. Studies have shown that normal activity can remove all GSR particles from a shooter's hands within 4-6 hours. Hand washing can remove all particles immediately. Collect GSR samples as soon as possible after a shooting incident. If immediate collection is not possible, protect the hands with paper bags until collection is possible.

While TCME does not have a limit on the time between the shooting incident and time of collection, the probability of identifying GSR particles decreases with time in an active individual.

TCME will analyze GSR kits collected from victims. It is important to understand that primer GSR particles can travel 5 or more feet from the firearm and therefore many shooting victims will have GSR particles on their hands. The presence or absence of GSR particles cannot prove or disprove suicide.

Clothing from shooting suspects can be submitted to the laboratory for gunshot primer residue analysis if required. In these cases, an explanation of the scenario is often helpful. In these instances, the entire surface of the clothing is not sampled. Clothing will be sampled in areas where the presence of gunshot primer residue would yield a stronger indication of the individual having fired (front of shirt, cuffs of long sleeved shirts) or carried a weapon (inside pockets and/or waistband), and will be at the discretion of the trace examiner.

If necessary, client agencies may choose to sample the clothing the suspect is wearing at the same time that a GSR kit is collected from the suspect's hands. If this is done, the GSR stubs must be clearly labeled as to the location on the clothing from which the samples originated.

GSR stubs may also be collected from vehicles if it is suspected that a firearm was discharged inside the vehicle. Horizontal surfaces like the dash, console, and window frames are good candidates for collecting GSR as well as the headliner. Please contact one of the Trace Evidence Examiners for specific information about collection of GSR stubs from vehicles.

## **Results and Interpretation**

If you have any questions about whether analysis of a GSR kit will add information to your case or questions about interpretation of results provided in a report, please contact the Trace Evidence laboratory.

### **Collection Of Evidence from Decedents**

Upon request of the assigned forensic pathologist or the investigating agency, trace evidence recovery personnel will examine decedents in the morgue for evidentiary materials that may be present. These examinations may include:

- head-to-toe visual examination for trace materials
- collection of
  - gunshot residue kits
  - fingernail clippings
  - swabs for DNA from contact areas
  - known standards of hair
  - any other relevant trace materials present on the decedent

When requesting this service:

- All contact with the decedent prior to delivery to this office must be of a very limited nature
- Hands of the decedent must be bagged.
- The decedent must be wrapped in a clean white sheet and secured in a sealed body bag

*It is NOT necessary to request the response of the Trace Evidence recovery team when the only requested evidence collections involve a sexual assault kit, a GSR kit, or fingernail clippings. Although these requests should be made known to TCME Medical Investigators for communication to morgue staff, these evidentiary samples are routinely collected by morgue staff as appropriate, and the Trace Evidence recovery team will not be required.*

### **Collection Of Evidence from Vehicles**

Upon request, laboratory personnel will examine vehicles for evidentiary materials pertinent to the case in question (homicide/kidnapping/sexual assault in a vehicle, vehicular hit and run, etc.). This may include but is not limited to a

- Complete visual examination for trace materials (hairs, fibers, foreign paints, plastics, impressions, etc.)
- collection of :
  - gunshot residue samples
  - known standards (paints, metals, plastics, etc.),
  - stains (possible blood, semen, saliva, etc., in consultation with Serology personnel)
  - collection of any other relevant trace materials present

Trace materials recovered will be retained by the trace evidence laboratory, packaged, and entered into the TCME evidence system in preparation for release to the customer. Standard procedures regarding photography, collection and preservation of evidence, and packaging will be followed.

Please contact the Trace Evidence laboratory before bringing a vehicle for examination, to ensure that all required personnel are available. When requesting this service:

- All contact with the vehicle prior to delivery to this office must be of a very limited nature.
- The vehicle must be submitted with a chain of custody
- The vehicle should be placed on a flatbed truck or trailer for transportation to the TCME Crime Laboratory Vehicle Processing Bay.
- Any areas of apparent damage should be covered with a new tarpaulin, plastic, paper or other non-contaminating material to prevent loss of trace materials during transport.
- Arrangements must be made to retrieve the vehicle as soon as the Trace Evidence recovery team has processed the vehicle.

