

INTRODUCTION: GENERAL INFORMATION

Technological advances create a continuous need to update evidence manuals. Examinations have either been developed or further refined since the last revision of this guide. These examinations require additional considerations for careful evidence handling and protection.

This guide is organized to provide the following:

- A description of forensic examination services provided by the Forensic Laboratory Services Bureau and the WSP High Tech Crimes Unit.
- General guidelines for the collection, preservation, and packaging of physical evidence.
- The procedure for submitting physical evidence.
- Procedures for handling various types of physical evidence.

This guide is not meant to be a comprehensive reference source for the collection and handling of physical evidence. An attempt has been made to briefly highlight the basic principles and requirements for dealing with the more common evidence types.

The investigator is encouraged throughout the guide to call the crime laboratory for assistance.

INTRODUCTION

FORENSIC LABORATORY SERVICES BUREAU

PO Box 42600
Olympia WA 98504
(360) 596-4120

The Forensic Laboratory Services Bureau (FLSB) of the Washington State Patrol (WSP), with bureau headquarters in Olympia, consists of three divisions: the Crime Laboratory Division, the Toxicology Laboratory Division, and the Impaired Driving Section. The Crime Laboratory Division consists of laboratories in Seattle, Spokane, Tacoma, Marysville, Vancouver, and Olympia. All forensic toxicology services for the State of Washington are conducted at the Toxicology Laboratories located in Seattle and Federal Way. See the Toxicology Laboratory manual for guidance on collection and submission of samples for this division. The WSP High Tech Crimes Unit has its offices in Olympia. See High Tech Crimes Unit section for information regarding collection and preservation of computer evidence.

The Washington State Patrol FLSB is mandated by the Legislature to provide criminal justice agencies within the state the scientific investigative support associated with matters of a criminal nature.

This guide offers a list of services offered in each functional area and methods of analysis typically used in these examinations. Also, the guide describes the types of services and analyses the FLSB does not provide.

Evidence from all types of crimes is accepted from local, county, and state law enforcement agencies. Other agencies are assisted on a cooperative basis when a special need arises.

The Washington State Patrol FLSB is responsible for providing scientific support and expert testimonies relating to physical evidence from crimes by:

- Assisting at the scenes of crimes.
- Performing scientific examinations and evaluations of physical evidence in order to provide information relevant to criminal investigations.
- Participating in pretrial consultations and by providing reports, charts, graphs, and other exhibits for court purposes.
- Providing expert testimony in court trials, hearings, and depositions.
- Providing training to the criminal justice community in crime scene investigation, the role and significance of physical evidence, and the handling, collection, preservation, and packaging of physical evidence.

CRIME LABORATORIES AND SERVICES

CRIME LABORATORY DIVISION

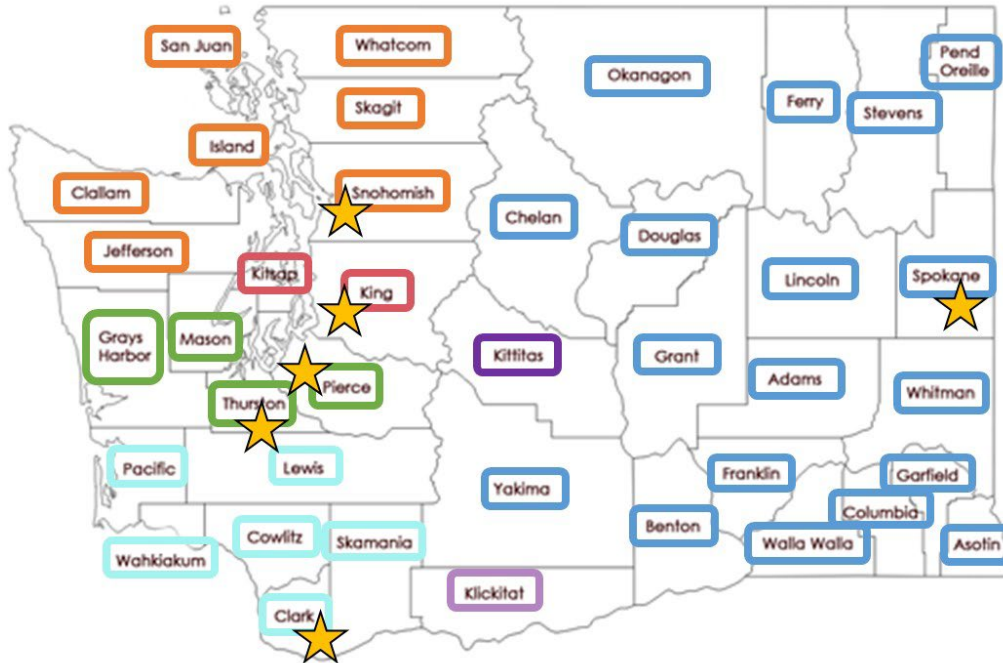
2203 Airport Way S, Bldg. A Suite 250
Seattle, WA 98134
Telephone: (206) 262-6002
FAX: (206) 262-6091

LABORATORIES

<p>CODIS Crime Laboratory</p> <p>2203 Airport Way S, Bldg. A Suite 250 Seattle WA 98134 Telephone: (206) 262-6020 Email: confel@wsp.wa.gov</p>	<p>Crime Scene Response Team</p> <p>Callout Phone: (253) 255-3064</p>
<p>Marysville Crime Laboratory</p> <p>2700 116th St NE, Suite P Tulalip WA 98271 Telephone: (360) 654-1201 FAX: (360) 654-1213</p>	<p>Olympia Crime Laboratory</p> <p>3310 Capitol Blvd SE Olympia WA 98501 Telephone: (360) 596-4525</p>
<p>Seattle Crime Laboratory</p> <p>2203 Airport Way S, Bldg. A Suite 250 Seattle, WA 98134 Telephone: (206) 262-6020 FAX: (206) 262-6033</p>	<p>Spokane Crime Laboratory</p> <p>580 W 7th St Cheney WA 99004 Telephone: (509) 625-5401 FAX: (509) 625-5440</p>
<p>Tacoma Crime Laboratory</p> <p>2502 112th St E, Room 273 Tacoma WA 98445 Telephone: (253) 538-3207</p>	<p>Vancouver Crime Laboratory</p> <p>1401 Kauffman Ave Vancouver WA 98660 Telephone: (360) 993-3800 Fax: (360) 993-3899</p>

CRIME LABORATORY AREAS OF RESPONSIBILITY

Service Area	Case Type	Laboratory for Submission
ALL	SAK Analysis	Vancouver
ALL	Convicted Offender database samples	CODIS - Seattle
Clark, Cowlitz, Lewis, Pacific, Skamania, Wahkiakum	Latent Prints Chemistry & DNA & Firearms/Tool Marks Microanalysis, IBIS	Olympia Vancouver Tacoma
Klickitat	DNA, Firearms/Tool Marks, Chemistry Latent Prints & Microanalysis & IBIS	Vancouver Spokane
Kittitas	Latent Prints Chemistry, DNA, Firearms/Tool Marks, Microanalysis, IBIS	Spokane Seattle
Grays Harbor, Mason, Thurston, Pierce	Latent Prints Chemistry, DNA, Firearms/Tool Marks, Microanalysis, IBIS	Olympia Tacoma
Clallam, Island, Jefferson, San Juan, Skagit, Snohomish, Whatcom	Firearms/Tool Marks, IBIS Latent Prints Chemistry, DNA & Microanalysis	Seattle Olympia Marysville
Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, Yakima	Chemistry, DNA, Firearms/Tool Marks, Latent Prints, Microanalysis, IBIS	Spokane
King, Kitsap	Latent Prints Chemistry, DNA, Firearms/Tool Marks, Microanalysis, IBIS	Olympia Seattle



PROCEDURES FOR EVIDENCE SUBMISSION

The following procedures should be observed to properly prepare and submit physical evidence to the crime laboratory. If you have unusual evidence and need assistance with packaging and services, please contact your local crime laboratory for assistance.

SHIPPING

- Most of the WSP CLD labs examine seized drugs. Some types of examinations, i.e. firearms, and latent prints, are performed only at a specific laboratory. Refer to the map (p. 4) to identify the appropriate CLD laboratory. If you are unsure which lab would handle your specific evidence, check with your local crime laboratory to determine which state crime lab should receive the evidence.
- Choose a suitable shipment container so that the evidence can be securely packaged and preserved during shipping. Each evidence item, if possible (see next bullet point), **must** be packaged, uniquely identified, and sealed separately to avoid loss or contamination. Small items of evidence should be packaged in an envelope or plastic bag, no smaller than 5" x 7". Mark each evidence item with the agency case number and an item number. These identifiers must be on the evidence packaging or on the evidence item itself.
- If the evidence item cannot be fully packaged for submission to the laboratory (for example, a door, car hood, etc.), the area of interest must be protected and preserved when submitted to the laboratory, preferably by hand. The submitted item still must have appropriate identifiers to include the agency name, agency case number and unique item number.
- Ensure the evidence packaging is sealed, clearly marked, and allows the evidence to be resealed in the packaging after analysis. Specific guidance for proper packaging of different types of evidence is provided in subsequent sections.
- Depending on the type of analysis requested, fill out either the [Request for Laboratory Examination](#) (RFLE) (Form WSP-3000-210-005) or the [Request for Laboratory Examination \(Sexual Assault Kit\)](#) (Form WSP-3000-210-032). Place the completed RFLE in an envelope and place inside the shipping container. Do not place the RFLE form inside sealed evidence. Laboratory personnel must be able to retrieve the form without breaking any evidence seals.
- Do not staple evidence to the RFLE and do not staple multiple evidence items together.
- Send the shipping container to the appropriate crime laboratory using a secure transport carrier with a formal delivery notification.
- To ship firearms and ammunition, please refer to the requirements of your carrier. Firearms and ammunition should be shipped in separate containers (see also the Firearms Evidence section).

NOTE: When threat-related items or mail are received or recovered, the first contact should be the FBI's Weapons of Mass Destruction coordinator. This individual has the responsibility for assessing the threat level and has a team of responders who can assess the nature of the threat, whether explosive, radiological or biological. The Crime Lab Division can analyze chemical and explosive materials and residues but is not equipped nor trained for radiological or biological material threats.

Once the FBI has screened the evidence it may be submitted to the crime lab for chemical or explosives analysis, if appropriate, or to the Washington State Public Health Department Laboratory in Seattle for biological and radiological analysis.

The FBI Office/Seattle Weapons of Mass Destruction coordinator can be reached at (206) 622-0460.

The Washington State Public Health Laboratory can be reached at (206) 418-5450.

PERSONAL DELIVERY

- Personal delivery is the preferred method when the evidence is difficult to pack for shipping, very fragile, or if the evidence is perishable.
- Evidence concerning headlight filaments must be delivered in person to crime laboratories. See section titled "Vehicle Lamp Evidence" in the Materials Analysis section of this manual for further details on the proper packaging and handling of this type of evidence.
- Cases involving the analysis of possible unexploded explosives must be delivered in person to a laboratory that can complete these examinations. Note that post-blast evidence only may be shipped provided the investigator contacts the laboratory prior to shipping.
- Unsafe firearms must be hand delivered to a laboratory with a Firearms section for clearing, please call ahead to schedule.
- For the above mentioned and other circumstances, the laboratory may require evidence to be picked up in person for return to the submitter.
- Personal delivery allows the investigator to discuss the case and its complexities with the forensic scientist. It is advisable to telephone the crime laboratory and arrange for a meeting time with a forensic scientist when the evidence is delivered.
- Remember that sending evidence by messenger increases the length of the chain of custody. Do not send verbal instructions regarding the case with the messenger.

REQUEST FOR LABORATORY EXAMINATION (FORM 3000-210-005)

The Request for Laboratory Examination ([RFLE](#)) is the WSP form used for submitting evidence to the Crime Lab. This form must accompany all submissions of evidence to the crime laboratory. The form, which includes instructions for completion, is available on the CLD website (<http://www.wsp.wa.gov/forensics/crimlabs.htm>) and should be completed electronically. All Sexual Assault Kits (SAK) should be submitted using the SAK-RFLE. For information on the SAK-RFLE (Form 300-210-032) please go to Biological Evidence Section, Case Acceptance Guidelines for Biological Evidence.

Please ensure the current version of the RFLE is used.

Some important points to remember when completing the RFLE are as follows:

- Fill in all the requested information. Incomplete forms cannot be accepted. If a suspect or victim name is unknown, indicate that in the appropriate block on the form.
- Link your current submission with any previous submission(s) from the same case. There is a convenient box near the top of the form for this purpose.
- Use the dropdown menu to list the most serious offense according to the Uniform Crime Reporting (UCR) system first. Other offenses may also be listed.
- The phone number and email address of the investigator are important. The forensic scientist(s) working on the case may need to discuss the case with the investigator.
- List the items in order of priority (most important first and the order in which the requester would like the evidence examined). Use the item numbers (or alpha-numeric name) assigned to the evidence and a very brief generic physical description to identify the item and its priority.

- In order to improve the efficiency and effectiveness of the forensic services that we provide to your agency, please contact the laboratory prior to submitting cases with 5 or more exhibits of physical evidence. A laboratory scientist will discuss with you the best evidence to submit and priority of each exhibit.

If you have any questions regarding the use of the RFLE or the submission of evidence, call the crime laboratory serving your area. The addresses and phone numbers of the crime laboratories are listed in the instructions and on page 3 in this section.

Once the evidence is submitted, the Crime Lab may contact the investigator in order to determine the best approach to the examination of the evidence. If we do not have the analytical capability/resources to complete a specific examination, we will contact the agency with that information and possible solutions. The most effective use of Crime Lab Division resources may not allow us to examine every item submitted. For example, if multiple items are submitted in a single-suspect controlled substance case, only a single item may be analyzed, and the agency would not receive pre-notification beyond what is described here. If specific items require analysis or if contact is requested prior to the examination, this should be clearly noted on the RFLE submitted with the evidence. Unless explicitly stated by the agency, submission of the RFLE is acceptance of CLD authority to approve technical deviations from test methods.

Sometimes it will be necessary for CLD to shift cases and evidence to one of the other CLD labs to make better use of our available laboratory resources. This is not considered a contractor/subcontractor relationship for laboratory analysis since the laboratories have the same capabilities.

If it is necessary for the lab division to use a non-WSP lab, either in a subcontractor relationship or because we do not offer a particular type of analysis, it is our responsibility to contact the submitting agency with this information and what may be expected from this transfer and subsequent analysis.

GENERAL GUIDELINES FOR THE COLLECTION, PRESERVATION, AND PACKAGING OF PHYSICAL EVIDENCE

The general instructions below will be helpful to the investigator. Evidence requiring special handling will be discussed in the appropriate sections of this guide.

A few precautions are continually repeated throughout the handbook. The reason for the repetition is that these precautions are important. Failure to observe them may seriously affect the evidence examination and, potentially, the outcome of the case. Precautions regarding bloodborne pathogens are mentioned repeatedly due to the hazards that biological materials present.

The guidelines here express the manner in which the crime laboratory would prefer physical evidence to be collected, preserved, packaged, and submitted.

PRECAUTIONS

Safety Alert

Knives, broken glass, firearms, and other sharp objects must be packaged appropriately in puncture resistant containers. Firearms should be placed in a new cardboard box and secured

with plastic zip-ties.

- Do **not** submit any hypodermic needles, razor blades, or other sharps. Syringes will not be accepted. Contact your local lab for further information. The crime laboratory will **not** accept any case under any circumstances that includes a needle alone, a syringe with the needle attached, or a syringe with the needle broken off or sheared.
 - *NOTE: Shearing or breaking of contaminated needles is prohibited. [29CFR1910.1030 and WAC296-823-14010] All syringes and needles are considered contaminated.*
- To prevent risk from fire and/or explosion, use care if submitting any items containing batteries and contact your local crime laboratory with any questions.
- Biohazard materials should be clearly marked and packaged appropriately.

GENERAL GUIDELINES

- Take extra caution when collecting evidence, especially if you are the first responder to a scene. Use gloves and possibly face masks to prevent contamination of potential biological evidence. Take steps to avoid contamination of latent evidence, such as fingerprints, shoeprints, etc.
- Collect a sufficient number and amount of samples. Remember that most of the time it is difficult, if not impossible, to return to the crime scene for more samples.
 - Collect small items of evidence on clean pieces of paper and fold the paper, seal, and label. To avoid loss, seal these smaller items into a larger container such as an envelope or plastic bag no smaller than 5" x 7".
- Labeling evidence: The following information is to be noted on the container or attached tag:
 - Agency name and case number
 - Agency item number (same as listed on the RFLE and/or the associated paperwork)
 - Brief description of item
 - Source of item/name of subject (use actual name, not "suspect/victim")
 - Location (where found)
 - Date/time of collection
 - Name or initials of person collecting item
- Preserving evidence: The general rule is to submit the evidence in the same condition as when collected. As with nearly all rules, there are exceptions. These exceptions are noted in the discussion of each evidence type (e.g., some evidence must be dried, refrigerated, or frozen).
 - The evidence must not be allowed to spoil, deteriorate, evaporate, or in any other manner be diminished in content or evidentiary value.
 - Biological stains, leather goods, plaster casts, and vegetable matter must be thoroughly dry before submission. After drying, this type of evidence is best stored in clean paper containers. Do not use plastic containers.

- Do not contaminate the evidence: The evidence must be handled in a proper manner so that no extraneous material or substance is added.
 - Place evidence directly into a container. Avoid placing the evidence on a surface, particularly one that is soiled or that may contain material similar to that of the evidence.
 - Handle the evidence as little as possible.
 - Package items separately so that transference of possible contaminants does not occur. Care must be taken to avoid leakage and/or breakage so that liquid samples, such as blood, do not leak on other items of evidence.
 - Protect a stain with a clean piece of paper so that when clothing is folded, the stain will not be transferred to another portion of the clothing. An accidental transfer may cause the forensic scientist to misinterpret the stain pattern.

- Sealing evidence:
 - Use non removable tape or evidence tape to seal evidence. Evidence packages are properly sealed if the evidence inside is protected from loss or contamination and an attempt to enter the package would be noticed. The open flaps of envelopes must be sealed with either packing or evidence tape. Scotch tape and staples do not constitute proper seals. **Each seal must be initialed so that the initials touch both the tape seal and the item's packaging.** It is also a good idea to include the date across the tape seal. Care must be taken when sealing containers with seized drugs.
 - Bottles and jars must be capped tightly to avoid leakage and then sealed with tape. The tape must extend across the top of the lid and down both sides of the body of the container.
 - Take all precautions to avoid the loss of evidence. Package and seal the containers to avoid leakage, tearing, or the sifting of evidence through cracks or small openings. Small packages should be over sealed into an envelope or plastic bag not smaller than 5" x 7". Consider a double package process to protect trace evidence from being lost in a larger outer container.
 - It is not always practical or necessary to seal evidence in a container in order to protect it from loss, cross contamination or deleterious change. For example, containerization and sealing are not necessary for large items such as furniture, doors and windows, and automotive components which cannot be packaged and sealed in a practical manner. In this case, the area of the item that has forensic importance should be covered so that the area is protected. The covering should be clearly marked indicating the specific area of interest.

- Control/Reference samples:
 - Control (reference/known) samples and/or comparison samples are necessary when comparisons are to be made.
 - The substrate samples to determine whether the material (substrate) on which a stain is found interferes with the stain analysis may be submitted but will only be examined if necessary. Do not use envelopes smaller than 5" x 7".

- Shipping evidence:
 - Ship evidence by a secure transport carrier with a formal delivery notification.
 - Firearms (that have been rendered safe) and ammunition should be shipped in separate containers. For more details, please refer to the Firearms Evidence Section.
 - Follow special instructions involving the shipment of biological specimens. See the Biological Section of this manual or contact your local laboratory.
 - If the evidence is very fragile (such as vehicle lamps) or in some other way difficult to ship, it should be delivered personally.

CRIME SCENE RESPONSE TEAM

INTRODUCTION

The complexity and demands of a major crime may overwhelm the resources of a law enforcement agency. Yet it is incumbent upon all agencies, regardless of resources and training, to perform a thorough and complete investigation. For such needs, the Crime Scene Response Team (CSRT) was established to respond to calls for crime scene assistance from law enforcement agencies within the state. The CSRT consists of highly trained forensic scientists and is a free service available for response 24 hours a day.

A law enforcement agency can request assistance from the CSRT by:

- Contacting the CSRT call out line at **(253) 255-3064**
- Contacting the local WSP Communications Center

The CSRT member will communicate with the requesting agency to assess the agency needs and determine the level of response.

CALLOUT CRITERIA

The CSRT provides assistance primarily to major crimes such as:

- Homicides
- Death investigations (excluding traffic fatalities)
- Sexual Assaults
- Assaults/Attempted homicides
- Vehicular homicides
- Fatal and non-fatal use of force incidents involving a law enforcement officer
- Excavation/documentation of buried/scattered human remains
- Other crimes as warranted by circumstance and resources

GOALS AND OBJECTIVES

The CSRT assists the agency in a thorough assessment and examination of the physical crime scene. This is accomplished by:

- Responding in an expeditious manner to minimize the loss of evidence.
- Processing the crime scene by recognizing, preserving, and collecting pertinent physical evidence.
- Recording the crime scene in an appropriate manner, including photography, sketching, diagrams, and note-taking.
- 3D laser scanning.
- Providing reconstruction of events where warranted.
- Providing the requesting agency with a written report and 3D laser scanning deliverables, when applicable.
- Providing expert testimony as needed.

CALLOUT PROCEDURE

Crime Scene Response Guidelines:

The following are guidance criteria to be considered in evaluating calls for assistance. These criteria are not exhaustive and consideration of appropriate response will depend both on the nature of the case, the needs of the requesting agency, and the availability of forensic scientists. Whenever appropriate, response will be scheduled for normal business hours. Examples of this would be vehicles which have been secured and impounded or are in police custody.

Before responding to any request, the requesting agency must have secured the scene and obtained a valid search warrant or legal permission to examine the scene.

Criteria to respond immediately:

- For investigation of a homicide where the deceased body (bodies) is still at the scene and the agency needs any of the following that cannot be delayed: scene documentation, 3D laser scanning, bloodstain pattern analysis, trajectory analysis, latent print processing and collection, scene reconstruction, and evidence recognition and collection.
- Where the suspect(s) is unidentified and remains at large, presenting a danger to the public if not identified as soon as possible.
- For investigation of a major crime where it is beyond the expertise of the requesting agency to best preserve and collect evidence.
- Any investigations that involve the closure of public areas, such as an officer involved shooting on a roadway.

Criteria for non-response:

- A scene that has been thoroughly searched by the agency and the CSRT is only being called to confirm that no further useful forensic evidence is present.
- A scene where the agency has no good investigative information that the vehicle/residence/location is associated with the crime.
- A scene where there is no compelling forensic reason to respond. An example of this is searching for hairs/fibers or collecting DNA samples in a vehicle to which it was known that the victim/suspect had prior access.
- A simple scene where verbal directions on evidence collection and preservation can be given to a law enforcement representative.

RELATIONSHIP TO REQUESTING AGENCY

The requesting agency will retain the responsibility, authority, control, and direction of the overall investigation, as well as all collected physical evidence. The CSRT does not transport evidence from the scene.

The requesting agency will be kept informed at all times of the status of the crime scene investigation.

The CSRT will not engage in any activity deemed unsafe, unethical, or in violation of accepted crime scene practices, WSP regulations, or Washington State laws.

Any requests for information from the news media at the scene will be referred to the requesting agency.

BIOLOGICAL EVIDENCE

INTRODUCTION

The Washington State Patrol Biochemistry/DNA section is responsible for the forensic biochemical analyses of body fluids, stains, and cellular material (not associated with bodily fluids) and the DNA typing of biological evidence.

Many examinations begin with a screening procedure to identify the presence of biological material on items of evidence. When biological material has been identified from the screening process, a sample of the material can be taken for DNA analysis. Biological screening can involve a series of chemical tests to indicate the presence of a bodily fluid (serology), detecting the presence of male DNA for certain sexual assault kit samples (Y-screening), or may be as simple as swabbing an item that has been reportedly touched or contacted in some way. The WSP crime lab system can perform presumptive and confirmatory tests for blood and semen, and presumptive tests for saliva.

Human DNA analysis (or typing) is the only type of DNA testing performed by the WSP Crime Laboratory. DNA typing is a process that involves chemically removing DNA from cells and applying molecular biology techniques to obtain a DNA profile that can be compared to other profiles. DNA profiles may be obtained from biological evidence items and from reference samples collected from known individuals. DNA can be obtained from many biological sources (such as blood, semen, saliva, hair, organs, skin, urine, and feces). DNA typing performed on biological evidence can be used to support the inclusion or exclusion of a known individual as a possible source of the profile. DNA profiles may also be searched in the Combined DNA Index System (CODIS) to identify potential contributors.

DNA can be recovered from items that may have been touched and no body fluids are present, however this kind of evidence can present interpretation challenges. These types of samples are commonly referred to as trace DNA. Samples that are likely to have been handled by multiple sources or have been limited in handling/touch by the suspect can result in complex mixtures of DNA from multiple donors or limited information. Analysis of trace DNA samples often leads to limited or inconclusive conclusions regarding inclusion or exclusion of a particular person of interest. In addition, it is not possible to conclude that an item was touched by an individual, when DNA was deposited on an item, or how DNA was deposited on an item. Trace DNA samples will not be analyzed if they are considered unsuitable and/or other evidence with a higher potential for developing a probative profile is available.

The conclusions drawn from DNA evidence by DNA analysts can help law enforcement investigators:

- Identify a potential perpetrator
- Exclude individuals not involved in a crime
- Reconstruct the events related to a crime
- Locate a crime scene
- Establish paternity in criminal cases
- Identify missing persons and unidentified remains

CASE ACCEPTANCE GUIDELINES FOR BIOLOGICAL EVIDENCE

The following case acceptance guidelines were established to improve efficiency, promote analysis of evidence that is most likely to yield results, and prioritize the testing of evidence submitted in more serious crimes (homicides, assaults, sexual assaults). These guidelines will support efforts to improve customer service by reducing the backlogs and providing timely investigative information.

Case Acceptance Criteria for Sexual Assault Kits:

- The first laboratory submission is limited to the sexual assault kit box and reference samples from the survivor, suspect, and recent consensual sexual partners. The request must be submitted using the [Request for Laboratory Examination \(RFLE\) Sexual Assault Kit Submission form](#)(Form 3000-210-032). The SAK-RFLE must be completely filled out for the evidence to be accepted at the crime laboratory.
- Additional items may only be submitted after discussion with the DNA scientist or DNA supervisor. If approved, additional items are submitted using the [Request for Laboratory Examination](#) form. This submission must be accompanied by a [DNA Case Supplemental Information](#) form and, when requested, [Authorization for Consumption of DNA Evidence](#).

A case summary or copy of the incident report and, if applicable, the *Sexual Assault Kit Report* should also be submitted. The case information should contain a brief description of where or who the evidence items came from. A forensic scientist may still contact you for additional information about the case.

Case Acceptance Criteria for Other Evidence:

- The first request for analysis is limited to five evidence items, not including reference samples. These items must be listed on the required [DNA Case Supplemental Information](#) form in order of requested priority. The customer should contact the laboratory to discuss prioritization of evidence if there is a need to submit more than five items.

The WSP Crime Lab requires the submitting agency or a prosecutor provide [Authorization for Consumption of DNA Evidence](#) when requested. Every effort is made to preserve at least half of the evidence; however, when dealing with limited samples, it may be necessary to consume the entire sample.

- Current laboratory resources cannot support the routine analysis of “trace DNA” samples collected specifically for skin cells from handling objects. Examples of trace DNA samples include firearms evidence (bullets, magazines, cartridge cases, and firearms), swabs collected from firearm evidence, and samples collected from surfaces which have been in routine contact with many people. “**Wearer** DNA” samples collected to obtain the DNA profile of an individual who may have worn a clothing item are generally not included in this category. Exceptions may apply for cases involving violent crimes, if there is no other evidence, if applicable reference(s) are provided at the time of submission, and if [Authorization for Consumption of DNA Evidence](#) is granted. Submissions of trace DNA cases should include discussions between customers and DNA staff.

- Property crime submissions are limited to 2 items collected from the crime scene and will require [Authorization for Consumption of DNA Evidence](#) at the time of submission. Evidence items suitable for submission include items that are known to be left behind by or items containing body fluids from the perpetrator(s). For vehicle theft cases, steering wheel swabs may only be submitted in conjunction with DNA reference samples from the vehicle's owner/primary driver(s) for elimination purposes. Items collected from handled or touched objects for analysis of "trace DNA" will not be routinely accepted. Additional items may be warranted and can be submitted with advanced agreement from a DNA supervisor.
- The customer must provide contact information on the Request for Laboratory Examination Form. Please return any inquiry calls or emails within 14 days to avoid cancellation of the lab request and return of the evidence.

The firearms, materials analysis, and latent print sections remain unaffected by this policy. For cases involving multiple examinations, this policy will only apply to evidence on which DNA analysis is requested.

Required At the Time of Initial Submission

To improve the quality of customer service, we require the following items with initial case submissions:

- For SAK evidence submissions:
 - A [Request for Laboratory Examination Sexual Assault Kit Submission](#)
- For other evidence submissions:
 - A [Request for Laboratory Examination](#) form
 - A [DNA Case Supplemental Information](#) form. Please indicate the evidence priority on this form. If you cannot provide reference samples, please indicate the reason on this form.
 - A case summary or copy of the incident report and, if applicable, the *Sexual Assault Kit Report*. The case information must contain a brief description of where (or who) evidence items came from. A forensic scientist may still need to contact you to obtain additional information about the case.
 - [Authorization for Consumption of DNA Evidence](#) form is required for all property crime submissions and may be required upon request for other submissions
 - Reference samples from victims, suspects, and elimination/consensual partners are required at the time of submission if possible

TECHNOLOGY UTILIZED

The Washington State Patrol Crime Laboratory does not currently offer mini-STR typing, mitochondrial DNA typing (mtDNA), single nucleotide polymorphism (SNP) technology, animal DNA typing, or plant DNA typing. The WSP laboratory should be contacted if any of these services are required, and the laboratory may be able to provide assistance to the agency in determining alternative laboratory facilities for testing.

The WSPCLD offers human DNA typing using national best practices recognized by the forensic community. DNA is first chemically removed (or extracted) from biological cells. Real Time (RT) polymerase chain reaction (PCR) instruments determine the quantity, quality, and ratio of DNA present in the sample (quantitation). Molecular biology techniques are then applied to obtain a DNA typing profile. A specific amount of DNA is amplified using the PCR process, which targets a core set of short segments of DNA that are repeated numerous times, also known as short tandem repeats (STRs). The amplified DNA is then run on a capillary-based gel electrophoresis instrument, resulting in a DNA type for each locus. The typing results at each locus are compiled into what is referred to as a DNA profile.

If the amount of DNA in a sample appears insufficient to obtain a profile, the analyst has discretion to halt testing. If multiple samples with similar probative value are quantitated, the analyst may choose which samples to amplify based on case approach considerations, which may include discussions with the submitting agency and/or prosecutor.

Robotic liquid handling systems are used by the laboratory and may be employed during certain steps of the analysis process.

Autosomal STR Analysis:

The 20 core STR loci tested by the WSPCLD are those recommended by the FBI and recognized by the Combined DNA Index System (CODIS), plus Amelogenin and DYS391 for sex determination and Penta D, Penta E, SE33, DYS570 and DYS576 for higher discrimination. Although it may not be possible to obtain results at all loci for every sample, the core STR loci that may be examined are: D3S1358, D1S1656, D2S441, D10S1248, D13S317, D16S539, D18S51, D2S1338, CSF1PO, TH01, vWA, D21S11, D7S820, D5S818, TPOX, D8S1179, D12S391, D19S433, D22S1045 and FGA.

Y-STR ANALYSIS

Y-STR analysis is similar to STR analysis but focuses exclusively on male DNA. The Y-STR loci tested by the WSPCLD are found on the non-recombining region of the Y chromosome, allowing the amplification of only human male DNA. The 23 Y-STR loci examined are: DYS576, DYS389 I, DYS448, DYS389 II, DYS19, DYS391, DYS481, DYS549, DYS533, DYS438, DYS437, DYS570, DYS635, DYS390, DYS439, DYS392, DYS643, DYS393, DYS458, DYS385 a/b, DYS456, and Y-GATA-H4. The alleles at each locus are inherited as one linked block of genetic information that is passed down through a paternal lineage.

Y-STR testing is applicable to the following scenarios, please contact the laboratory to request Y-STR testing when needed.

- Samples where large quantities of female DNA may be obscuring the smaller male DNA component. Examples of appropriate cases and samples include:
 - Sexual assault cases where only digital penetration or penile penetration without ejaculation (or with use of a condom) occurred or when only oral assault occurred.
 - Sexual assault cases where the perpetrator has a low sperm count or is vasectomized.
 - Fingernail clippings from female victims, especially homicide victims, when it is expected that the perpetrator was male and that some sort of struggle may have occurred.

- Cases where a reference sample from a male victim or suspect is unavailable, but a sample from a male relative from the same paternal line is available.
- May be considered for use on cold cases that were previously unsuccessful with standard DNA typing. Please check with the lab that conducted the original testing. The original DNA extracts and/or additional suitable evidence items from the case must be available.
- To supplement conventional STR results obtained for a sample with additional genetic information.

The following are limitations of Y-STR testing:

- All males with the same paternal lineage will have the same profile and thus will be indistinguishable from one another (A Y-STR profile is not unique and cannot identify a specific, single individual).
- Y-STR profiles are not eligible for CODIS. Relevant reference samples must be submitted for comparison to any profiles.
- Statistical weight of a Y-STR profile is significantly lower than standard DNA testing. All other samples in a case that are potentially suitable for standard DNA testing should be exhausted before Y-STR testing is attempted.
- The Y-STR analysis of samples originating from more than one male donor may be inconclusive. The submission of elimination references, if applicable, will help profile interpretation.

The following criteria are generally utilized to determine if a case is eligible for Y-STR analysis. Since Y-STR analysis is a specialty examination, it will not be conducted on every case and is limited to applicable samples submitted in violent crime (e.g. homicide, sexual assault, assault) and paternity or identity cases only. Consultation with the laboratory is encouraged before requesting this testing.

- If a probative autosomal (standard STR) DNA profile has already been developed in the case, Y-STR analysis will generally not be conducted.
- If there are multiple suspects in the case and they are paternally related, Y-STR analysis will generally not be conducted.
- For Y-STR requests involving victim's clothing: Y-STR analysis will generally not be conducted without a serology result if the suspect co-habitates with the victim or processes laundry with the victim. The investigation must have a suspect identified and an available suspect reference sample. A suspect reference sample is required to conduct Y-STR analysis for comparisons, since there is no state Y-STR DNA profile database.
- Y-STR analysis often involves limited amounts of DNA. Authorization to consume the evidence may be required by the laboratory.

HANDLING BIOLOGICAL EVIDENCE

The handling of biological fluids and stains presents hazards due to the possible presence of pathogens. All evidence items submitted for biological testing must be handled using universal precautions. Treat all evidence objects as sources of pathogens and take appropriate protective actions while handling biological evidence.

Gloves must always be worn when handling potential biological evidence. Gloves must be changed frequently and always between handling evidence items to avoid contamination between items. Additional personal protective equipment including Tyvek® suits, boot covers, and masks may be needed to protect the collector and the evidence. No smoking, eating, or drinking should be done around potential biological evidence items. Do not touch your face, clothing, or personal items (such as a cell phone) while wearing gloves. Change gloves immediately afterward if you inadvertently contaminate your gloves. To reduce the risk for contamination, do not cough, sneeze, spit or talk over or around potential biological evidence. Face masks that cover the nose and mouth are highly recommended when collecting evidence, especially for trace DNA samples.

Good personal hygiene must be observed. The hands should be washed thoroughly after the removal of protective gloves, even if the gloves are not cut or punctured. Used protective gear should be removed when exiting the crime scene and must be disposed of properly.

Questions regarding health and safety should be directed to local health authorities or to the Industrial Safety and Health Division, Department of Labor and Industries, Olympia, Washington, at www.lni.wa.gov; Safety and Health Hot Line, 1-800-423-7233.

COLLECTION, PRESERVATION, AND SHIPPING OF BIOLOGICAL EVIDENCE

Collection

Evidence may be recovered from many sites: from the crime scene, from an evidence dump site, from a vehicle involved in the crime, from the suspect's body and clothing, and from the victim's body and clothing. In sexual assault cases, evidence such as penile swabbings from a suspect, the suspect's underwear, and fingernail/tip samples may be useful evidence. When appropriate, as much evidence as possible should be collected as quickly as possible from the bodies of the victim and suspect. Transitory evidence should be collected as the first priority. Biological evidence is fragile and can easily be destroyed. The recognition and recovery of such evidence must be performed properly by the investigator in order to make the best use of it. Please call your local laboratory for case specific recommendations.

The DNA laboratory may be contacted before any biological evidence is delivered for processing. The first submission of DNA evidence is limited to five items plus reference samples (except sexual assault cases, which should only include the SAK and references). The laboratory can help determine what evidence should be delivered and how that evidence should be processed to provide the best forensic examination possible. When several forensic disciplines are involved with one item of biological evidence, the item may be shipped between WSP laboratories for the examination to be completed in the appropriate order for that item.

It is imperative that the victim receive immediate medical attention. Promptness of an examination will also permit medical personnel to retrieve any physical evidence before being lost through washing or cleansing. Commercial kits are available to assist medical personnel in collecting specimens and controls required by the crime laboratory. The examination should be conducted in a manner which avoids the loss of evidence. The preferred sequence of the examination by medical personnel is to first examine and collect the clothing, then the external areas of the body, and finally the internal areas of the body.