### **Hair Evaluation for DNA Analysis**

Hair is mostly a proteinaceous outgrowth of the skin. In humans, it occurs over all the surfaces of the body except the lips, nipples, palms and soles. The mature hair has three major components – an outer layer of scales called the cuticle, an inner shaft of elongated, overlapping cells called the cortex and a narrow central channels of partially evacuated cells called the medulla. Examinations of hair in the Trace Laboratory include:

- Differentiation of hairs from the other fibrous materials
- Differentiation of animal hairs from human hairs
- Evaluation of a hair's suitability for DNA testing (nuclear or mitochondrial DNA in human hairs)

### **Collection of Hair Evidence**

Hair can be collected at a scene or an item of evidence can be submitted to the laboratory. The item of evidence can be examined in the laboratory for the presence of any hairs. Collection of hairs can be accomplished by “picking” or “lifting” hairs using gloved fingers, tweezers, light adhesive tape (such as fingerprint tape) or “Post-it” note style adhesive paper. Collected hairs should be placed in a secure paper bundle. If a tape lift is performed, DO NOT attach the lift to paper. The lift should be placed on a transparency sheet. Hairs collected from individual items should be collected and packaged separately.

### **Results and Interpretation**

If you have any questions about whether analysis of hair evidence will add information to your case or questions about interpretation of results provided in a report, please contact the Trace Evidence laboratory.

Microscopic examination of hair characteristics can be used to determine species and/or suitability for DNA analysis. Human hairs with roots and/or with follicular tissue may be suitable for nuclear or mitochondrial DNA analysis. Human hairs without roots may be suitable for mitochondrial DNA analysis. Nuclear DNA profiling may be attempted on hairs with roots with minimal or no follicular tissue, but hairs of this type may be more suitable for mitochondrial DNA analysis. Depending on the length of the hair, attempting one methodology before the other may preclude the ability to perform the alternate methodology at a later date.

The Tarrant County Medical Examiner Crime Laboratory does not conduct mitochondrial DNA testing. Should mitochondrial DNA testing be desired, please contact the mitochondrial DNA laboratory of your choosing for additional guidance.

## **TOXICOLOGY**

### **Scope of Services**

The Forensic Toxicology laboratory works in conjunction with the Medical Examiner's Office, law enforcement, other laboratories, and attorneys to analyze biological samples for the presence and quantity of alcohols, other volatile substances, carbon monoxide, and many over-the-counter, prescription, illicit, and novel drugs. The laboratory analyzes blood, vitreous humor, urine, and other specimens to assist the Medical Examiner in determination of cause and manner of death. The laboratory is often called upon to analyze specimens for independent retesting and for law enforcement as a part of the investigation of traffic offenses, drug facilitated sexual assault, and any other investigative matter.

### **Types of Submitted Cases**

#### **Medical Examiner/Death Investigations**

In death investigations, the Toxicology Section normally performs analysis of blood, vitreous humor, and/or urine specimens.

- *Blood* can be analyzed to determine the possibility of drug-related deaths or for contributing factors for other causes of death.
- *Vitreous* is analyzed primarily to support the determined blood alcohol concentration.
- *Urine* is analyzed primarily to support the drug detection in blood, or to evaluate the time of drug usage relative to time of death.

Other specimens collected at autopsy should be frozen and stored for submission at a later date if a need develops for a particular specimen. These samples could become important in certain situations.

Medical Examiner cases receive testing for volatiles and a comprehensive drug screening unless otherwise specified by the pathologist.

## Traffic Related Offenses

For a traffic-related offense, grey-top vacutainer tubes are preferred for blood specimens. This type of tube contains a preservative and an anticoagulant. Submit a full grey-top tube of blood if possible; two tubes are preferable. Urine may be submitted, but testimony concerning the results will be limited. Drugs detected in urine only indicate prior use of that drug and may not correspond to the presence or levels of drugs in the blood at the time of the offense. Drug detection in blood aids in determination of the influence of the drug(s) at the time the sample was obtained. It is desirable to keep all samples refrigerated and to submit them as soon as possible. Refrigeration slows the degradation of some drugs that may be present in the sample.

Unless an agency has previously established an alternate testing procedure with the Toxicology Laboratory, all incoming driving while intoxicated (DWI) cases will first be analyzed for ethanol. If the ethanol result is less than 0.10 g/dL an ELISA drug screen and quantitation will automatically be done. Cases with an ethanol result above a 0.10 g/dL will receive no further testing. If cases require additional testing at a later date they may be resubmitted with a notification (email or submission letter) noting the additional testing requested.

Please note: The toxicology laboratory does not analyze specimens for synthetic cannabinoids (K2, spice, synthetic marijuana).

## Independent Testing Submissions

Customers submitting blood evidence to the toxicology laboratory for independent testing, i.e. retesting, should:

- 1) First Submit:
  - a. the court order for testing
  - b. a letter on company letterhead detailing:
    - i. the name on the specimen (client/suspect name)
    - ii. the specific testing requested
    - iii. the submitting agency name
    - iv. preferred method for receiving test results and invoicing
  - c. An "Acknowledgement of Shipping" form
    - i. ( [http://www.tarrantcounty.com/content/dam/main/medical-examiner/Forms/Retest\\_by\\_Court\\_Order.pdf](http://www.tarrantcounty.com/content/dam/main/medical-examiner/Forms/Retest_by_Court_Order.pdf) )
  - d. directions as where and how to return the specimen
  - e. any other related paperwork
- 2) Understand that it is the requestor's responsibility to assure the sample has been sent or delivered to the evidence section. Evidence mailed with the incorrect label may be delayed in being processed.
  - a. Mailing labels must read:

**ATTN: Evidence – Toxicology**  
 Tarrant County Medical Examiner's Office  
 200 Feliks Gwozdz Place  
 Fort Worth, TX 76104

- 3) Payment for the testing and return of the specimen may be made at any time. A billing invoice can be generated for your records upon request. In **all** cases the requestor of the testing will be billed.
  - a. See “Acknowledgement of Shipping” form for payment options.
- 4) No results of testing will be released unless accounts with TCME are in good standing including testing and shipping being paid in full.
- 5) Testimony, travel, and affidavits are not included in the testing or shipping charges. These items will be billed independently as necessary.

Questions about independent submission of evidence should be directed to the toxicology section secretary.

### **Sexual Assault Investigations**

The TCME Toxicology Section normally performs analysis of blood and/or urine specimens in the investigation of a sexual assault. It is recommended that both samples be submitted. Urine provides the longest window of detection for drug facilitated sexual assaults. The sooner a specimen is collected following an assault the greater the chance of detecting the drugs which may have been used. Most drugs are detectable in blood for 12-24 hours; however some may be quickly eliminated. Most drugs are detectable in urine for at least 72 hours. Alcohol and drug analysis is recommended in sexual assault investigations where victims report impairment, loss of memory, and/or loss of consciousness.

- **Blood**— A grey top vacutainer tube is preferred for blood specimens. They contain a preservative and an anticoagulant. Alternatively, purple top vacutainer tubes may be used if grey top tubes are not available. Ideally the sample should be refrigerated until transported to TCME.
- **Urine**— If the specimen is collected in a urine collection cup, transfer to a leak proof bottle. Yellow top urine tubes are also acceptable.

Please note: blood tubes containing citrate will be reported as unsuitable for GHB testing.

All sexual assault cases are tested for alcohol and drugs. Non-routine drugs also added to the testing are gamma-hydroxybutyrate (GHB) and 7-aminoflunitrazepam (Rohypnol). Ideally the urine would be screened for the presence of drugs and if drugs are found during screening those compounds would be quantified in the blood specimen. Alcohol testing would be performed on the blood if available.