The Harborview Abuse and Trauma Center has established guidelines for sexual assault medical evaluations and evidence collection for adults, adolescents, and children.

There are generally three methods of collection recommended by the WSP Crime Lab:

- 1) Collect the entire item.
- 2) Collect a portion of the item.
- 3) Remove the biological material from the item.

Collecting the entire item

The best way to collect an item of biological evidence is to collect the entire item. This method of collection allows the laboratory to process the evidence with the potential involvement of several forensic disciplines (e.g. latent prints, materials analysis). After a sexual assault in which the suspect has deposited body fluid evidence on the victim, it is critical to immediately collect articles of clothing worn during the assault. These may not be the clothing items the victim wears to the hospital. In some cases it may be important to collect the clothes the suspect was reportedly wearing at the crime scene.

If latent blood detection methods (such as luminol) or alternate light sources are used to locate stains at the crime scene, an effort should be made to mark those areas on the evidence prior to collection (e.g. a potential semen stain on a blanket observed on the bed at a crime scene).

If collecting fired cartridge cases from the crime scene and subsequent DNA analysis is anticipated, handling should be limited to preserve DNA that may be present. One way to limit handling is to collect the fired cartridge case with the aid of the stick end of a swab inserted into the inner portion of the cartridge case, or by the use of other sterile collection tools such as sterile plastic forceps. To optimize the chance of sufficient DNA recovery, it is preferred that the cartridge case not be swabbed or processed for latent prints prior to submission to the laboratory for DNA testing.

Collecting a portion of the item

If the entire item is not able to be collected because the item is too large (e.g. walls, concrete, flooring), a portion of the item may be removed. This method is preferred if it is necessary to preserve a stain pattern on a large item. A large enough area around the stain/pattern should be taken to avoid having the cutting instrument come in close contact with the biological material.

Removing the biological material from the item

Do not submit swabs previously used for presumptive blood testing for DNA analysis. A separate swab should be used for sampling DNA evidence after a stain has given a positive presumptive test for blood. The chemicals in the presumptive tests interfere with DNA testing.

Visible staining: If the item (or a portion of the item) is not able to be collected, the visible stain may be transferred off the object by swabbing(s) or scraping.

- **Swabbing:** Moisten a sterile cotton swab with clean water* (not dripping wet, just moist enough to dissolve the stain) and rub the stain. If the stain is small, collect it on a small area of the swab. Collect larger stains on as many swabs as necessary. Use a dry swab afterward to collect any remaining residue. Both the wet and dry swab should be packaged together as one item.
- **Scraping:** This should be performed as a last resort since flakes can create contamination. If the body fluid can be easily flaked off a surface, use a new/sterile scalpel or razor blade and scrape it onto a clean piece of paper. If more than one stain is to be collected, use a new/sterile blade for each scraping to prevent cross-contamination. Fold and tape the paper closed.

Non-visible biological material: If the item (or a portion of the item) is not able to be collected, but a non-visible stain or cellular/contact material is suspected to be present, the area may be swabbed. Latent print analysis may need to be considered before an area is generally swabbed**.

- If the stain is not visible or to collect cellular/contact material from an item, moisten a sterile cotton swab with clean water* (not dripping wet) and swab the area on the item. Use a dry swab afterward to collect any remaining residue. This technique is referred to as the “wet/dry technique”. Both the wet and dry swab should be packaged together as one item.
- The wet/dry swabbing technique should be used for swabbing areas on the body that may have been licked, kissed, or bitten.

Lotions or lubricants: Collect large deposits of oils, lubricants, creams or ointments in a glass test tube or vial. Otherwise, wipe the area of the deposit with a sterile damp swab(s) and follow it with a sterile dry swab(s). Sterile gauze may also be used to collect the deposit. A substrate control may be collected from a deposit-free area, adjacent to the deposit.

*It is always preferable to use sterile, deionized water to moisten swabs. If this is not possible, clean water should be used. Commercially bottled water may be an appropriate option. A control swab, moistened with the water used then air dried, may be collected, however these controls are not generally processed at the crime laboratory.

**For collection of evidence that yields limited DNA, such as touch/handler/wearer cellular samples and small stains, certified DNA-free swabs should be used. Swabs labeled only as ‘sterile’ may contain contaminant DNA from the manufacturer and can produce DNA profiles that are not forensically significant. For further information on certified DNA-free swabs, contact the crime laboratory.

M-Vac® Collection

The M-Vac® is a wet-vacuum DNA collection system. It is possible to use this device to collect DNA from a variety of porous and non-porous materials. M-Vac® collection for DNA analysis is available in each DNA laboratory within the WSP Crime Lab system. The WSP Crime Lab recommends agencies contact their local WSP Crime Lab if this service is requested.

Due to the potential for removal of trace evidence and mixing of discrete stains present on an item, the WSP Crime Lab recommends M-Vac® collection be performed at the WSP Crime Lab, and not at individual agencies. The M-Vac® has the ability to collect trace amounts of DNA from the substrate, and as such, complex mixtures, and contaminant profiles may be detected in DNA extracts produced from this collection method. If an agency prefers to perform M-Vac® collection at their location or on scene, with subsequent submission of the M-Vac® product (dried filter/filter device) to the WSP Crime Lab for DNA analysis, an elimination sample from the M-Vac® operator/collector *must* be submitted along with the evidence.

Preservation

Bacterial action, mold, sunshine, moisture, and warm temperatures can damage the evidentiary value of biological evidence due to the damage or destruction of DNA. All biological evidence must be dried and packaged according to these guidelines before submission to the laboratory.

Proper packaging:

- Each item, including each article of clothing, should be packaged separately. Transfer of materials between items must be avoided.

- Use clean paper bags, envelopes, cardboard boxes, or some other breathable packaging material to package evidence to avoid the accumulation of moisture inside the package. Do not use plastic bags or containers. The presence of moisture enhances bacterial growth.
- Comforters, blankets, pillows, coats, and other large items should be packaged in a way that allows them to be repackaged easily at the end of the forensic examination.
- Label each item with a case number, item number, date, item description, source and/or location.
- Evidence tape or other nonremovable tape should seal any openings. Initial across the tape. The date may also be appropriate to add across the seal. All packaging should have tape over any openings to ensure that small particles are not lost. Only tape or self-adhesive seals should be used. No envelopes should be licked to seal.
- Evidence must be properly packaged and sealed to prevent any loss or contamination.

Special packaging considerations:

- Bottles/containers with liquid: The liquid should be removed using a pipette or by poking a hole in the bottom of the receptacle. Liquid should not be dumped out due to potential biological evidence around the opening/lip/mouth area of the container. The removed liquid may be preserved in a sealable plastic container. If an examination is needed for ignitable liquids, refer also to the Fire Debris section of this manual, or contact your local laboratory.
- Condoms: For condoms with a small amount of liquid, the liquid should be allowed to dry before packaging. If the liquid cannot be dried, the condom should be packaged so that the liquid cannot spill out of the condom. A new/sterile twist tie or clamp may be used so biological material from the inside of the condom is not mixed with the biological material on the outside of the condom. Secure the condom in packaging such as a plastic specimen jar or conical tube to keep it upright and leak proof, and then freeze the item.

Proper drying:

Evidence items and stains must be thoroughly dried at room temperature without the use of heat or fans. Partially dried items will be subject to bacterial action and mold, destroying their value as evidence. To avoid the possibility of cross-contamination, items from different areas of the crime scene, from different individuals (e.g. victim and suspect), and from unrelated cases should **not** be dried together at the same time. If an item is wet upon collection and cannot be adequately dried (e.g. soaked diaper, human tissue), consider freezing the item or call the lab for recommendations.

Proper storage:

For best practices related to the storage and preservation of DNA evidence, please reference the NIST Biological Evidence Preservation Handbook, available on our website. DNA typing results can be obtained from evidence stored refrigerated, frozen, or at room temperature for an extended period of time. If at room temperature, biological evidence should be stored in a cool, dark, and dry place.

- Do not freeze the following items: metal objects, rocks, guns, knives, aluminum baseball bats, or any item that has hard plastic, rubber, glass, or non-porous surfaces (e.g. shoes, belts etc.). These items should not be frozen, as condensation forms upon

removal of these objects from the freezer. These items should be stored dry at room temperature.

Shipping

Items must be packaged in a way that will allow them to be handled and transported safely. A few examples include:

- Knives/Firearms/sharp items: should be placed in a new cardboard box and secured with plastic zip-ties. (See the firearms section of this manual for shipping safety procedures for firearms).
- Glass: should be secured in a cardboard box, padded, marked “fragile” and “glass” on the outer packaging.
- Blood tubes: any glass tube packaged for shipping must be cushioned and protected from breaking (this includes tubes used to store sexual assault swabs). Wrap the tube in absorbent material (e.g., enough tissue paper or towels to absorb the contents if it should break) and place in a small, resealable plastic bag. Tape top edges together with evidence tape. Place the bag into a second bag and seal, and then place this into a Styrofoam mailing container and seal container. Styrofoam containers are commercially available. Blood tubes should never be frozen, they may be refrigerated. If liquid blood tubes are included in the sexual assault kit, they should be removed when the kit is placed in freezer storage.

Items should not be marked “biohazard” or “blood” on the outer packaging for shipping.

REFERENCE/KNOWN SAMPLES

A reference/known sample is taken from an individual under supervised circumstances. A chain of custody must be maintained on the sample from the time of collection. The DNA typing profile obtained from the reference sample is compared to any profiles from the evidence items. The reference sample may be collected by law enforcement, medical staff, or correctional staff. Offender DNA collection kits supplied by the WSP CODIS Crime laboratory should not be used for the collection of DNA reference samples in criminal cases. The reference sample should be shipped to the WSP laboratory doing the analysis on the evidence items in the case. Reference samples that arrive separate from and later than the other evidence may cause a delay in the processing of the case. If reference samples are not submitted with the initial laboratory request, the request may be cancelled unless other arrangements have been made in advance or sufficient justification is provided on the *DNA Case Supplemental Information form*. “Sufficient justification may include an inability to obtain reference samples.

A “secondary” reference sample is a personal item (e.g. toothbrush, hairbrush, comb) that is believed to be from an individual. On rare occasions, this type of reference may be used when a “primary” reference is not available. Contact the crime laboratory for more information on submitting secondary reference samples.

The reference samples that should be submitted are dependent on the case circumstances:

- Reference/known samples should be submitted from all victims and suspects.
- References may also be required for elimination purposes (e.g. a consensual partner of a sexual assault victim).
 - Note: elimination samples from Law Enforcement or Crime Scene personnel may also be required if known or suspected unprotected contact between an

individual and an item of evidence may have occurred (e.g. Officer touched weapon during collection safety check).

- In missing person's investigations, references may be requested from family members. Family member reference samples submitted to a WSP Crime Laboratory shall be accompanied with a [Consent for Family Reference Sample Collection, Testing, and CODIS Entry](#) form (available on the WSP CLD website: <https://www.wsp.wa.gov/forensics/crimlabs.htm>).
- If an evidence sample profile matches to an offender profile in the CODIS database providing an investigative lead, a reference sample will be requested to confirm the "hit."

Methods of reference sample collection:

- A buccal (saliva) sample on swabs or FTA[®] paper* is the easiest method of collection for known/reference samples. When collecting a buccal sample, the individual's mouth should be free of food, tobacco, and other substances. It may be appropriate to have the individual rinse and spit before the collection of the sample. The buccal sample can be collected by using 2-4 swabs. Rub and roll the swabs on the gums and inside the cheeks so that the sample collected has thoroughly coated the surface of the swabs. The swabs should be air dried and packaged for submission to the laboratory. If FTA[®] paper collection is also desired, the wet/moist swabs should be blotted and rubbed on the FTA[®] paper before the swabs are dried. The FTA[®] paper should also be packaged for submission to the laboratory. The swabs and/or the FTA[®] paper must be labeled with the name of the person from whom it was collected and some case identifier to link the item to the individual.
- A blood sample on FTA[®] paper* may be collected. This type of sample is generally collected by medical staff using a finger lancet or blood draw. Liquid blood is blotted on the FTA[®] paper labeled with the name of the person from whom it was collected and some case identifier to link the item to the individual. The FTA[®] paper should be packaged for submission to the laboratory. This method of collection is recommended for a victim of sexual assault, especially when an oral assault is alleged.
- Liquid blood presents a biohazard for laboratory staff and is not a recommended method for reference sample submission. If liquid blood submission is the only available option, blood samples should be drawn into lavender-top tubes. (Grey-top tubes are used by the Toxicology lab for alcohol and drug screening. In some cases, typically vehicular assaults and vehicular homicides, you may need to collect blood samples in both types of tubes for separate submission to the crime laboratory and the Toxicology laboratory.). Both the tubes and the packaging must be labeled with the name of the person from whom the blood was drawn.
- Blood may be collected at autopsy. It is recommended that liquid blood be blotted on FTA[®] paper* for submission. If autopsy blood is not available or is in poor condition, other body tissues can be used for reference/known samples. The crime laboratory should be contacted for recommendations.

*FTA[®] paper is recommended for long term storage of reference samples. Other types of absorbent paper are acceptable, but not recommended.

Elimination Database Samples

The WSP Crime Laboratory maintains an elimination database which includes DNA profiles from WSP Crime Lab staff, law enforcement agency personnel, and other individuals that enter laboratory facilities, to screen for potential contamination of evidence profiles. The WSP Crime Laboratory highly recommends submission of elimination samples from detectives, crime scene

technicians, and forensic staff who regularly handle items of evidence submitted for DNA analysis. Agency personnel may contact their local WSP Crime Laboratory for more information or to submit a DNA elimination sample.

RETURN OF ITEMS

All DNA work product produced during sample analysis, including remaining DNA extracts from evidence (reference DNA extracts will be discarded), microscope slides, and sample cuttings or cellular material not subjected to DNA extraction, will be returned to the submitting law enforcement agency in a new, separate item. As part of the DNA work product, DNA extracts will be in a preserved format and can be stored at room temperature or lower.

The DNA Crime Laboratory Report will indicate the name of the new item in which DNA work product is returned.

If you have any questions, please call your local crime laboratory. Phone numbers can be found in the introduction to this Forensic Services Guide.

CODIS PROGRAM

THE COMBINED DNA INDEX SYSTEM (CODIS) PROGRAM

The Washington State Patrol Combined DNA Index System (CODIS) is composed of different categories (or indexes) of samples, including:

- Offender: contains DNA profiles of Washington convicted offenders.
- Forensic: contains DNA profiles generated from crime scene evidence.
- Missing Persons: contains DNA records of missing persons and deduced missing persons.
- Relatives of Missing Persons: contains DNA records from the biological relatives of individuals reported missing.
- Unidentified Humans: contains DNA records from recovered living persons (e.g. children who can't and others who can't or refuse to identify themselves) and recovered dead persons (including body parts and tissues) whose identities are not known.

DNA casework forensic scientists contribute the DNA profiles for all indexes except the Offender Index. The forensic scientists in the CODIS Laboratory contribute the DNA profiles for the Offender Index. If a DNA profile is generated from an evidence sample submitted to any of the DNA casework laboratories, it will be searched against the database if the sample meets the eligibility requirements. The database searched (national- or state-level) will depend on the relevant CODIS (national or state) Procedures in effect at the time the profile is initially entered. If the database eligibility requirements change after a profile is initially entered, profiles may be moved from one database to the other, or removed from the database entirely. If removal occurs, the submitting agency will be notified. Samples eligible for upload to the state CODIS database are automatically searched against the appropriate indexes and may result in an investigative lead for the submitting agency. Investigative leads may be due to a profile in the Forensic Index matching another Forensic Index profile (a forensic hit) or matching a profile in the Offender Index (an offender hit).

All fifty states, the District of Columbia, the U.S. Army Criminal Investigations Laboratory, and Puerto Rico submit eligible DNA profiles to the FBI-sponsored National DNA Index System (NDIS). DNA profiles at NDIS are searched on a regular basis against the appropriate indexes resulting in hits between WA State DNA profiles and profiles submitted by other NDIS participating laboratories across the nation. In addition to the indexes listed above, NDIS maintains additional indexes such as the Arrestee Index, Detainee Index and Juvenile Index which are populated by entities that have the legal authority to collect DNA samples from these individuals.

CONVICTED OFFENDER DNA SAMPLE COLLECTION

Convicted Offender DNA samples are collected by law enforcement agencies across the state using Convicted Offender DNA collection kits provided at no charge by the CODIS Crime Laboratory. To order DNA collection kits, request training, or if you have any questions, please contact the CODIS Crime Laboratory at (206)262-6020 or email the laboratory at confel@wsp.wa.gov.

Convicted Offender DNA samples must be collected using the supplied DNA collection kits and mailed to the CODIS Laboratory at 2203 Airport Way, South, Suite 250, Seattle, WA, 98134. Postage is required on the mailing envelope included with each kit. If multiple samples need to be submitted, they may be sent together in a larger mailing envelope. Please send samples to the CODIS Laboratory within 1-2 weeks of collection.

Washington State law (RCW 43.43.754) allows for the collection and testing of a DNA sample for any person convicted of a felony or any of the following non-felonies:

- Stalking
- Harassment
- Communicating with a minor for immoral purposes
- Assault 4 with sexual motivation
- Assault 4 where domestic violence was pleaded and proven
- Custodial sexual misconduct 2
- Patronizing a prostitute
- Sexual misconduct with a minor 2
- Indecent exposure
- Violation of a sexual assault protection order granted under chapter 7.90 RCW
- Anyone required to register as a sex or kidnapping offender
- Failure to register
- Collection from a deceased offender who was previously convicted of a qualifying offense.

DNA samples submitted for the purposes of entry into the Offender Index are not considered evidence samples and do not take the place of a suspect reference sample. If reference samples of any kind are submitted for a criminal case using Convicted Offender DNA collection kits, they may be rejected by the casework laboratory. For more information on casework reference samples please see the Biological Evidence section of this guide.

MATERIALS ANALYSIS

Materials Analysis encompasses forensic work in the following areas:

- Fire Debris and Explosives
 - Fire Debris
 - Explosives
- Impressions
 - Impressions (Footwear/Tire)
- Materials – Trace
 - Fibers/Fabric/Cordage
 - Glass
 - Hairs
 - Miscellaneous
 - Paint/Polymers
 - Tape
 - Vehicle Lamps
- Seized Drugs and Chemical Analysis
 - Seized Drugs/Cannabis Quantitation
 - Clan Lab
 - General Chemical Analysis

Each discipline will describe the significance of the testing that can be done, list any precautions needed, and provide recommended collection, packaging, and submission methods.