### **Alcohol Analysis of a Biological Sample**

Alcohol analysis is done by dual-column headspace gas chromatography with a flame ionization detector. This is the “gold standard” technique in the field of forensic toxicology, has been subjected to extensive review in the scientific literature, and is widely accepted by the scientific community. In all cases, positive results are confirmed by a second test or alternate specimen(s).



## Drug Analysis of a Biological Sample

The Toxicology Laboratory performs a two-part general unknown screening procedure to detect the presence of drugs in a sample. Part of this procedure is an immunoassay screening technique that does not identify any specific drug, but rather classes of drugs. Screening is followed by confirmation and quantitation to confirm the specific drug(s) present and determine the amount of each compound within the sample. Cases which fall below administratively-established ELISA screening cut-off levels are reported as “none detected.” Additional information should be provided if there are indications of significant impairment due to the involvement of a drug not detectable by the immunoassay screen. All drugs reported undergo confirmation by GC/MS (Gas Chromatography-Mass Spectrometry), LC/UV (Liquid Chromatography-Ultraviolet detection) and/or LC/MS (Liquid Chromatography-Mass Spectrometry). For information concerning specific detection capabilities or cutoff values, please contact the laboratory.

The following drugs are NOT routinely reported from the laboratory:

Antibiotics	Mescaline
Heart medications	Psilocybin
Diabetic medications	LSD
Diuretics	Synthetic Cannabinoids (K2, spice)
Lithium or other metals	Steroids

There are a variety of drugs that cannot be detected or easily identified by the laboratory. Other compounds can be readily quantified but are more difficult to detect during the screening process. Buprenorphine, zopiclone, zaleplon and risperidone are examples of this category. It is always helpful to list drugs that may be suspected so that the laboratory may target those specific compounds if necessary. In the event that the laboratory cannot identify a particular drug or group of drugs they may be able to suggest third party testing by a suitable reference laboratory. Please contact the laboratory for more information.

### Safety Considerations

Toxicological evidence is always considered a biohazard and Universal Precautions should be observed. Treat all biological samples as if they are infected with a blood borne pathogen. Personal protective equipment (such as eye protection and gloves) is recommended. Assure that the package containing the biological specimens complies with all postal regulations for shipping biological specimens including protective containers, absorbent material, and biohazard warning labels. Additional information regarding packaging and air shipment requirements of a biological sample can be acquired from IATA (International Air Transportation Association).

## **DRUG CHEMISTRY**

### **Scope of Services**

The Drug Chemistry section evaluates physical evidence for the presence of controlled substances and other compounds. The evidence submitted may be plant material, powders, liquids, syringes, pills, or tablets. The laboratory typically determines both the identity of the compounds and the net weight (weight without packaging) of the submitted evidence. The Drug Chemistry section does NOT perform quantitative analysis of drug evidence (purity determinations).

### **Safety Considerations**

Syringes, razors, and broken glass pose safety hazards to personnel collecting or handling drug evidence, especially if the evidence is contaminated with biological material. In addition, some drugs or chemicals can be absorbed through the skin or mucous membranes and pose a hazard to handlers. Personal protective equipment including gloves, a lab coat or covering, and eye protection is recommended when handling evidence of this type.

### **Packaging**

1. Submit drug evidence in an appropriately sized container.
2. The actual physical evidence may require additional packaging before placing it in the outer container. Inner packaging may include zippered bags, heat-sealed bags, plastic sample bottles, or other containers appropriate for the evidence being submitted. Example: Place suspected small crack rocks in a zippered bag and seal in an envelope for submission.
3. Place exhibit number, initials, date, and seal on inner packaging. Always follow your department's procedures for marking and packaging evidence.
4. After the physical evidence is carefully placed in an outer container, it is ready for sealing. The TCME requires a proper seal to be placed on the outer container of ALL evidence in the care, custody, and control of the laboratories. An appropriate guideline to follow is to place a seal on all points of entry of the container, such as both ends of an envelope or the top and bottom of a box; further entrance into the container must be evident. Use tamper-evident tape, such as evidence tape or clear 2" packing tape. A proper seal means your seals must contain tape, date, and initials on all seals made. Seals do not necessarily have to be created over intact manufactured seals.
5. If the outer packaging is a heat-sealed plastic bag, make sure the bag is securely sealed. Pull on opposite ends of the bag at the heat seal. A strong seal will not pull apart. If the seal pulls apart, it may be necessary to increase the temperature on the sealer and reseal the bag. Initial and date all seals.

## **Marihuana and Other Plant Substances**

### Collection

1. Fresh green plant substance (marihuana, mushrooms, cactus, etc.) shall be dried thoroughly before being submitted if possible.
2. Do not include the roots and dirt with the plant substance.
3. Leaves and stems shall be stripped from large stalks for submission. Large stalks, dirt, or roots are not included in the weight. Large drug seizures may have been soaked in gasoline. Contact the laboratory before bringing the evidence to the laboratory facility to discuss the venting of gasoline or other noxious fumes.

### Special Packaging Requirements

1. Package freshly dried plant substance in paper bags or boxes to allow for continued drying before submission.
2. Large drug seizure evidence should be sub-divided in containers weighing no more than thirty (30) pounds. Individual bundles weighing more than thirty pounds do not have to be subdivided.

## **Biohazard Evidence**

### Collection

Syringes can be examined by the TCME Drug Chemistry laboratory.

1. Leave any liquid contents in the syringe. Do not attempt to transfer the contents of the syringe to another container.
2. Liquids from a syringe will be treated the same as a syringe. It will not be examined unless requested by the prosecuting attorney.
3. If you believe you have retrieved the contents of a syringe already in another container, consider it to be a biohazard and treat it with the same precautions. Drug evidence or a container with drug evidence is often confiscated from a body cavity or spit from the mouth. This drug evidence is considered a biohazard and will be treated as such.
4. Never submit a syringe in an envelope or bag, uncapped or not, unless it is in a plastic safety tube or some hardened container. Seal the tube (or hardened container) with tape.

## **Clandestine Laboratory Chemicals**

### Safety Considerations

The greatest safety hazard associated with clandestine laboratories is chemical exposure. The chemicals can cause severe chemical burns and/or may be toxic. The use of personal protective equipment such as eye protection, protective clothing, self-contained breathing apparatus (SCBA) or air purifying respirators, and nitrile gloves is recommended.

## Collection

1. Package all liquids in a sturdy plastic bottle with secure plastic lids or a glass jar with a plastic lid. Lids may be sealed with chemical tape or duct tape. Do not use metal lids on jars or bottles.
2. Label bottles clearly. Exhibit numbers are the minimum that should be on each piece of evidence. Placing a piece of 2-inch packing tape on the bottle, writing the information on the bottle, and placing a second piece of tape over the writing is frequently effective in preventing organic solvent fumes from dissolving the writing. Evidence bags with white “write on” strips seem to resist ink loss well.
3. Place individual exhibits in separate sealed plastic zipper bags. Again, placing a piece of 2-inch packing tape over the mouth of the plastic zipper bag, writing the information on the tape seal, and placing a second piece of tape over the writing is frequently effective in preventing organic solvent fumes from dissolving the writing. Prop bottles upright to reduce the chance of spillage.
4. Place solids in sturdy plastic bottles and handle as described in #1, 2, and 3. Solids can also be submitted in a plastic zipper bag, sealed as described in #3. Placing the plastic zipper bag inside another, which is also sealed as described in #3, will protect the solid from contamination resulting from any spills or vapors.

## **BREATH ALCOHOL CALIBRATION**

### **Overview**

The Tarrant County Breath Alcohol Program is a unit within the Toxicology Division of the Tarrant County Medical Examiner Forensic Laboratory Services (TCME).