In general, appropriate packaging will include:

- Labeling with case number, item number, and evidence description
- Seals will completely cover any package openings and have at a minimum, initials running on and off the tape.
- Include a completed Request For Laboratory Examination form (RFLE) submitted either electronically or placed in an envelope on the exterior of the packaging so that personnel do not have to break any seals to retrieve it.
- Always call the Crime Lab first if you have questions – ask for a Materials Analysis Supervisor
- Training is available – please contact a Materials Analysis Supervisor to schedule.

Contact information (# provided is to the section supervisor):

Marysville Crime Laboratory

360-654-1195

Seattle Crime Laboratory

206-262-6109

Spokane Crime Laboratory

509-625-5454

Tacoma Crime Laboratory

253-538-3245

Vancouver Crime Laboratory

360-993-3806

Fire Debris

Significance

Laboratory examination of the evidence may reveal:

- The presence and nature of an ignitable liquid. The laboratory does not perform direct comparison of ignitable liquids beyond their individual classification.
- The manner and area where the fire was set.
- The potential connection of a suspect with the arson scene through comparison of trace evidence and latent prints, or identification of similar classes of ignitable liquids.
- The presence of another crime which the fire was planned to conceal, such as a homicide or fraud.

Collection and Packaging

- Contact the crime laboratory if there are any questions concerning the procedures for collecting and packaging fire debris evidence.
- Any liquid found may be ignitable; remember to handle with care.
- Evidence suspected of containing traces of ignitable liquids must be packaged in **vapor tight containers**.
- Each container must be properly labeled and sealed. The containers must be sealed with tape extending across the top of the container and down the sides. The tape must be initialed so that the initials are across the tape onto the container.
- Do **not** place gloves used for collecting and packaging evidence in the evidence container.
- Never package ignitable liquids in a plastic container or a container with a plastic lid.
- Products designed for packaging volatile evidence may be purchased from many evidence packaging supply companies.
- Do **not** use jars without Teflon-lined lids, plastic resealable (ziplock) bags, or garbage bags to package volatile evidence.

The following are acceptable types of packaging for most ignitable liquid/volatile evidence. Exceptions may exist, contact the Crime Laboratory for more information.

Packaging Type	Use	Specifics
Screw-top glass vials with Teflon-lined lids	Liquids	Package the vial upright in a can surrounded by absorbent material such as kitty litter. No more than 5-10 milliliters is necessary.
Clean, unused, lined, metal paint-type cans	Most types of volatile evidence	Never fill more than 2/3 full. Unlined cans will rust through resulting in volatile loss. Lined cans are recommended. Do not use plastic cans or cans with plastic lids. Use a hammer or rubber mallet to tap the circumference of the lid for a proper seal. Do not step on or use excessive force when sealing the can. Debris in the can lid groove will prevent creating a vapor tight seal. Do not submit liquids directly in paint cans.

Polyester and nylon bags designed for volatile storage	Clothing or other debris that does not contain sharp or jagged edges.	The bags must be designed for volatile storage or there is risk of contamination. This is the preferred packaging for shoes. Never fill more than 2/3 full. Heat-seal or roll down the opening three times and tape to secure the bag. The tape must extend the length of the roll and wrap around to the other side of the package on both sides. Test the seal by gently squeezing the bag to ensure it stays taut. If the bag deflates the seal is not sufficient to preserve volatiles
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Special Types of Samples	
Comparison Sample	A sample of material from the fire scene which is identical to the evidence submitted but is believed to not contain an ignitable liquid residue.
Control Sample	A sample of known composition that are analyzed alongside test samples in order to evaluate influences from the sample matrix or packaging/collection material. Examples include an unused piece of gauze consistent with gauze used to mop up a suspected ignitable liquid or an unused paint can consistent with the cans used for evidence storage.
Soil	Bacteria in the soil can destroy petroleum-based products; low temperature will retard bacterial action. Freeze all soil samples after collection. Refrigerate if unable to freeze. Submit these samples to the crime laboratory as soon as possible.
Molotov Cocktails	Package ignitable liquid and wick separately from the bottle, jar, or glass fragments. If there is no visible liquid, the wick remains are more likely to contain residue than the glass. If fingerprint examination is desired, the glass should be stored so it can dry out rapidly. Fingerprints are dissolved by ignitable liquids. Preservation of this evidence for fingerprints may prevent ignitable liquid analysis. If there is insufficient liquid, seal the glass in a vapor-tight container. Separate the larger pieces, which are most likely to contain latent prints, for drying and fingerprint processing. If there is not enough glass to process for both prints and for liquid analysis, a decision must be made as to which of the analyses will be most beneficial to the case.
Burned or Charred Paper (for document examination)	Contact the Crime Laboratory for information on how to collect and package these types of evidence.
Shoes	Shoes are often too long to fit easily into a gallon-size can without significantly bending and/or distorting the sole. It is not known whether or not this will alter the individualizing characteristics of the shoe outsole. To avoid this possibility, seal shoes in a polyester or nylon fire debris bag.

Submission

- The analysis for ignitable liquids must not be delayed, since they may be lost through evaporation, weathering, or bacteriological degradation. If possible, evidence containers should be **stored in the freezer**, or refrigerator if freezing is not possible, prior to submission to the crime lab. Submission of the evidence to the crime lab should be done promptly.

- Whenever possible, submit control and/or comparison samples with every case. It is highly recommended a blank paint can be submitted with every case.
- Always contact the Crime Laboratory for advice on packaging evidence that will require analysis for **DNA and volatiles**.

Explosives

The Crime Laboratories in Seattle, Tacoma, Spokane, and Marysville can conduct analyses of explosive material and/or post-blast explosive material analysis.

Precautions

Laboratory personnel **will not accept** unexploded explosive devices, or large quantities (greater than 1 teaspoon) of explosive material.

Significance

Unexploded devices, and the individual components of a device, will often provide the best evidence to link an individual to a bombing attempt. Fingerprints will often be intact, tape and glue will not have burned away, wiring and fusing will be undisturbed. In such cases, chemical analysis along with trace examination and fingerprinting or DNA analysis can provide a more complete picture of the device, and there is a much greater chance of connecting the device to an individual. Device reconstruction is beyond the scope of the services provided by the Crime Laboratory.

- **Bulk Explosives:** Bulk explosives may be single chemical compounds or they may be mixtures of substances that together are explosive. Explosives can be commercial or military products, or they may be homemade mixtures. Crime laboratory analysis of bulk explosives can identify the components of an explosive, and in some cases, provide information about the possible source of the explosive. In some cases, distinguishing characteristics of an explosive sample can be linked to explosives or individual chemicals in a suspect's possession.
- **Post-Blast Debris:** Debris from an explosion may be burned, buried in rubble, and/or scattered over a wide area. Pieces of an explosive device may be thrown very far from the site of an explosion. An extensive search of the surroundings and painstaking sifting through rubble may be required to obtain important evidence. This evidence may include fragments of the explosive device itself (e.g., pipe fragments, blasting caps, electrical components) or chemical residues deposited on objects near the explosion. Crime laboratory analysis can often determine what explosive material was used in the device, and in some instances, may help develop additional investigative information.
- **Components of Explosive Devices and Deactivated Devices:** Components of explosive devices may include tape, glue, containers, pipes, fuses, wires, blasting caps, clothespins, clocks, remote controls, etc.

Collection

Do not submit active devices to the laboratory. Active devices, including blasting caps, should be rendered safe in some way before submission to the laboratory. Call your local bomb squad or the Washington State Patrol Bomb Unit to deactivate the device. Make note of what method was used to deactivate the device (e.g., water cannon, blown up with dynamite, etc.), and provide this information documented on the RFLE when submitting the evidence.

Packaging

Items with sharp or jagged edges should not be packaged in paper envelopes. Use sturdier containers such as clean metal paint cans.

Sample Type	Specifics
Bulk Material	<p>Submit only small amounts of bulk explosives. Be sure to include representative samples of the material, especially if there are indications of mixtures. Typically a teaspoon of material is sufficient for laboratory analysis of bulk explosives.</p> <p>Many explosives, particularly "high" explosives, contain components that are volatile and will evaporate over time. It is recommended that these suspected materials be packaged in a vapor-tight container such as clean metal paint cans, vapor-tight plastic bags (such as polyester or nylon bags), or screw-top glass vials with Teflon-lined lids.</p> <p>Flash powder can be very sensitive and may ignite with a spark. If possible, package flash powder in anti-static plastic bags, made for use with static-sensitive computer components; or screw-top glass vials with Teflon-lined lids. Do not package bulk flash powder in metal containers or plastic bags not designed to be static-resistant.</p>
Post-Blast Material	<p>If possible collect the entire exploded device or as many pieces/fragments as can be found. Porous materials or objects with cracks and ridges tend to collect a large amount of useful residues. Materials from near the blast site such as foam, rubber, pipe threads, cardboard, or any rough-surfaced items will often be useful items to collect.</p> <p>Again packaging of these materials are similar to the bulk material collection paying attention to "chemical bombs" which could have acidic residues remaining which could rust metal cans.</p>
Controls	<p>For exploded devices a control sample may need to be taken. Submit control samples in a separate package along with the evidence. For example, if soil from a blast site is submitted, also collect a sample of similar soil from an area away from the seat of the blast. If a portion of rubber molding with blast residues is submitted, also submit a clean area of the molding. Package controls in the same manner as samples with residues – the manner in which a piece of material is packaged can affect the analysis (e.g., bacterial action in soil over time).</p>

Submission

In order to assure the safety of WSP CLD personnel and to be in compliance with applicable Federal Regulations, all bulk material from unexploded devices must be **delivered in person** to one of the four CLD laboratories that perform explosives analysis. **DO NOT SHIP.** The Spokane, Marysville, Seattle, and Tacoma laboratories are the labs currently performing explosives examinations.

If fingerprint analysis is desired, submit the items to the Materials Analysis section of the crime laboratory first. Indicate clearly that a fingerprint examination is needed. The crime laboratory can usually forward evidence to the latent prints section after the explosives analysis is finished.

If any questions arise about evidence collection, packaging, submission, or about what services the laboratory can provide, call the crime laboratory for assistance and advice.

IMPRESSION EVIDENCE

The process of entering and leaving a crime scene can cause an impression to be left behind by objects such as footwear and tires. These impressions, can be evaluated to assist in developing investigate leads or compared to known sources.

Significance

Examination of impression evidence may reveal:

- The type of object that created the impression.
- Possible number of objects present
- If an impression was created by a specific object.
- The approximate size (not a shoe size) of the object creating the impression.
- Manufacturing information about the objects creating the impression.
- Order of deposition and possible movements/direction of travel.

The laboratory performs 2 examinations for this evidence type; comparisons and a make/model determination.

Comparisons include a questioned evidence impression being compared with a known item (shoe, tire, fabric, etc.) for comparison as to include or exclude a possible source.

For scenes in which there is only a questioned footwear impression it can be examined using the SoleMate database which is a footwear database which contains manufacturer information including outsole patterns to aid in identifying potential make and/or model of a possible footwear source.

Tire impression tread designs may also be searched for potential manufacturer make but this is done using tire tread design guides.

Collection

ALL impressions should be photographed first before using any other collection method. For best results the camera should be located 90 degrees above the impression and a scale should be present in at least two directions (L-shape). For three-dimensional (3D) impressions the scale(s) should be level with the impression. It is discouraged to use objects such as pens or currency in place of a scale. The use of additional light (oblique or at different angles) may assist in the increasing the quality of the image.

For long continuous tire impressions, place a flat tape measure along the length of the impression. Take overlapping photographs along the impression for at least eight feet (approximately the full circumference of most tires) and overlap the photographs by approximately 2 inches.

For all impression evidence, care should be taken to preserve trace evidence before any attempt is made to collect the impression.

For impressions on objects which can be physically removed the entire object should be submitted to the laboratory.

Dry-deposit impressions (e.g. dust impressions) may be lifted with fingerprint tape, a trace evidence lifter, a gel lifter, or an electrostatic dust lifter.

Wet-deposit impressions may be lifted with a gel lifter or may be lightly dusted with fingerprint powder prior to being lifted with a gel lifter. Do not press gel lifters too firmly, or the impression can be distorted. Consider a black gel lifter if the impression is made with light colored particles, or a white gel lifter if the impression is made with dark colored particles.

3D impressions may be cast with dental stone (plaster should be avoided as it gives less detail and forms a softer cast). The casts should be allowed to thoroughly dry before removal and case data (agency #, date, and who collected) should be added to the casting material.

Some impressions may be latent in part or whole and need to be chemically enhanced before collection is possible. Photograph before and after chemical enhancement. If the impression can be physically removed, submit it to the crime laboratory where the enhancement could be done there.

Known items

Test impressions (exemplars), made with the object suspected to be the source of an impression, are generally made in the laboratory. Tire exemplars are the exception and may be prepared by the investigator due to the necessity of making the impressions while the tires are still on the vehicle.

Tire exemplars can be made by preparing a continuous piece of clear transparency on a smooth surface that is the length of one full rotation of the tire's circumference. A clean board is evenly rolled with black ink and the tire is rolled across this inked board. The tire is then rolled across the transparency (also the length of the tire's circumference). The starting and ending position and the direction of the tire roll must be marked on the tire and the transparency. The tire information (position on vehicle, inside and/or outside edge, manufacturer, design name, size, and DOT serial number) should also be written. The tires may be submitted with the test impressions. The WSP Crime Scene Response Team is also available to assist in preparing these exemplars.

Packaging

Digital images of impressions are placed on a CD, DVD, or USB flash drive. Package the electronic medium in an envelope and seal as an evidence item.

Physical objects are to be packaged in a manner which protects the impression from contact with any other surface (including the packaging if the impression is fragile). Securing a small, open cardboard box over an impression can often keep the packaging from disturbing an impression.

Dry deposit lifts should be secured in boxes in a manner which prevents anything from coming into contact with the impression or lift. Plastic should never be used to package impressions or dust print lifts of impressions since the plastic can develop an electrostatic charge which can then remove portions of the impression or lift.

Casts should be thoroughly air dried prior to packaging. Do NOT clean the casts. Package the cast with any dirt/debris still adhering. The cast should be cushioned and packaged in a cardboard box which allows the cast to continue drying.

Known shoes should be packaged in paper.

Submission

For comparison requests, the questioned impressions and the suspected known sources must be submitted as separate items of evidence – not in the same sealed package. The accompanying RFLE should state which items should be compared in the Special Instructions section.

For shoe make/model requests, the impressions may be submitted electronically. Only images with impression information should be submitted. The file size for an image, or the total of multiple images, must not exceed 25 MBs. Make sure to attach a completed RFLE along with the images as attachments to: shoesearch@wsp.wa.gov.

No images of tires for tire make/model determinations are to be submitted electronically. The images for these examinations are to be submitted in a sealed item of evidence to the laboratory.

Emailed images cannot be used as evidence in comparison to a known.

If you have any questions or would like additional training in this matter, please contact the crime laboratory.

FIBERS, FABRIC, AND CORDAGE

The transfer of fibers and fragments of cloth can be the result of such actions as violence to a person with a weapon or with a vehicle, clothing being snagged and/or torn, or the contact of clothing with another article of clothing. Fiber examinations can determine the type of fiber such as animal, vegetable, mineral, or synthetic. These fibers can then be compared against a known sample.

Significance

The examination of fibers, fabric, and cordage may reveal:

Classification/Identification of the Material

- Typical end use or origin of the fiber or fabric (e.g. carpeting, clothing, ropes).

Comparative Associations

- Contact between two or more objects/persons.
- Contact with objects such as blankets, upholstery, carpets, and drapes.
- Contact between a vehicle and victim.

Physical Match

- Two pieces of fabric, carpeting, or other textile were at one time a single object.

Damage Analysis

- Nature of damage to fabric (e.g. tearing, ripping, cutting, puncture, type of knife, etc.).
- Could a particular weapon be the source of the damage (inclusion/exclusion only).

Generation of Investigative Leads

- Who was driving at the time of the collision?

Collection

Loose fibers on the surface of an item are generally questioned fibers. The fibers that comprise an item are considered known fibers. These two should be collected separately. Collect the questioned fibers BEFORE the known fibers. Remember to look for all possible sources for the questioned fibers. Fibers are not readily visible and may be transferred inadvertently by touching one object that has loose fibers and then touching a second object, leaving those fibers behind. Fibers can also become air-borne, settling on surfaces that will subsequently contact other items.

Damaged regions of textiles are fragile and should be disturbed as little as possible to allow an accurate assessment of the damage and to preserve any transferred particles.

- Do not try to align damaged clothing or other textiles to each other.

If the item being collected is a rope or binding and it must be cut to remove it, choose an area away from any knots, if possible. Wrap this area of the rope with tape. Cut through the tape and mark the tape with the initials of who cut it and the date.

Do NOT use a vacuum to collect fibers. Even vacuum assemblies designed for collection of trace materials often lose fibers due to the particle size limit on the filter. They also pick up more dirt and extraneous materials and cause static issues with the fibers that are collected.

Loose fibers may be collected using sticky notes or tape lifts. Make sure that the sticky note or tape is clean and free of any foreign fibers.

Packaging

- DO NOT put adhesive lifts, tape or sticky notes on paper or cardboard.
- Fold sticky notes onto themselves and then place in an envelope.
- Tape lifts should be placed on transparency film and then into an envelope.
- Paper-folds or paper envelopes is preferred over plastic because of the static electricity buildup problems of plastic. If plastic bags are used please try to utilize anti-static bags.
- Each of the recovered items must be packaged separately, properly labeled, and sealed.
- Indicate from where a sample was taken and/or if it is the questioned or known material.
- Ensure that all collected materials are air-dried before packaging.
- Contact the Crime Lab for any questions regarding packaging.

Submission

If submitting fibers for comparison, be sure to identify on the Request for Laboratory Examination form (RFLE) which item(s) are the questioned samples and which item(s) are the known.

If submitting for another examination such as an investigative lead, please indicate this on the special instruction portion of the RFLE along with what you are trying to determine.

Collection Methods (In Order of Preference)	Packaging	Additional Notes	Item/Material
Fibers – Embedded in Plastic or Paint	<ol style="list-style-type: none"> 1. Intact Object 2. Dismantled Object 3. Cutting – Manual 	<p>Place object or dismantled object in paper. Support with a rigid container if needed.</p> <p>If cutting, use scalpel or razor blade to cut around a region of interest. Place cuttings inside a white paper packet, inside a coin enveloped (taped shut), sealed inside a larger paper envelope.</p>	Painted or plastic objects that appear to have “abrasions” are good sources for fibers.
Fibers – Loose	<ol style="list-style-type: none"> 1. Lifting – Sticky Note 2. Lifting – Tape Lift 	<p>Fold sticky note over to protect the fibers, place inside a labeled coin envelope (taped shut), sealed inside a larger paper envelope.</p> <p>Place tape onto laser transparency film. Label film and seal inside a larger paper envelope.</p>	

Collection Methods (In Order of Preference)	Packaging	Additional Notes	Item/Material
Fibers – On Clothing	1. Intact Object	Place inside a paper bag (sealed).	The foreign fibers on the clothing will be the questioned sample. The fibers that comprise the fabric will be the known sample.
Fibers – On Rope	1. Intact Object 2. Dismantled Object 3. Cutting – Manual	Place rope inside a paper bag (sealed).	If the rope must be cut, then choose an area away from any knots, if possible. Wrap this area of the rope with tape. Cut through the tape and mark the tape with the initials of who cut it and the date. If multiple cuts are made, mark each cut (on both sides) with the number of the cut such that the pieces can be placed back together in the proper order.
Fibers – Tuft	1. Lifting – Sticky Note 2. Lifting – Tape Lift	Fold sticky note over to protect tuft, place inside a labeled coin envelope (taped shut), sealed inside a larger paper envelope. Place tape onto laser transparency film. Label film and seal inside a larger paper envelope.	