The Tarrant County Medical Examiner Forensic Laboratory Services (TCME) is an independent laboratory and operates on a fee-for-service basis, with the exception being the Breath Alcohol Calibration Laboratory (Breath Alcohol Laboratory). Services from the Breath Alcohol Laboratory are offered at no cost to law enforcement agencies as long as they file the majority of their criminal cases involving breath alcohol tests within Tarrant County, Texas.

The Breath Alcohol Program provides technical supervision of certified breath alcohol programs operated by local law enforcement agencies; this supervision is provided by breath alcohol Technical Supervisors certified by the Texas Department of Public Safety and employed by Tarrant County.

### **Authorization**

Technical direction for the Breath Alcohol Program is provided by the Texas Department of Public Safety (DPS), Office of the Scientific Director (OSD).

Senate Bill 74 of the 61<sup>st</sup> Legislature in 1969, established that breath alcohol testing in Texas must be performed by methods approved by DPS and by an individual certified by DPS; this legislation also gave authority to DPS to implement applicable policies and procedures in this regard.

Applicable breath alcohol testing regulations promulgated by DPS which apply to operation of the Breath Alcohol Program are located in the Texas Administrative Code, Title 37, Chapter 19.

Additional guidance is provided by DPS in other documents including Standard Operating Guidelines for Technical Supervisors.

In matters pertaining to breath alcohol testing, Technical Supervisors are the field agents of the Scientific Director.

TCME Technical Supervisors are the custodians of breath test records for DPS TS Area 043.

Technical Supervisors may conduct evidential subject tests.

### **Scope of Services**

The primary function of the Technical Supervisor is to provide technical, administrative, and supervisory expertise for safeguarding the scientific integrity of the Breath Alcohol Testing Program and to assure the Breath Alcohol Testing Program's acceptability for evidential purposes.

The Breath Alcohol Program provides Technical Supervisor services to local law enforcement agencies that file the majority of their criminal cases within Tarrant County. The service is offered without charge, and thus no formal contract is maintained between the County and any local agency.

Technical Supervisors provide testimony and response to subpoenas and court orders regarding activities performed or supervised by the Laboratory.

#### General services provided include:

- Calibration of breath test equipment;

- Maintenance, repair, and adjustment of breath test equipment;

- Preparation of simulator solutions used to verify instrument performance;

- Oversight of evidentiary breath test operation;

- Testimony and production of records related to breath testing and interpretation of breath test results; and

- Retraining of breath test operators.

#### Specific duties include:

- Supervision of operators certified by DPS in matters of breath alcohol test operation;

- Supervision of certified instrumentation, reference sample devices, and related equipment;

- Supervision of data gathered for initial and follow-up certification of instrumentation;

- Supervision of techniques of testing, maintaining scientific integrity, and upholding applicable regulations;

- Selection and supervision of site selection for placement of breath test equipment;

- Supervision of compliance with policy of public information and/or demonstration of alcohol testing equipment;

- Performance of technical, administrative, and regulatory aspects of breath alcohol testing within a designated area; and

- Provision of expert testimony concerning all aspects of breath alcohol testing within the designated service area.

## Appendix A:

### DNA Laboratory Case Acceptance Policy

#### DNA testing is routinely performed for requests involving:

- Blood and / or semen
- Items such as clothing, gloves, bandanas, ball caps, gloves, masks etc... for wearer DNA
- Items such as guns (and other weapons), tools, knife handles etc... for handler DNA
- Items which may contain saliva such as cigarette butts, soda / beer cans / bottles, chewed gum, etc...
- Unknown suspect cases involving any of the above for the purposes of CODIS entry

#### Sexual Assault cases:

As a matter of routine and only after authorization is received from the agency, sexual assault evidence is first screened (serological testing) for the presence of semen (when applicable based on case information) and a serology report issued. DNA testing is not performed until an additional request is made for that service