Glass

Forensic glass examinations may provide useful information in any number of criminal cases including homicides, burglaries, hit-and-run, and assault cases.

Significance

The examination of glass may reveal:

Classification/Identification of the Material

- Type of glass – tempered, laminated, bottle.

Comparative Associations

- A possible association between a questioned sample (e.g. from an accident scene) and a known source (e.g. a suspect vehicle headlamp).

Physical Fit

- Broken pieces of glass were at one time a single piece of glass.

Damage Analysis

- The direction of force that broke the glass.
- The direction of travel of a projectile that perforated the glass.

Precautions

Broken glass can cut hands, bags, and other evidence. Be sure to take proper precautions when handling and packaging glass evidence. Wear leather gloves underneath the disposable gloves when handling sharp glass fragments. Alternatively, use clean forceps, or a clean hand shovel with a clean piece of cardboard as a dustpan to collect glass fragments. Clean forceps, hand shovels and improvised dust pans between samples.

Collection

Sources of Questioned Samples

Glass may be found on clothing, on the ground or floor next to broken windows, at traffic scenes, on shoes, floorboards of vehicles, victim's hair, or any number of other locations.

Sources of Known Samples

Known sources may include windows, doors, vehicle parts, lights, and glass objects (e.g. bottles).

When collecting glass as a known or comparison sample, collect pieces from different parts of the frame if possible. Many pieces are needed in order to document the variation of chemical features from that pane of glass. If multiple panes are present, collect separate samples from each broken pane. If the window/door is double paned, be sure to collect each of the broken panes separately and label which pane is "exterior" and which pane is "interior". Collect fragments from the frame using clean forceps. A general rule of thumb is to collect at least 10 pieces of tempered glass or enough flat glass to cover a 2 inches square. More glass is always better.

Physical Fit

- Collect all possible glass. If from a window, consider collecting the entire frame leaving existing glass in the frame.

Damage Assessment

For questions regarding direction of force or impact, submitting the entire pane of glass is recommended.

- Low Velocity Forces - If the direction of force which broke the pane of glass is to be determined, all of the glass must be retrieved. Low velocity forces include breakage by a person's hand, a baseball bat, a hammer, etc. Glass remaining in the window frame must be marked so the surfaces can be identified as "inside" or "outside," and may need to be taped to prevent loss or further breakage. The amount of glass on the ground or floor on each side of the frame should be noted and collected separately. Photographs of the window frame should be taken prior to collection of the complete frame.
- Bullet Holes - If projectile holes, such as bullet holes, are to be examined, the entire pane of glass should be submitted intact with "inside" or "outside" indicated. Care must be taken not to disturb any possible gunshot residue on the surface of the glass. The glass may have to be taped on the exit surface to hold it together. If the exit side cannot be determined, consult with the crime laboratory.

Packaging

- Glass found in different areas must be packaged separately.
- Use metal cans, hard plastic containers, cardboard boxes, or pasteboard boxes to prevent loss of glass particles. Glass may tear through both paper and plastic bags.
- Small pieces of glass should be placed in a paperfold, sealed, labeled, and packaged in a small rigid container (e.g., a pill box, metal vial). The container must also be sealed and properly labeled. Seals must have initials running from on the tape to off the tape onto the packaging.
- Large pieces of glass should be packaged in rigid containers. Use packing material such as cardboard or part of a corrugated carton to avoid breakage and to protect the edges. Hand delivery is the preferred way to submit large pieces of glass, as it avoids the task of extensive packaging and reduces the risk of breakage.
- Package so that if a container opens or tears during shipping, the glass is not lost and does not leak out and contaminate other glass evidence or pose a safety hazard.

Submission

Evidence for requests of direction of force or large items need to be hand delivered to the lab.
Do not mail.

Write in the Special Instructions section of the Request For Laboratory Examination form (RFLE) what type of glass examination is desired (i.e. physical fit, direction of force, comparison, classification of type of glass, etc.).

Call the Crime Lab with any questions regarding collection or packaging.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Glass – Broken in Frame	<ol style="list-style-type: none"> 1. Intact Object 2. Dismantled Object 3. Picking 	<p>Tape over glass to keep still in frame where possible. The frame will often also have additional types of trace materials. Place inside paper inside a rigid container (typically a cardboard box).</p> <p>If can't collect intact or dismantled, then collect fragments. Place large fragments wrapped in paper (for cushioning) inside a rigid container such as a cardboard box or a metal can.</p> <p>Collect smaller fragments in a metal tin or a paper packet inside a pasteboard box (taped shut). Place tin or box inside a paper or plastic bag.</p>	<p>If interested in direction of force (e.g. low velocity - baseball bat or high velocity - bullet) on a window or door of non-tempered flat glass, collect all the glass from the broken frame – preferable still in the frame and taped to prevent falling out. Mark “inside” and “outside” faces of the pane. The glass on the ground on the “inside” and “outside” should be collected separately.</p> <p>If any fibers or hairs are observed on the glass, these should be collected with a sticky note prior to collecting the glass.</p>
Glass – Clothing	<ol style="list-style-type: none"> 1. Intact Object 	Place inside a paper bag (sealed).	
Glass – Loose Fragments	<ol style="list-style-type: none"> 1. Picking 2. Lifting 	<p>Place large fragments wrapped in paper (for cushioning) inside a rigid container such as a cardboard box or a metal can.</p> <p>Collect smaller fragments in a metal tin or a paper packet inside a pasteboard box (taped shut). Place tin or box inside a paper or plastic bag.</p> <p>Very small fragments may be picked up with sticky notes. Fold sticky note over to protect fragments, place inside a labeled coin envelope (taped shut), sealed inside a larger paper envelope.</p>	<p>If the fragments are too small to collect by picking, then they might be too small for comparison. Such small glass fragments may still be suitable to identify the type of glass.</p>

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Glass – Soles of Shoes	1. Intact Object	Place shoes inside a sealed paper bag.	Do not package with other clothing items.

Hair

Hair evidence may be found in all types of crimes, especially in crimes where bodily contact has been made, such as in crimes involving homicide, rape, and/or assault.

MICROSCOPIC COMPARISONS OF ONE HAIR TO ANOTHER ARE NOT PERFORMED IN THE CRIME LABORATORY.

Hairs suitable for DNA analysis are transferred to the DNA section for further analysis. Animal hair DNA analysis is not performed in the crime laboratory.

Significance

Microscopic examination and screening of hair can reveal:

Classification/Identification of the Material

- If the hairs are of human or non-human origin.
- If human, from what part of the body the hair may have originated.
- If the hair has a root, and if human whether in the active or inactive growth stage and if there is any adhering tissue.

Damage Analysis

- If the hair has been subjected to trauma, such as burning, crushing, cutting, or chemical damage.

Generation of Investigative Leads

- If the hairs were forcibly removed from the body or were naturally shed.
- If the hairs have been cut.
- If the hairs have been chemically treated.
- If the hair indicates a hair-related disease.
- If the hair exhibits adhering trace evidence.
- If the hair exhibits a putrid root.

Collection

Sources of Questioned Samples

Hair may be found on clothing, bedding, bodies, comings (such as from sexual assault kits), embedded in objects (such as a windshield or bat), loose on floors or other surfaces, and furniture.

Sources of Known Samples

Known hairs may be obtained from individuals of interest. However, pulled hairs are not required for analysis because microscopic comparisons of one hair to another are not performed. However, if a large number of hairs are recovered from an object, a pulled hair sample (pubic and/or head) may assist in screening the hairs for the best ones to send to DNA analysis.

Precautions

Hairs may be used for DNA analysis. As such, they may be easily contaminated by handler DNA. Use DNA precautions when collecting hair evidence. Be sure to change your gloves frequently.

Packaging

Do not combine hairs that are collected from different locations. Place the hairs from each location in separate paper containers or plastic bags. Place these small containers into larger manila envelopes, properly seal and label, and submit to the crime laboratory.

Place the hairs in clean paper or small plastic bags. Seal with tape and write the date, time, item number, description of the evidence, and the location where it was found. Then place the sealed paper package into an envelope. Seal the envelope and identify the contents; note the date, time, and initials of the person handling the evidence.

If the hairs are placed directly into an envelope, make sure that all the flaps and corners of the envelope are sealed with tape. Even a slight gap can cause hairs to be lost.

If hairs are placed on sticky notes, DO NOT place the root end on the adhesive.

Contact the Crime Lab for any questions regarding collection or packaging.

Submission

- Complete the Special Instructions section of the RFLE for the type of hair exam desired (suitability for DNA analysis, body origin of hair, type of hair damage, etc).

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Hairs – Clump	1. Picking	Use a gloved hand or a tool to pick up a clump of hair and place inside a coin envelope or a small paper bag. Seal inside a larger outer paper packaging.	Clumps of hair are typically either a large dust bunny, which will include large amounts of other types of trace materials, or a large quantity of hairs removed from the same person and therefore likely to have forcibly removed root morphology.
Hairs – Loose	1. Lifting – Sticky Note 2. Picking	Fold sticky note over to protect the hairs, place inside a labeled coin envelope (taped shut), sealed inside a larger paper envelope. Place hair in paper packet inside a coin envelope (taped shut) sealed inside a larger paper envelope.	Long hairs are difficult to remove from tape lifts. Please use sticky notes instead of tape lifts. DO NOT PLACE ROOT ENDS ON THE ADHESIVE
Hairs – On Clothing	1. Intact Object	Place inside a paper bag (sealed).	

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Hairs – Tuft	<ol style="list-style-type: none"> 1. Lifting – Sticky Note 2. Picking 3. Lifting – Tape Lift 	<p>Fold sticky note over to protect tuft, place inside a labeled coin envelope (taped shut), sealed inside a larger paper envelope.</p> <p>Place tape onto laser transparency film. Label film and seal inside a larger paper envelope.</p>	<p>Long hairs are difficult to remove from tape lifts. Please use sticky notes or picking if long hairs are present.</p>

Miscellaneous Materials

There are an unlimited number of both manufactured and natural materials that may be encountered at a crime scene that may provide vital information in connecting a suspect to the crime.

Significance

The examination of miscellaneous materials may reveal:

Classification/Identification of the Material

- What kind of material an object is made from.

Comparative Associations

- If a questioned material could have come from a specific source.

Physical Fit

- If fragments were part of a single object at one time.

Damage Analysis

If an object was damaged in a certain way or by a specific instrument.

Generation of Investigative Leads

- Possible manufacturing information.

Precautions, Collection, and Packaging

The charts below provide some examples of materials that may be encountered and how to collect and package them. However, this is not an exhaustive list. Call the Crime Lab to get advice regarding materials that aren't listed.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
General Chemical Analysis – Bank Dye	<ol style="list-style-type: none"> 1. Intact Object 2. Dismantled Object 3. Cutting – Manual 	<p>Wrap clothing or items suspected of containing transfer bank dye in paper, separating clothing layers, and seal inside a paper bag.</p> <p>Place expended dye pack in antistatic plastic bag inside a rigid container.</p>	<p>Textiles include upholstery, and carpeting.</p> <p>Do NOT collect unexpended dye packs - they are incendiary devices.</p>
General Chemical Analysis – Liquid Substance	<ol style="list-style-type: none"> 1. “Picking” 	<p>Remove liquid substance from original container using pipette (plastic or glass). Pipette liquid into a glass vial with a Teflon-lined screw top cap. Place the glass vial inside a plastic zip-locked bag inside a metal can with absorbent material (preferably spill pads, if not available then kitty litter or paper towels).</p>	<p>The hand tool to be used for “picking” in this instance is a pipette (glass or plastic).</p> <p>Liquid substances of interest may be adulterated drinks or solvents.</p>
General Chemical Analysis – Unknown Solid Nonsticky Substance	<ol style="list-style-type: none"> 1. Picking 	<p>Collect 2 separate samples with stainless steel or plastic spatulas. Package each sample separately. Each sample should be placed inside a glass vial with a Teflon-lined screw top cap. Place the glass vial inside a plastic zip-locked bag inside a metal can with absorbent material (preferably spill pads, if not available then kitty litter or paper towels).</p>	<p>The hand tool to be used in this instance is a spatula. A cleaned stainless steel spatula is first choice. Second choice is to create a plastic spatula by making an angle cut to remove the bulb end of a polyethylene or polypropylene pipette.</p> <p>If sufficient material, collect duplicate samples (in separate cans).</p>

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
General Chemical Analysis – Unknown Solid Sticky Substance	1. Picking	Collect 2 separate samples with plastic spatulas. Package each sample separately. Each sample should be placed inside a glass vial with a Teflon-lined screw top cap. (If the sample does not easily come off the spatula, then place the spatula inside the glass vial.) Place the glass vial inside a plastic zip-locked bag inside a metal can with absorbent material (preferably spill pads, if not available then kitty litter or paper towels).	A plastic spatula may be created by making an angle cut to remove the bulb end of a polyethylene or polypropylene pipette. If possible, collect and package a separate sample of the substrate (without the sticky material) for a reference.
General Chemical Analysis – Volatiles	1. Intact Object 2. Cutting - Manual	Clothing should be collected intact. A cutting may be taken of textiles (e.g. upholstery, carpeting) if unable to package the intact object. Package in a vapor-tight container (metal can or an approved and properly sealed fire debris bag).	Volatiles include pepper spray, bear spray, perfumes, or any other sample where the “odor” is coming from the chemical of interest. Reference samples of pepper or bear sprays are not needed for analysis.
General Criminalistics – Bullet	1. Intact Object	Place inside a paper packet inside a pasteboard box (taped shut) or a metal tin. Seal inside a brown paper bag.	Do not try to pry anything out of the nose. If the bullet is dug out of a substrate (i.e. drywall, wood, etc.), then collect a reference sample of the substrate separate from the bullet.
General Criminalistics – Carpeting	Questioned Samples: 1. Intact Object 2. Dismantled Object 3. Lifting – Tape Lift Known Samples: 1. Intact Object 2. Dismantled Object 3. Cutting – Manual	Package carpeting in paper bags or wrap in paper and place in a box. Package transparency films with tape lifts in larger paper envelopes.	The foreign fibers on the carpet will be the questioned sample. The fibers that comprise the carpet fabric will be the known sample. Collect the Questioned sample first (before the known sample) if the intact object is not possible.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
General Criminalistics – Clothing	1. Intact Object	Package shoes separate from other clothing. Place inside a paper bag (sealed).	The foreign fibers on the clothing will be the questioned sample. The fibers that comprise the fabric will be the known sample.
General Criminalistics – Miscellaneous Object	1. Intact Object 2. Dismantled Object 3. Cutting – Manual	Place object inside a paper bag or wrap in paper and place inside a box.	
General Criminalistics – Rope	1. Intact Object 2. Dismantled Object 3. Cutting – Manual	Place rope inside a paper bag (sealed).	If the rope must be cut, then choose an area away from any knots, if possible. Wrap this area of the rope with tape. Cut through the tape and mark the tape with the initials of who cut it and the date. If multiple cuts are made, mark each cut (on both sides) with the number of the cut such that the pieces can be placed back together in the proper order.
General Criminalistics – Shoes	1. Intact Object	Package shoes separate from other clothing. Place inside a paper bag (sealed).	The soles of the shoes may have a wide variety of embedded trace materials. These materials should not be removed, especially if Impressions analysis is also desired.
General Criminalistics – Tools	1. Intact Object	Place inside paper then secure inside a sealed box or other rigid container.	Tools can have broken glass, paint from a transfer, paint from overspray, wood chips, and other trace materials.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
General Criminalistics – Upholstery	<p>Questioned Samples:</p> <ol style="list-style-type: none"> 1. Intact Object 2. Dismantled Object 3. Lifting – Tape Lift <p>Known Samples:</p> <ol style="list-style-type: none"> 1. Intact Object 2. Dismantled Object 3. Cutting – Manual 	<p>Package carpeting in paper bags or wrap in paper and place in a box.</p> <p>Package transparency films with tape lifts in larger paper envelopes.</p>	<p>The foreign fibers on the upholstery will be the questioned sample. The fibers that comprise the upholstery fabric will be the known sample. Collect the Questioned sample first (before the known sample) if the intact object is not possible.</p>
General Criminalistics – Vehicle Parts	<ol style="list-style-type: none"> 1. Dismantled Object 2. Picking 	<p>Package in a paper or antistatic plastic zip-locked bag.</p>	<p>Vehicle parts are good sources of paint, plastics, and glass and may be used for physical matches or investigative leads.</p> <p>Remember that headlights and mirrors may be sources of glass.</p> <p>See Vehicle Lamps (separate document) if interested in determining if the lamp was on/off.</p>

Submission

Complete the Special Instructions section of the Request for Laboratory Examination form (RFLE) to indicate the examinations desired (e.g. manufacturing information, a comparison of two items of evidence, an assessment of the damage, etc.).

PAINT AND OTHER PROTECTIVE COATINGS

Paint and polymers are typically found on either vehicles or architectural surfaces. These materials may be examined for color, chemical composition, and elemental composition to allow for either comparative associations or investigative leads.

Significance

The examination and comparison of paint or other protective coating and fragments may reveal:

Comparative Associations

- This analysis compares the physical and chemical properties of a questioned paint sample (e.g. paint chips at a crime scene) to known source (e.g. suspect vehicle, or tool suspected in a burglary) to see if there is a possibility of a common origin. The inherent value of the comparison becomes stronger as the inherent complexity of the paint sample increases (i.e. multiple layers, aftermarket repaint).

Generation of Investigative Leads

- Chips left by a vehicle at a hit-and-run scene may produce information regarding the make, model, and year of manufacture. This can only be determined from OEM paint.

Physical Fit

- That the paint chip from the scene came from a particular object or vehicle by a physical fit (i.e., the questioned paint chip edges fit like a piece of a jigsaw puzzle with edges of the damaged area).

Collection

Ensure that all layers of paint are collected (e.g. with automotive paint, sample all the way to the metal substrate).

In all cases, the control samples should be taken from an undamaged area immediately adjacent to the area of damage or of interest.

If a physical match is possible, all paint from the damaged area should be collected or the item submitted in total.

At burglary scenes, control samples should be taken from an area immediately adjacent to the tool mark or damage.

Packaging

- Paper-folds and plastic or paper envelopes can be used to collect the paint samples. Paper is preferred over plastic because of the static electricity buildup problems of plastic.
- Each of the recovered items must be packaged separately, properly labeled, and sealed. Seals must completely cover any openings and initials must run from on the evidence tape to off the tape onto the packaging.
- Indicate from where a sample was taken (i.e. ground near victim, exterior side of front door, damaged region of East wall of living room, etc.). If a vehicle is involved, labeling should include the make, model, year, and VIN. Also indicate from what part of the vehicle the sample was taken.
- Tools - Tools with paint smears must be protected to avoid loss or contamination of the questioned paint. The area containing the paint smear should be protected with soft tissue paper, and the tool packaged securely into an appropriate container (e.g., box).

Submission

If submitting paint for comparisons, be sure to identify on the Request For Laboratory Examination form (RFLE) which items are the questioned samples and which samples are the known. Indicate in the Special Instructions section what comparisons should be performed.

If submitting paint for an investigative lead, please indicate on the RFLE that a make/model search is desired and from which items.

Contact the Crime Lab for any questions regarding collection or packaging.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Paint – Loose Chips	1. Picking	Place inside a white paper packet, inside a coin envelope (taped shut), inside a large paper envelope (sealed).	If paint chips are found on the ground, you can use a spatula to collect multiple paint chips.
Paint – On Tools	1. Intact Object	Place inside paper then secure inside a sealed box or other rigid container.	
Paint – On a Vehicle	<ol style="list-style-type: none"> 1. Intact Object 2. Dismantled Object 3. Cutting – Power 4. Cutting – Manual 	<p>Intact Object – place inside paper bags or paper sealed inside a large box (e.g. skateboards, bikes).</p> <p>Dismantled Object – place inside a paper bag or paper sealed inside a large box (e.g. bike parts, side mirror). Alternatively, seal the region of interest with paper and evidence tape.</p> <p>Power Cutting – place inside a paper bag sealed inside a box.</p> <p>Manual Cutting - Place inside a white paper packet, inside a coin envelope (taped shut), inside a large paper envelope (sealed).</p>	<p>Typical Samples (one item may have two samples)</p> <ul style="list-style-type: none"> • Questioned – scene chips, foreign paint on Victim’s vehicle, clothing • Known 1 – Suspect’s Vehicle, suspected panel(s) and/or part(s) • Known 2 – Victim’s Vehicle (near Questioned sample) <p>Paint varies from car part to car part, be sure to sample enough areas on suspect vehicle to cover potential region that the paint could have originated from.</p> <p>Peeling paint on suspect vehicle may lead to physical match to questioned paint chips.</p>
Paint – On Clothing	1. Intact Object	Place inside a paper bag (sealed).	

TAPE

Tape consists of at least a flexible backing and an adhesive. It may be found at a variety of crime scenes, such as wrapped around improvised explosive devices (IEDs), used to bind victims, or on threatening letters or envelopes. Tape may also provide a variety of evidence types, including latent prints, DNA, hairs/fibers, explosive residue, and miscellaneous trace evidence.

Significance

The examination and comparison of tapes and adhesives may reveal:

Classification/Identification of the Material

- Type of adhesive (electrical tape, duct tape, rubber cement, etc.)
- Scrim (fiber) count may indicate household versus commercial use duct tape.

Comparative Associations

- A possibility of common origin between a questioned sample and roll of tape.

Physical Match

- The tape itself can be examined for a physical match with known tapes.

Collection

When possible, submit tape still adhering to the substrate to minimize loss of trace evidence, latent fingerprints, or contact impressions. If unable to submit substrate, do not distort or tear the tape during removal. If the tape is cut during removal, mark cut ends accordingly.

Sources of Questioned Samples

- Pieces
- Bindings
- Wrappings

Sources of Known Samples

- Rolls of tape

Packaging

Pieces

Individual pieces should be placed on clear transparency film (look for transparency film for laser printers at any office supply store). An alternative is fire debris plastic bags.

Rolls

Tape rolls can be placed in a cardboard box, envelope, or paper bag.

Wrappings or Bindings

Place in a plastic fire debris bag.

Precautions

Do NOT place pieces of tape on paper because the paper is hard to remove from the adhesive.

Do NOT wad or fold the tape onto itself.

Do not place pieces of tape on plastic document protectors because they contain chemicals that interfere with analysis of the adhesives.

Package questioned and known samples in different packaging.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Tape – Ligature	1. Dismantled Object	Mark any cuts made in order to remove from victim. Place laser transparency film (not report covers) on any loose adhesive faces and then place in a paper bag.	The ends of wrappings are excellent candidates for physical match to the end of a tape roll. Tape is generally of interest for DNA, Latent Prints, and Trace.
Tape – Rolls	1. Intact Object	Place inside a paper bag. If the sides of the roll are sticky, place transparency film (not report covers) on the sides and then place in a paper bag.	The end of the tape roll may be used for physical match. The sides of the roll may have other trace materials of interest. Tape is generally of interest for DNA, Latent Prints, and Trace.
Tape – Small Pieces	1. Intact Object 2. Dismantled Object 3. Picking	Individual pieces of tape are typically adherent to some object. It would be best to leave intact on the object and package the object or a dismantled portion of the object. If not, remove with a metal tool and place on a laser transparency film (cellulose acetate). Label the film and place it inside a paper envelope.	Do NOT use report covers for tape or adhesives. Report covers have a chemical that may be found in some adhesives. The direct contact of the adhesive surface on the report cover can result in extraction of that chemical into the adhesive. Tape is generally of interest for DNA, Latent Prints, and Trace.
Tape – Wads	1. Intact Object	Don't wad tape, leave it on the object if at all possible. If someone else has already wadded the tape, then place transparency film over the most exposed adhesive areas and place in a large paper bag.	Tape is generally of interest for DNA, Latent Prints, and Trace.

Item/Material	Collection Methods (In Order of Preference)	Packaging	Additional Notes
Tape – Wrappings	1. Intact Object	Tape used to wrap an object as part of crime should be left on the object (e.g. tape on bed sheets, plastic bags, tarps). Package the object in paper. If extensive areas are present with the adhesive face exposed (such that it would stick to the paper bag), then place transparency film on those faces.	The ends of wrappings are excellent candidates for physical match to the end of a tape roll. Tape is generally of interest for DNA, Latent Prints, and Trace.

Vehicle Lamp Evidence

Vehicle lamps are submitted when the question of whether a vehicle's lamps were on (incandescent) or off at the time of an impact may be critical to the investigation of a case. Examinations are conducted by obtaining lamp(s) from the area of impact on the vehicle and examining the filaments and other portions of the lamp affected by the filaments. Exams of other lamps at a distance from impacts can only yield information as to whether the lamp is functional based on continuity of the filaments. These types of exams should be limited to lamps from motor vehicles (i.e. cars, trucks, motorcycles), since the empirical data upon which these lamp exams are based come from motor vehicles. If lamps from other types of vehicles are examined, caution must be used in interpreting motor vehicle data. High-Intensity Discharge (HID) and Light-Emitting Diode (LED) vehicle lamps are not suitable for analysis.

Significance

Vehicle lamp conclusions range from "on" (incandescent) at the time of impact to "off" at the time of the impact; however, the condition of vehicle lamps after an impact can often be explained by more than one set of circumstances. For this reason, vehicle lamp cases are often inconclusive or a qualified opinion may be given.

Precautions

- Never turn on a vehicle's headlamps after an accident. If the glass envelope of a bulb has fractured, the filament can burn out when energized and show indications of being incandescent at impact.
- The evidentiary value of vehicle lamps can be lost if the lamps are not collected, packaged, and transported using the correct procedures. Lamp filaments are often fragile after an impact. Lamps should always be hand carried to the crime laboratory rather than mailed or shipped.

Collection

- Photograph the lamps in place prior to removal. Record the dash lamp switch position and if the vehicle is equipped with daylight running lamps.
- Prior to removing a lamp, mark the 12 o'clock or "up" position.
- Do **not** test continuity by turning on the lamps.
- Avoid breaking any filaments during handling or transporting lamps. If a filament is accidentally broken, make note of the fact and submit the information with the lamp.
- Whenever possible, submit all of the lamps from the vehicle in question.
- If a lamp is intact and easily removed from its socket, it can be removed as normal for replacing the lamp.
- Broken lamps should be removed with the lamp base and packaged to protect the filaments. One method of accomplishing this is to push the lamp base through a hole in the bottom of a drink cup, cut the bottom from one or more cups to put over the lamp as a spacer, and use an additional cup as a cover. Tape the cups together.
- Check the lamp housings and surrounding areas for loose filament fragments. Use tweezers or "Post-it" notes to collect any fragments of loose filaments present. These can then be packaged in plastic bags or envelopes.
- Do not place packaging materials around the filaments of broken lamps.

Packaging

- Verify that the lamp is labeled with the exact location, usage, and vehicle information (year, make, model, license number, and VIN).
- Ensure that the lamps are protected from shock and that all packaging materials are well sealed.

Submission

Hand carry to deliver all vehicle lamps. Failure to hand carry vehicle lamps can result in a loss of information. There are circumstances when the damage to a lamp can be used to determine if it was incandescent at the time of an impact only if it can be demonstrated that the damage did not occur subsequent to the impact.

Seized Drugs

Significance

Seized drugs analysis typically involves the qualitative examination of suspected drug evidence to determine if the material does in fact contain a controlled substance, and if so to identify that substance to the exclusion of all others.

Precautions

When threat-related mail is received, the first contact should be the FBI's Weapons of Mass Destruction coordinator. The Crime Lab Division can analyze chemical and explosive materials and residues but is not equipped nor trained for radiological or biological material threats. Once the FBI has screened the evidence it may be submitted to the crime lab for chemical or explosives analysis, if appropriate, or to the Washington State Public Health Department Laboratory in Seattle for biological and radiological analysis. The FBI Office/Seattle Weapons of Mass Destruction coordinator can be reached at (206) 622-0460.

Drug evidence recovered from anal, vaginal, and oral cavities presents a serious health hazard to both law enforcement and crime laboratory personnel. This evidence must be repackaged or decontaminated prior to packaging. Outer packaging must be marked as a biohazard. Contact the Crime Laboratory for additional information about decontamination procedures.

See below for additional precautions related to specific types of seized drug evidence.

Collection & Packaging

Make sure each item is contained within appropriate packaging before sealing in the final evidence envelope or container. Do not put loose powder, tablets, or any other small or breakable objects directly into the final evidence envelope/outer package. Make sure the outer envelope or package containing the item(s) is sealed and labeled properly.

Item/Material	Examples of Drug Type	Packaging	Additional Notes
Syringes, razor blades, and sharps	Any	n/a	<p>Do not submit any hypodermic needles, razor blades, or other sharps. Syringes will not be accepted. In rare circumstances, and only with documented prior approval by a <u>Materials Analysis supervisor or designee</u>, a syringe may be submitted. The crime laboratory will not accept any case under any circumstances that includes a needle alone, a syringe with the needle attached, or a syringe with the needle broken off or sheared.</p> <p><i>NOTE: Shearing or breaking of contaminated needles is prohibited. [29CFR1910.1030 and WAC296-823-14010] All syringes and needles are considered contaminated.</i></p>

Vaping devices	Cannabis, nicotine, and synthetic cannabinoids	Remove batteries from the vaping device to prevent fire and/or explosion. Do not submit batteries. If the batteries cannot be removed, the liquid reservoir should be removed and submitted. Package the device and/or liquid reservoir securely in packaging which will prevent damage to the device or liquid reservoir.	Contact your local crime laboratory with questions, especially for disposable or “one time use” vaping devices.
Glass smoking devices	Methamphetamine, cocaine, cannabis	Remove liquid from the device. Package to protect the smoking device from breakage. This can be done with bubble wrap, padding material, or evidence packaging tubes.	
Residues	Any	Package securely to preserve evidence and prevent loss.	
Solid dosage forms and powders	Pills, powders, tablets, chunky material, blotter paper, paraphernalia. Covers most types of seized drugs.	Package securely to preserve evidence and prevent loss.	If the material is suspected to contain fentanyl , the evidence should be packaged in a 4-6 mil plastic bag or hard sided container to prevent accidental breach of the packaging.
Plant material	Cannabis, psilocybin mushrooms, peyote, opium poppies, khat.	Be sure evidence is thoroughly dry* before packaging in paper sack, box, or envelope. Plastic containers and bags should be avoided due to the risk of mold and decomposition of the plant material. *See Additional Notes for khat	Suspected khat (which contains cathinone and/or cathine) should be frozen immediately and delivered to the laboratory in a manner that minimizes thawing. Call the laboratory if you have any questions. See below for additional information related to the requirements for the identification of cannabis.

Liquid samples	Generally syringe contents, injectable solutions and steroids, cannabis concentrates, some prescription medications, and some precursor materials.	Vials or bottles with secure, non-leaking lids. Glass vials with Teflon sealed caps are recommended. Plastic flip-top vials are good for small quantities. Vials and bottles should be packaged to prevent breaking.
Field tests	Do not submit to the crime lab. These kits contain broken glass and chemicals which should be disposed of properly.	These kits are presumptive tests. They are not conclusive tests which prove the presence or absence of a particular drug. These kits are meant to be read immediately and do not retain evidentiary value beyond the manufacturer's recommended window for interpretation. To conserve sample for confirmatory testing, do not conduct a field test on drug residues. Any used field test kits received with seized drug evidence will be disposed of by the crime laboratory in a safe manner.

Cannabis Identification

Types of cannabis cases the crime laboratory will accept for analysis:

	Under the age of 21	21 and older
Leaf Cannabis	All	Exceeding maximum amount allowed
Cannabis Concentrates (hash oil, wax, shatter)	All	Exceeding maximum amount allowed
Cannabis Infused Products in Solid form	Offenses on or after July 24, 2015	Vaping products exceeding maximum amount allowed. No other infused products analyzed.
Cannabis residues (smoking devices)	All	NONE
All manufacturing and delivery cases, except cannabis infused products in solid form cases		

The Crime Laboratory Division will only provide THC quantitation analysis for solid-form cannabis-infused products in vaping products. We will accept cases of cannabis-infused products in solid form involving those under the age of 21 and perform a **qualitative** analysis (no determination of concentration) for offense dates on and after July 24, 2015. For all other

suspected cannabis-infused product in solid form cases, please refer to outside laboratories approved by the Liquor and Cannabis Board (LCB). A list of these labs is located at the LCB website: <https://lcb.wa.gov/>.

A six-week minimum lead time is required for all cannabis cases requiring THC quantitation. A minimum of 0.5 gram of material must be submitted for THC quantitation. Hemp or non-flowering plants may require additional material and it is recommended a baseball sized amount of material be submitted for testing. Exhibits containing less than this amount will be analyzed to determine if THC is present but will not be quantitatively analyzed. Please keep your local crime laboratory informed of all rush court dates to facilitate the timely analysis of cannabis cases. Cannabis cases requiring THC quantitation may be forwarded from your local laboratory to another laboratory in the Crime Laboratory Division for analysis.

The Crime Laboratory Division will not provide analysis of cannabis or cannabis products related to Civil Infractions.

Measurements of the height and diameter of the plant to establish if a plant or clone is immature will not be conducted by the Crime Laboratory. These measurements need to be taken in the field before collecting and/ or packaging of the sample.

Submission

- Only one item per suspect will be analyzed for drug possession cases.
- For delivery/distribution cases make sure to list the items in order of priority (i.e., the order in which you want the items to be examined). Specifying the probable cause item is recommended. **Only six items may be submitted unless there is prior approval from a Materials Analysis supervisor.**
- Describe any special precautions to be taken, such as suspected to contain fentanyl/fentanyl analog, biohazards or future latent print examination.
- **Disposal of Seized drugs:** The crime laboratory does not destroy or dispose of any seized drugs or any other submitted evidence, even if it is determined not to contain a controlled substance. All submitted evidence—except that which was consumed in the analysis and used field test kits received —will be returned to the submitting agency.

Clandestine Laboratory Analysis

Clandestine (clan) lab case samples may contain a variety of liquids, solids, pure reagents, reaction mixtures, extracts and waste chemicals.

Significance

The objective in analyzing evidence from suspected clandestine laboratories is to determine if controlled substances had been, are being, or could be manufactured, the synthetic route utilized, and the production capacity. Evidence from a clandestine drug laboratory may include controlled substances, precursors, chemical reagents, solvents, by-products, and chemical waste.

The most common seized drug manufactured in clandestine laboratories in Washington is methamphetamine. However, clandestine laboratories involved in the production of other controlled substances including, but not limited to, 3,4 - methylenedioxymethamphetamine (MDMA), methcathinone, lysergic acid diethylamide (LSD), phencyclidine (PCP), phenethylamines, tryptamines, and other seized drug analogs, may be encountered.

Collection & Packaging

Sample collection **MUST** be done by a qualified team.

The WSP Crime Lab has a team of chemists that are available to provide on-scene advice related to the clandestine manufacture of illicit substances. The chemists are available to provide advice related to safety, what samples to collect, type of process occurring, etc. The chemists are **not** available to collect and package evidence or to conduct a hazmat response within a scene.

If advice of a chemist is all that is needed, call the Crime Scene Response Team (CSRT) coordinator at (253) 255-3064 and request the assistance of a chemist.

If a full clan lab response by a qualified team is needed, contact WSP-SWAT.

Samples will normally be collected at the scene in duplicate to ensure that sufficient samples are available for reanalysis if required; therefore, only one sample vial set needs to be submitted to the crime lab for examination. Crime lab analysis of clan lab samples is intended to determine if drugs of abuse had been, are being, or could be manufactured, the synthetic route utilized, and the production capacity. Always overpack samples and include absorbent material when packaging liquid samples, in case of spillage during transit.

Contact your local Crime Laboratory for additional information related to clandestine laboratory sample collection and packaging.

Submission

- Do not submit propane tanks suspected to have been filled with anhydrous ammonia. Contact your local Crime Laboratory or WSP-SWAT for information on preliminary testing and documentation. Disposal information can be obtained from the Department of Ecology.
- **Disposal of Seized drugs:** The crime laboratory does not destroy or dispose of any clandestine laboratory evidence, even if it is determined not to contain a controlled substance or element of drug manufacturing. All submitted evidence—except that which was consumed in the analysis—will be returned to the submitting agency.

Poisons/Toxins, Solvents, Inhalants, and General Chemical Unknowns

Wide varieties of substances are of interest in criminal investigations and may be submitted to the crime laboratory system for analysis and identification. Materials that may be submitted can include unknown substances, which may be solids, single or multi-phased liquids, organic or inorganic material, or any of a myriad of items.

Significance

The finding of the scientist's examination may give some possible results which include:

- Identification of an unknown material.
- Identification of the chemical components of a sample.
- Determination that there is no evidence of a suspected contaminant.
- Inconclusive results from which no conclusion can be drawn.

At times, it may be possible to develop a list of possible sources or uses of the identified components. Though identification may not be achieved, useful or investigative information will be included in the report whenever possible.