#### DNA testing can be performed when:

- The identification of spermatozoa (semen) and / or prostatic antigen has been confirmed
- Samples that may contain saliva such as neck / breast swabs when oral contact is reported
- Possible non-victim blood samples in cases in which the suspect was reportedly injured
- Samples in which there is a report of penile contact but neither spermatozoa nor prostatic antigen have been confirmed; however, submission of a suspect and / or elimination reference is **required** prior to the start of testing

#### DNA service requests on Sexual Assault cases are generally triggered by:

- Submission of comparison buccal swabs to the evidence department
- Phone or email requests to the laboratory after receipt of the serology / screening report, such as no-suspect cases
- Documented agreement between a law enforcement agency or outside laboratory for DNA services
- Court order

Unless suspect and / or elimination reference buccal swabs are submitted, items **are not** routinely processed to test for the presence of male DNA, or carried thru DNA typing when there is a report of digital penetration and / or touching only. Items from these types of cases are typically only candidates for Y-STR testing. Should interpretable results be obtained, a direct comparison to a reference is required, as any data obtained from Y-STR testing is not eligible for CODIS searching; therefore, DNA testing is not performed on digital / fondling type contact cases in which a known reference is not available, such as no-suspect or stranger cases

#### All Cases:

- Because of planned changes for TCME DNA data analysis and statistical methodologies, the submission of **all** applicable comparison / elimination references (buccal swabs) for DNA requests are typically **required** prior to analysis. This includes, but is not limited to, buccal swabs from victims, suspects (when known), consensual partners, home/business owners and employees. All references are necessary in order to reliably interpret DNA results and report the most appropriate statistical data. Not having all applicable references at the time of testing may prevent the ability to do so

- **Exceptions** may occur depending on case circumstances, such as flight of an individual(s); however, the decision to proceed with testing is made only after consultation with the DNA laboratory. Every attempt must be made to provide the appropriate references for the reasons stated above. The TCME DNA laboratory reserves the right to delay testing until the appropriate references are submitted
- Additionally, case details / information (offense report or other documentation) **must** be provided to the laboratory prior to completion of DNA testing and issuance of a report to ensure the most appropriate statistical calculations have been applied to the results, as well as for determination of CODIS profile eligibility. This information is necessary for proper statistical evaluation of results, and is **critical** in the assessment of mixture profiles. The TCME DNA laboratory reserves the right to delay testing and / or issuance of a report until the information is provided when statistical calculations and / or CODIS profile entry are applicable

### **Combined DNA Indexing System (CODIS):**

- The TCME DNA laboratory is a CODIS / NDIS participating laboratory and as such DNA profiles which meet certain minimum eligibility requirements are routinely uploaded into the CODIS database for the sole purpose of searching against other DNA profiles at the local, state and / or national levels. When a candidate match occurs, a possible investigative lead (i.e. name of individual or associated case information) is provided to the agency to establish probable cause in order to obtain an evidentiary DNA sample (buccal swabs) from a suspect to submit to the TCME DNA laboratory for in-house confirmation of the individual's DNA profile. However, when a suspect name is known prior to submission of the evidence, every attempt should be made to obtain and submit buccal swabs from the individual, regardless if the individual's DNA profile is already known to exist in the CODIS database. A request from an agency to access a specific individual's DNA profile known to exist in the CODIS database for the purpose of a direct comparison to an evidence (crime scene) DNA profile is not permitted.

**Unless there is a possibility of the presence of blood, "touch", "high traffic" or "low copy number" type samples are not accepted for DNA testing. These include but are not limited to:**

- Door knobs / handles, vehicle surfaces such as door handles, steering wheels, buttons & gear shifters
- Swabs of possible "sweat" or "smudges"
- "Possible fingerprints"
- Bullets, casings, projectiles
- Other applicable low template "touch" items / swabs

**Exceptions** to the above may be accepted on a case-by-case basis on capital cases or other aggravated offenses but only after consultation with the DNA laboratory **and** submission of the appropriate references. However, "touch" type items from unknown suspect and / or property crime cases **are not** candidates for the purpose of CODIS entry and are not processed for that request