Precautions

Evidence from these cases may contain unknown materials that may present flammable, contact, and/or inhalation hazards in addition to other toxic effects. Acids and bases, which are very corrosive, may be encountered as evidence. Eye and skin protection must be used when handling these types of materials.

Tear gas products are irritants, by definition, and will cause physical discomfort if inhaled or exposed to the eyes.

Collection and Packaging

Samples must be packaged appropriately to preserve the sample and reduce exposure to personnel handling evidence. Packaging should be selected which will not degrade due to the nature of the sample (i.e., acids will react with metal containers and may form harmful chemicals).

Food items should be frozen, or at a minimum refrigerated, to reduce decomposition of the sample. Generally these items need to be submitted as soon as possible to the crime laboratory for analysis.

Many of the collection and packaging techniques listed for fire debris evidence (see Fire Debris Analysis document) can also be utilized for solvents, inhalants and general unknowns. It is especially important that any evidence suspected to be volatile in nature be packaged in vapor resistant packaging such as paint cans, polyester bags or nylon bags that are properly sealed. Contact your local crime laboratory if there are any questions concerning the packaging of this type of evidence.

Submission

The Crime Laboratory Division is not properly equipped to analyze many types of poison/toxin cases. The Division lacks appropriate technology and/or methods of analysis, personnel

expertise, safe facilities and sufficient training for the wide variety of potential toxins, poisons, biotoxins, neurotoxins, and other possible contaminants. Furthermore, these substances may endanger Crime Laboratory staff when accepted into the laboratory.

When cases are received with **specific suspected contaminants** suggested by the agency, Supervisors or Laboratory Managers will have the authority and flexibility to accept such cases if Crime Lab personnel have demonstrated experience and accepted methods for conducting such analyses. It may be necessary to refer the agency to another laboratory more fully capable of handling these analyses.

PLEASE CONTACT YOUR LOCAL CRIME LAB BEFORE SUBMITTING THIS TYPE OF CASE.

FIREARMS EVIDENCE

INTRODUCTION

Firearms evidence must be properly collected and handled in order to expedite and maximize the examination results.

PRECAUTIONS

- **Always handle all evidence with gloves.**
- Do not pick up the firearm by placing a pencil or some other object in the barrel so that trace evidence will not be dislodged or removed. Pick up by checkered portion of the grip.
- Handle the firearm carefully with the muzzle always pointing in a safe direction (or as safe as possible), even if the safety is on or the firearm is not cocked. The safety may be faulty or the trigger pull may be very light ("hair trigger"). Place the firearm into a box (preferred), paper bag, or envelope for transport back to the workstation.
- Knives/Firearms/Sharp items: should be placed in a new cardboard box and secured with plastic zip-ties.
- If the firearm is loaded, it must be unloaded before shipping to the crime laboratory. If, for some reason, the firearm cannot be unloaded, the submitting agency must call the crime laboratory and determine when and how to hand deliver the firearm to the laboratory.
- If the firearm is to be processed for latent fingerprints or DNA, caution should be exercised in order to prevent the destruction of prints or the contamination of potential DNA on the firearm. The submitting agency should call the crime laboratory for instructions prior to packaging and submitting evidence to the laboratory if there are questions regarding latent fingerprints or DNA.
- If a firearm or other metal object is recovered from fresh or salt water, it should be placed in a container of the water it was found in immediately (do not leave exposed to the air for any length of time). Immersion in that water will keep additional corrosive effects to a minimum.
- Do not clean the firearm before submitting.
- Do not fire the firearm before submitting.

Proper labeling of evidence includes the contents, source, date, time, item number (alpha-numeric as necessary), agency name and case number, and the name or initials of the collector.

- Secure weapons in new cardboard boxes with zip-ties or other method to prevent movement.
- Document and label the package appropriately (see [section 4](#) of this manual).

SIGNIFICANCE

The laboratory examination may reveal information about the firearm, ammunition, target object, and circumstances of the firearm incident. The examination may determine:

- Caliber of the fired ammunition.
- Type of firearm (by examining the recovered bullets and expended cartridge cases).
- Whether the recovered bullets and expended cartridges cases were fired from the recovered/submitted firearm.
- Any malfunctioning of a submitted firearm.
- Entrance and exit bullet holes in clothing.
- Approximate relative distance from muzzle to target.
- Any obliterated serial numbers.
- Reconstruction of events.

METHODS USED

- Detailed examination of firearms including test firing and collection of fired bullets and cartridge cases.
- Microscopic comparisons between test fired bullets and cartridge cases, to each other, and then with submitted fired bullet and cartridge case evidence for specific firearm association.
- Microscopic examination of fired bullets for caliber determination, number of firearms used and the generation of a list of possible responsible firearms.
- Microscopic examination of fired cartridge cases to determine the number of firearms used.
- Polishing, acid etching and other methods applied to items with obliterated identifying markings or serial numbers.
- Visual and microscopic examination and chemical processing of items for the presence of gunshot residues, normally lead and gunpowder. These examinations will normally result in the determination of whether the muzzle of a firearm was in contact/near contact with a target, or at an intermediate or distant range from the target at the time of discharge.
- Review and examination of reports, images or other information to assist in the analysis of trajectories or in the reconstruction of events.

CONCLUSIONS

Microscopic conclusions will normally be reported as:

- The identification of a specific firearm to fired bullet or cartridge case evidence.
- The elimination of a specific firearm as having fired a bullet or cartridge case evidence.
- The identification or elimination of a specific firearm to fired bullet or cartridge case evidence cannot be made (inconclusive).
- The submitted evidence is unsuitable for microscopic comparison.

DEFINITIONS

- **Identification:** The opinion of a qualified examiner that there is sufficient agreement of features and microscopic detail (class and individual characteristics) to conclude that two (or more) tool marks originated from the same source.
- **Elimination:** The opinion of a qualified examiner that there is sufficient disagreement of features and microscopic detail (class and/or individual characteristics) to conclude that two (or more) tool marks originated from different sources.
- **Inconclusive:** The opinion of a qualified examiner that there is not sufficient agreement or disagreement of features and microscopic detail (class and/or individual characteristics) to conclude that two (or more) tool marks originated from the same source or from different sources.

Unsuitable: The opinion of a qualified examiner that there is not sufficient microscopic detail or features for comparison.

OPERABILITY AND TEST FIRES

The Crime Laboratory Firearms Section has developed a video for agencies to do their own test fires/operability testing. This video demonstrates how to test firearms, which will then allow the firearms scientists to focus on the critical forensic analysis in the laboratory. There are certain circumstances that might require submission of an operability case. Those circumstances

include but are not limited to full auto conversions, damaged firearms, and other non-functional firearms. Trigger pull weights are not reported. The laboratory will also continue the operability testing on cases that require microscopic comparison. Turning this service back to our customer/user agencies allows us to focus on cases requiring our work in the laboratory. The laboratories have a range and can assist an agency with the test firing of firearms. Non-standard caliber ammunition can be provided at agency request. The video can be found on the FLSB website of the WSP [Firearms Operability Video](#).

OTHER EXAMINATIONS

- Elemental analyses of gunshot residue for the presence of lead, barium and antimony are not conducted (ie. GSR on hands).
 - Experience has shown that neither positive nor a negative finding of gunshot residue can determine if an individual fired a gun. A positive finding means only an association with, or exposure to, a fired gun, fired ammunition component, or other contaminated surface either purposeful or accidental. On the other hand, since gunshot residue is not always deposited and is so easily lost through normal activity, no significant conclusion can be drawn from a negative finding.
- The attempted association of a specific fired bullet to a specific discharged cartridge case is not normally conducted.
- Elemental analysis of lead bullets or bullet cores for identification to a lot or box of ammunition is not conducted.

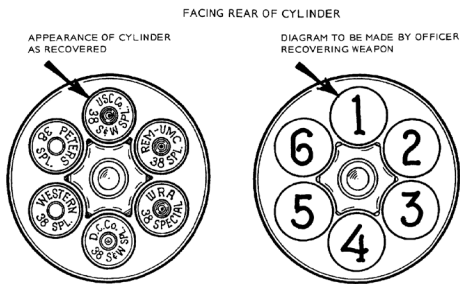
COLLECTION AND PRESERVATION

- All items should be inventoried. Record the source, date, time, agency case number, item number, and description of the item. Descriptions of firearms should include the serial number (do not confuse with part numbers), make, model, caliber, and the condition when found (i.e., loaded or unloaded, cocked or uncocked, safety on or off, etc.).
- The area of recovery should be measured, sketched, and photographed, showing the positions of the item.
- Unload the firearm, if possible.
- Handle carefully in order to preserve trace evidence. Do not remove the trace evidence unless the entire object cannot be submitted. Before removing, describe the location of the trace evidence and photograph or sketch the evidence in place.

UNLOADING A REVOLVER

- Place a line on the cylinder on each side of the top strap with a pencil or felt pen prior to opening or moving the cylinder. This will inform the examiner which chamber was at the top.
- While pointing the barrel downward, open the cylinder; before moving the cylinder or removing the cartridges, make a diagram of the cylinder. Number the chambers, starting at the top and going clockwise; note any cartridge in each chamber, whether the cartridge has been fired, and the headstamp information, indicating the manufacturer. See example:

HEADSTAMP



Chamber #	Condition	Information
1	Fired	S&W
2	Fired	REM
3	Fired	WRA
4	Loaded	S&W
5	Loaded	WES
6	Loaded	PET

- Each cartridge or cartridge case that is removed should be placed in an individual container. The number of the chamber from which it was removed must be noted on the container.
- The firearm, cartridges and cartridge cases must be marked prior to packaging and shipping. A tag is an acceptable method of marking the firearm.
- Unfired cartridges should be marked with an indelible felt tip pen along the case.
- Fired cartridge cases should be handled in a similar fashion as cartridge cases collected at a scene. Note: a mark made with a permanent marker may be removed during examination.
- **Never** mark the base of a fired or unfired cartridge.

UNLOADING A SEMI-AUTOMATIC PISTOL

- Remove the magazine. Handle the magazine with care if it is to be processed for latent prints or DNA. Do not remove any cartridges. Mark the magazine. Package the magazine in a paper envelope, small box, etc. Seal and label the container. Submit with the firearm.
- Remove the live cartridges, if any, from the chamber. Mark the cartridge, indicating that it was removed from the chamber, place in a container, and seal and label the container. Submit with the firearm.
- Note the serial number of the firearm for proper identification.

UNLOADING BLACK POWDER FIREARMS

Percussion cap revolvers

- Remove the percussion caps from the cylinder and then remove the cylinder from the frame.
- Do not attempt to remove the projectile and charge from the individual chambers.

Percussion cap rifles

- Remove the percussion cap. Do not attempt to remove the projectile and charge from the firearm.

Flint Lock pistols and rifles

- Remove the flint and any powder in the flash pan. Do not attempt to remove the projectile and charge from the firearm.

Call the Crime Laboratory for shipping instructions. If there is a problem with unloading Black Powder Firearms, they can be hand delivered to a laboratory with a Firearms section. Please call ahead.

RECOVERED BULLETS, PROJECTILES, AND FRAGMENTS

- Each bullet or fragment recovered from the crime scene should be carefully packaged in an appropriate container, such as a small box (e.g., a pill box) or envelope (preferred). Seal and label the container.
- If a bullet is buried in a wall or other object, cut around the bullet. Remove the material containing the bullet. Do not probe the hole or try to dig out the bullet—it may damage the bullet. Place in a container, and seal and label the container.
- Do not touch recovered bullets with bare fingers. Possible traces of blood or other evidence on the bullet could be contaminated or removed by handling. Use a clean, unused pair of disposable gloves or pick up with clean tissue.
- Shot pellets should be collected and submitted in the same manner as bullets.
- Search for shot shell wads and shot cups whenever a shotgun is involved.
- Shot patterns should be measured, sketched, and photographed. If possible, the surface containing the shot pattern should be recovered.
- Bullets and fragments recovered at an autopsy should be carefully rinsed, dried, and placed in a small container or envelope. Seal and label the container. Do not seal bullets that are damp or wet in plastic containers as this may cause corrosion and damage the markings on the bullets.

FIRED CARTRIDGE CASES AT SCENE

- Consider whether the items will be submitted for processing for fingerprints and/or DNA. Wear gloves to collect the evidence and prevent potential contamination.
- Each cartridge case should be placed in a small container or envelope. Make sure the packing is appropriately labeled. Do not mark the cartridge case on the base or on the side.

GUNSHOT RESIDUE FOR DISTANCE DETERMINATION

If fired at close range, a firearm will discharge partially burned and unburned gunpowder particles onto the target surface. The appearance (i.e., the pattern and density of the particles) may assist in establishing the distance between the firearm and the target surface.

In addition to gunpowder particles, soot, vaporous lead, and small lead particles are also produced during the discharge of a firearm and these substances can be found on a target surface around a suspected bullet hole. These various products of the discharge of a firearm can be identified using chemical testing and the results of the various chemical tests can also be used to determine whether a firearm was in contact/near contact with a target, at an intermediate range from a target, or a distant range from a target at the time of discharge.

Drop-off distance is the approximate distance where the firearm and ammunition combination in the examination no longer deposits observable/detectable residues on the specific target material. Drop-off distance is normally indicative of the difference between intermediate range and distant range. If an approximate drop-off distance is reported, this wording will be added to the report:

“Testing to determine the approximate drop-off distance was conducted in a laboratory setting. A variety of scenario-based variables may have affected the evidence which could change the drop-off distance greater than any measurement uncertainty in performed laboratory tests.”

CAUTION:

Chemical testing of clothing may have a detrimental effect on retesting and subsequent testing may not produce results similar to the original.

- If clothing is submitted, each article must be air-dried and packaged separately. Package the clothing in paper bags or wrap in brown paper. Do not package in plastic bags. Seal and label the containers, noting the contents.
- If the pattern is on skin, 1:1 color photographs of the wound and entire pattern should be submitted, before and after the wound area is cleaned. A scale or ruler must be included in the photographs. Close-up photos of the entry and exit wounds should be submitted as well as close-up photos of typical gunpowder particles in the pattern. Some of the particles should be picked off and folded in a piece of clean paper. The paper should be sealed, labeled, and placed in an envelope. Seal and label the envelope.
- The laboratory should be informed of the locations of the entry and exit wounds found on the body. Copies of autopsy or medical reports may be helpful in the course of the analysis and should be submitted to the laboratory.
- The suspect firearm and the same type of ammunition should be submitted. The gunpowder pattern on the proximity test target material may be compared to the patterns visible on or chemically developed on the submitted clothing.
- In the case of black powder firearms, the unknown factors of powder type and amount will be limiting factors in trying to establish distances between the firearm and target.

FIREARMS PARTS

- It is important to collect any and all firearm parts found at the crime scene.
- It may be possible to reassemble the firearm for testing; a firearm type and manufacture may be identified.
- All of the collected parts may not be from the same firearm.
- The parts may be packaged in a box (preferred), a paper bag, an envelope, etc. Parts packaged in a box may be strapped down to prevent shifting during transport. The packaging should be marked with the appropriate identifying marks, such as agency case number, item number, and description of the item.

SERIAL NUMBER RESTORATION

- The serial number on a metal surface of a firearm (as well as office equipment, bicycles, machinery, or other high value item) may be obliterated to conceal ownership. Chemical processing can often restore the number. Do not wipe or abrade the surface.

SHIPPING FIREARMS AND RELATED EVIDENCE

- Package the firearm in a suitable box. Firearms packaged in a box should be strapped down with zip ties to prevent shifting during transport. Mark the sealed box with the appropriate identifying marks, such as agency case number, evidence item number, and description of the item.
- When packaging semiautomatic pistols, place a zip-tie through the magazine well and out of the ejection port to render the firearm safe. Please do not put the zip-tie inside the barrel of the pistol as this may disturb trace evidence within the bore of the barrel.
- All firearms must be unloaded before being shipped or hand-carried to the laboratory. If the firearm is difficult to unload, contact the crime laboratory for assistance. Secure the weapon in a new cardboard box with plastic ties to prevent movement.
- Carriers have different rules regarding the shipping of firearms and ammunition. Please contact the carrier with specific questions regarding the shipping of this type of evidence.

1.0 TOOL MARK EVIDENCE

INTRODUCTION

A tool mark is a mark made by one object on the surface of another, softer object. Although these marks are generally made at the entry point of a burglary, various kinds of tool marks can be found elsewhere, such as fractured knife blades, cut marks on wire, abrasions left on a vehicle, cut marks on a padlock, and machine marks on a metallic surface.

TYPES OF TOOL MARKS

- Some tool marks only show the basic shape of the tool. This type of tool mark lacks specific detail that can single out a particular tool; only the general shape and size of the tool can be determined—wood impressions are often of this type. Since wood will fracture or partially "spring" back, often only the general form and size of the tool can be determined.
- The tool mark that is of more value is the type that consists of striations (a series of narrow, fine grooves, some of which are microscopic) and indentations which show the individual characteristics of the tool. These marks can often lead to the identification of a particular tool.

METHODS USED

The submission of a tool with a questioned/unknown tool mark will normally result in the making of test tool marks in an appropriate medium using the submitted tool. These test tool marks will be microscopically compared to each other and then compared with the questioned/unknown tool mark. Casting of the test tool marks may be required depending on the type of questioned/unknown tool mark submitted. Also, trace evidence on the tool or toolmark will be assessed and evaluated for potential examination by another section.

CONCLUSIONS

Microscopic comparisons will normally be reported as:

- The identification of the submitted tool to the questioned tool mark.
- The elimination of the submitted tool from the questioned tool mark.
- The identification or elimination of the submitted tool to the questioned tool mark cannot be determined (inconclusive).
- The submitted tool mark is unsuitable for microscopic comparison.

OTHER EXAMINATIONS

Fracture matches and some impression/pattern evidence (i.e., footwear and tire tracks) are assigned to the Materials Analysis Unit.

PRECAUTIONS

- Do not attempt to fit a suspected tool into the questioned mark. The tool mark may be damaged, the tool may be altered, and trace evidence may be lost or contaminated.

- In the case of cut wire type materials, mark the end of the wire type material cut by an agency representative during the retrieval of the evidence with paint, permanent marker, or wrap with tape, indicating this is a cut produced by a known tool. This provides information to the laboratory as to which end of the wire type material is to be compared with the suspected tool.
- Care must be taken to protect the suspected tool so that the face of the tool is not damaged, thus changing the tool mark it will produce. Protect the face of the tool with soft tissue paper.
- Handle the tool with gloves, as DNA might be recovered from a tool left at the scene.
- Protect any trace material on the face of the tool. Paint, metal particles, and other materials from a surface frequently adhere to the tool. The trace material can be compared with samples of the surface containing the tool mark.
- Samples of the surface adjacent to the tool mark must be taken. Later, when the suspect tool is recovered, trace materials on the tool can be compared to the samples taken at the scene. This information can be very valuable, particularly if the tool mark comparison is not definitive.

PRESERVATION OF TOOL MARKS

- When possible, submit the object containing the tool mark. This may entail submitting a drawer, a metal screen door, or cutting out a portion of the object containing the tool mark.
- Close-up photos that include a scale must be made if the object containing the tool mark cannot be submitted. The film plane should be parallel to the tool mark. Oblique lighting will increase details visible in the photo.
- It is important that the tool mark be kept clean and dry. An exception is when a tool mark on a metal surface is subject to rusting. To retard rusting, coat the tool mark with a light film of oil.
- Casting of the tool mark may be done as a last resort. A cast will never completely replicate the details of the original tool mark. Suitable silicone rubber casting materials, such as Mikrosil or AccuTrans, can replicate a significant amount of the details in a tool mark. A formulation with a lesser degree of replication will cause a loss of the finer details in the tool mark and reduce the chances for a definite conclusion.
- Casting should be done by an experienced person. Improper casting may produce a worthless cast and damage the tool mark. **DO NOT PRACTICE ON THE EVIDENCE.**

TOOL FRAGMENTS

- At crime scenes, burglary tools may break during the commission of the crime. Fragments of the broken tool may be found near the scene or even in the tool mark itself.
- Since these fragments may be very small, a flashlight held obliquely to the floor surface is helpful. A magnet may also be used to locate the fragments that contain iron.
- The recovered fragment may be fitted to the suspect's broken tool and constitute what is called a physical match. The physical match may identify the tool as the one used at the crime scene.

2.0 INTEGRATED BALLISTIC IDENTIFICATION SYSTEM (IBIS)/NATIONAL INTEGRATED BALLISTIC INFORMATION NETWORK (NIBIN) EVIDENCE

The Integrated Ballistics Identification System (IBIS)/National Integrated Ballistic Information Network (NIBIN) has greatly increased the ability of the Firearms Sections to identify incidents in which the same firearm was used. Often, IBIS/NIBIN can offer new leads in “dead end” cases and reduce the number of unsolved firearm cases.

IBIS/NIBIN is located in the Spokane, Tacoma and Seattle Crime Laboratories. Please submit IBIS/NIBIN entries to one of these laboratories. If there are any questions regarding submissions for IBIS/NIBIN entry, please contact the Firearms Section at one of these three labs that handle firearms evidence.

METHODS USED

- Images of evidence and test fired cartridge cases will be entered into the NIBIN database for correlation with existing stored images. Automatic searches of NIBIN Region 15 (Washington, Idaho, Montana, Alaska and Northern California) occur when a cartridge case is entered into NIBIN. The cartridge case will also be searched any time a new cartridge case with appropriate characteristics is entered into NIBIN. Agencies can make a special request to have a cartridge case searched against any specific area that is outside of NIBIN Region 15, but is within the United States. The stored images of cartridge cases are maintained indefinitely.
- The submitting agency representative will be contacted regarding a potential association between submitted evidence items or test fired cartridge cases and existing database images.
- If needed for warrants, arrests, trial, etc., confirmation of potential associations between submitted evidence items or test fired cartridge cases and existing database images may be requested and the cartridge cases from the involved cases will be examined by a Firearms Examiner. The results of this examination will be communicated to the representatives of the agencies involved.

SUBMISSIONS FOR NIBIN ENTRY

The following items may be submitted for IBIS/NIBIN entry:

- Recovered fired cartridge cases (evidence).
- Test fired cartridge cases – from primarily semiautomatic pistol and semiautomatic rifle firearm types.
- Please contact the Firearms Sections about any special situations or firearms questions related to IBIS/NIBIN entry.

The Crime Laboratory Division Firearms Section has developed a video for agencies to do their own firearms test fires/operability testing for NIBIN/IBIS entry. The video is entitled WSP Firearms Operability Testing Process and is located on the WSP website. ([Firearms Operability Video](#))

In an effort to increase customer service and provide quicker ways to submit items for IBIS/NIBIN, cartridge cases to be entered into IBIS/NIBIN will be handled in one of three ways:

- 1) They may be submitted as evidence and will be documented and handled as evidence. An RFLE needs to be submitted and chain of custody will be maintained.
- 2) They may be handled as walk-ins and remain in the possession of an agency representative who remains present during entry.
- 3) FOR TEST FIRES ONLY: They may be handled as non-evidence and delivered to the laboratory (e.g. by mail or in person) or created on-site by law enforcement personnel exclusively for IBIS/NIBIN entry, then placed in a location designated by the laboratory and entered into IBIS by any authorized IBIS/NIBIN operator. THESE TEST FIRES WILL BE DESTROYED.

Options 1 and 2 are recommended for evidence cartridge cases and option 3 is recommended for test fires. Since test fires under option 3 are destroyed, if an agency wants to retain test fires as evidence that the firearm is operable, it should create additional test fires for that purpose.

Please submit test fires in a test fire envelope or other appropriate packaging. The following information should be included on the test fire envelope/package for the IBIS/NIBIN entry:

- Agency name, case number, and contact
- Date seized
- Make/Model/Caliber/Serial Number/type (pistol, rifle, shotgun)
- If the firearm will be returned to a citizen or destroyed
- Any relevant scenario based information (location recovered etc.)

No evidence bullets or bullets produced during the test firing of firearms are currently being entered into the NIBIN database.

LATENT PRINTS EVIDENCE

INTRODUCTION

Friction ridge impressions (commonly referred to as latent prints) are a widely recognized means of personal identification. Most crime scene evidence has the potential to contain latent prints. One should assume that latent prints are present on all objects handled. Process or collect these pieces of evidence accordingly. Latent prints are susceptible to destruction and may be destroyed simply by coming into contact with other items of evidence, packing materials, or a package container. Proper collection, handling, and packaging of the evidence is critical.

DEFINITIONS

Automated Biometric Identification System (ABIS): A computer system (previously known as the Automated Fingerprint Identification System) that allows scientists to store, and search finger or palm print images in a database.

Exclusion: The opinion of an examiner that there is substantially stronger support to conclude that a known subject could not be the source of an impression, or that two areas of friction ridge impressions did not originate from the same source rather than from the same source.

Identification: The opinion of an examiner that there is substantially stronger support to conclude that two impressions originated from the same source rather than from separate sources.

Incomplete: The determination during comparison that the exemplars are inadequate in either quantity or quality. A reason for an incomplete result will be included in the report. Better quality or more complete exemplars may be needed for a conclusive result.

Inconclusive: The conclusion that the observations do not provide a sufficient degree of support for identification or exclusion over the other. . A reason for an inconclusive result will be included in the report.

Latent Print: A transferred impression of friction ridge detail that may not be readily visible.

Next Generation Identification (NGI): The FBI's national AFIS (previously known as IAFIS or the Integrated Automated Fingerprint Identification System).

CAPABILITIES AND SERVICES

The primary functions of the Latent Prints section is to examine and process items of evidence for friction ridge impressions, determine if the impressions are suitable to be designated for comparison, compare unknown impressions to known prints, and search unknown impressions in the available databases. The results of all examinations will be compiled in a case report which is returned to the requestor or other interested parties.

The Latent Prints section typically designates for comparison only those impressions potentially suitable for identification or exclusion. Impressions suitable for exclusion only will not be compared at the scientist's discretion; if omitted, these comparisons may be performed upon a specific request by the submitting agency.

The Washington State Patrol (WSP) contracts with the Western Identification Network (WIN), to operate and maintain the Automated Biometric Identification System software and database. WIN is a consortium of several western states (Washington, Oregon, Idaho, Nevada, Utah, Wyoming, Montana, and Alaska), referred to as central sites, sharing a common ABIS database. When searching a print in the ABIS database, the WSP can search Washington records alone, each central site member, some combination of central site members, or all central site members. In addition, access may be provided to other national, state, or local state databases through the WIN network (e.g. California DOJ and the FBI's NGI).

Latent impressions which meet the quality requirements to be searched in the WIN ABIS are searched against databases of known tenprint or palm print exemplars. Impressions which are not identified as a result of the search are routinely registered into an unidentified latent prints database. As new exemplars are submitted to WIN or NGI, they are automatically searched against all registered latents in the respective unidentified latent prints database. When a potential match is generated, the original submitting agency is notified and a new request may be opened to compare the generated subject to the unidentified latents from the original request.

Retention of unidentified impressions in the WIN database is limited by an expiration date linked to the offense. When multiple offenses are listed, the offense with the longer statute of limitations is generally chosen. When the expiration date is reached, the impression is removed from the database and is no longer subject to automated searches.

If a new search of a registered latent is desired, a new request may be submitted.

The identification of a source of an impression is considered a significant result. Further comparisons of the impression to listed subjects are not likely to be conducted, and any exclusions of the source may be omitted from the laboratory report.

Examinations may be limited based on case circumstances. Those limitations will be described in the laboratory report and the remaining examinations can be completed upon request.

COLLECTION

Evidence should be examined thoroughly for latent prints prior to collection. All visible impressions should be photographed (see below for photography instructions).

Latent prints developed by powder processing methods should be lifted and submitted to the laboratory. If the lift process may pose a challenge, the latent prints should be photographed prior to lifting. Lift tape may be placed over the impression, left in place without lifting, and the item submitted to the laboratory.

Latent lift cards should be documented with the location and orientation of the latent print. Please provide written information and a simple sketch of the object to describe the location from where the lift was made. Small directional arrows are helpful in orienting the placement of a latent print. Written information should include the date, case number, crime scene location, the object from which the lift is made, and name of person making the lift. If any of the officer's prints appear on the lift tape after lifting, those impressions should be crossed out and initialed (figures 1 and 2).



Figure 1

Date	Crime	Case No.	— Sketch and/or Remarks —
6/30/15	Burg.	15Z1234	
Victim Chip Chuck			
Address of Incident 18A Big Tree Ln			
Location of Latent Prints Lifted Door window			
Prints Lifted by: Diego Garcia			
ID No. XXX			
Lightning Powder • (800) 347-1200 www.lightningpowder.com			
Re-Order #1-2501			

Figure 2

If evidence is to be submitted chemical processing, the officer should avoid the use of powder processing as powders could interfere with chemical processing. Any processing completed prior to submission, including cyanoacrylate fuming, should be noted on the Request for Laboratory Examination form.

Friction ridge impressions should be photographed using a high resolution digital SLR camera. The largest file format available should be used and images should be captured in a loss-less file format such as .tiff or RAW. The camera should be perpendicular (at a right angle) to the latent print so that the camera sensor is parallel to the impression. Every attempt should be made to fill the frame with the impression to ensure that the maximum amount of detail is recorded and that the image is captured at a minimum of 1000ppi. A scale should be placed next to the print and on the same plane for the photograph. The scale is important to allow the image to be sized 1:1 for comparison and possible search of the ABIS system. The object or

area containing the impression should also be photographed to provide the context or orientation of the impression.

Known Exemplars

The requestor should take inked prints from all persons known to have legitimate access to the evidence (elimination prints) to allow for comparison against any latent prints recovered. All tenprint cards and pages included in a set of exemplars should be labeled with the identifying information of the subject as well as the date and initials of the individual recording the exemplars. These exemplars should be treated like items of evidence and should be packaged accordingly. Alternatively, if individuals already have known prints on file, list their name, date of birth, and SID number on the laboratory request. Latent prints recovered from items of evidence often include palms or prints made from the second or third joint areas of the fingers. For this reason, it is always best to obtain comprehensive known prints (major case prints) for comparison.

A properly inked and rolled tenprint card should have all ten fingers and thumbs rolled nail to nail with minimal smears, along with plain (or flat) impressions at the bottom of the card.

In addition, each finger and thumb should have the center, both sides, and extreme tips inked and recorded (figure 3).



Figure 3

The palms should be inked from the tips of the fingers to the base of the wrist or the wrist crease. The outside of the palm should also be inked and recorded separately which is known as the 'writer's palm' (figure 4).



Figure 4

Post Mortem Prints

In homicide and death investigation cases, the agency should make every effort to obtain a complete and comprehensive record of all friction ridge detail. The laboratory should be contacted if assistance is needed.

If it becomes necessary to remove the hands or fingers from the body, notify the laboratory in advance of its intent to deliver the body parts in person. **Do not send body parts through the mail or other carrier services.**

HANDLING AND PACKAGING

REMINDER: Prohibited items include: Explosives, flammable liquids, razor blades, and syringes with needles or needles sheared or broken.

- Non-porous items (glass, aluminum cans, plastic bottles) should be packaged in containers to limit movement while in transit. Items should be submitted in separate containers if possible. If multiple items are submitted in the same container ensure the separate items will not contaminate others (leaking or cross contamination of biological substances). Items should be handled as little as possible and in a manner to avoid those areas that would be handled normally. Unnecessary layers of packaging and handling can easily damage latent impressions.
- **Do not pack the sealed evidence container with “filler” material (shredded paper, foam peanuts); these materials risk rubbing away any latent impressions.**
- It is strongly recommended that knives, firearms, or other sharp items be packaged in cardboard boxes and secured with plastic zip-ties. Make note on the Request for Laboratory Examination of any potential hazards present.
- Porous items (paper, cardboard) may be packaged in an envelope. Multiple porous items may be packaged in the same container. Handling of these items should be kept to a minimum even with gloves as glove marks can interfere with the development of latent impressions.
- Any wet items should be completely air-dried prior to submission.
- Adhesive tape, if possible, should be placed onto a sheet protector or a sheet of heavy plastic. Avoid "wadding" the tape. Do not package tape in paper containers.
- Latent print lift cards should be packaged in a properly sealed envelope or plastic bag of an appropriate size.
- Multiple lift cards may be submitted in the same packaging provided that each lift card is labeled with a unique identifying number and that the total number of lift cards contained is reflected on the outer packaging.
- Friction ridge exemplars should be packaged in a properly sealed envelope or plastic bag of an appropriate size.
- Latent lift cards collected at clandestine laboratories must be properly packaged to protect the health and safety of Crime Laboratory personnel. If latent print lift cards from clandestine laboratories are not packaged properly the evidence cannot be accepted. To package the lift cards properly, seal each latent lift card individually in plastic bags that have not been exposed to any potential contamination.
 - Note: When latent print processing is requested on items recovered from a suspected clandestine laboratory such as glassware, plastic baggies, and chemical containers, please call the WSP-SWAT team for assistance. Crime Laboratory personnel will not process evidence from clandestine laboratory “hot zones” for latent prints due to safety considerations for laboratory personnel.

DIGITAL EVIDENCE

INTRODUCTION

The Washington State Patrol's High Tech Crime Unit (HTCU) provides city, county, state, and federal law enforcement agencies with digital forensic technical support and training; and in accordance with established practices and standards of digital forensics processing, recover evidence that may exist on computer hard drives, cell phones and other digital media for use in related criminal and internal investigations.

ABOUT THE HIGH TECH CRIME UNIT

HTCU is a full service digital evidence retrieval and analysis unit. HTCU detectives are experienced professional investigators that can retrieve evidence without damaging or altering the original data. The data can be recovered from deleted or damaged file structures.

HTCU can provide an independent, impartial, and secure investigation while revealing and preserving important evidence, which agencies use to ensure an appropriate outcome to important digital criminal investigations.

HTCU SERVICES

Recovery of Cell Phone contents including (varies based on phone model and carrier):

Decoded Data	GPS	Applications	Internet Browser
Call Logs	Home Location	WhatsApp – Chat	History
Voicemails	Favorites	Viber	Cookies
Contact Lists	Recently found locations	Fring	Bookmarks
Locations (Wi-Fi, cell towers, and GPS fixes)	Last Journey	AIM	
Images	Last Fix	TextNow	
Video Files		TextFree	
Text messages (SMS)		Google+	
Multimedia messages (MMS)		Skype	
Emails		Tiger text	
Notes		Facebook	
Installed Applications		Motion X	
User Dictionary			
Calendar			
Bluetooth Device Pairing History			
Chats			
GeoTag Information			
Deleted Data			

Recovery of data from computer hard drives and other digital media (cameras, SD cards, thumb drives, CDs/DVDs, etc.) including:

- Recovery of e-mail files
- Recovery of deleted files
- Recovery of Internet History files
- Recovery of financial records
- Recovery of photo/video files
- Recovery of text documents

TYPICAL INVESTIGATIONS

Internet Crimes against Children, Homicide, Rape, Child Abuse, Financial Crimes, and Narcotics.

HANDLING AND SHIPPING OF EVIDENCE

HANDLING

No attempt should be made to power up a computer taken as evidence, as this may alter/destroy information stored on the hard drive.

Hard Drives should be submitted as found when seized, i.e. if in a desktop tower the entire tower should be submitted.

External hard drives, GPS units, digital cameras and other external devices should be submitted with power and connection cables.

Batteries should be removed from laptops and submitted with the computer and the power supply.

Cell phones should be left in the power state they were found in; if found off they should remain off, if turned on they should remain on.

Cell phones should be placed in airplane mode or secured from the network if possible. Cell phones unsecured from network connection should be transported in a faraday bag connected to a portable battery pack. **THE PHONE AND BATTERY PACK INCLUDING CONNECTION CABLE SHOULD BE SEALED IN THE FARADAY BAG.**

If submitting a cell phone to HTCUC that is turned on please contact HTCUC and notify the unit when the phone is expected to be delivered so they can insure the power supply is maintained.

Cell phones should be submitted with power and connection cables.

If any known biohazard is present the outside of the package will require a "BIOHAZARD" label or markings.

SHIPPING

Evidence should be shipped via UPS, Fed Ex, Certified Mail or delivered in person. When shipping digital media all items should be packaged properly with plenty of packing material. All items should include a Lab Request Form and a copy of the signed search warrant and affidavit or a signed consent to search form.

The address for shipping is:

Washington State Patrol/High Tech Crime Unit
106 11th Ave. SW, Suite 4100
Olympia, WA 98501

For questions or if delivering in person please call: 360-704-4242.

TOXICOLOGY LABORATORY DIVISION

Seattle Toxicology Laboratory
2203 Airport Way South, Suite 360
Seattle, WA 98134
Telephone: (206) 262-6100
FAX: (206) 262-6145

Federal Way Toxicology Laboratory
33810 Weyerhaeuser Way South, Suite 100
Federal Way, WA 98001
Telephone: (206) 262-6080

Email: toxlab@wsp.wa.gov

Website: <http://www.wsp.wa.gov/forensics/toxicology.htm>

PREFACE

In July 1999, the Washington State Toxicology Laboratory became a division within the newly formed Forensic Laboratory Services Bureau of the Washington State Patrol. The Washington State Patrol Crime Laboratory formed another division within the same bureau. It is important the user recognize that each Laboratory Division performs distinct services for the State of Washington and that the appropriate guidelines and requests forms be used for each.

The Toxicology Laboratory Division handbook is organized to provide the following:

- A description of services provided by the Toxicology Laboratory
- General guidelines for the collection, preservation, and packaging of physical evidence
- The procedure for submitting physical evidence

It is not possible for any handbook to be comprehensive for every type of case. The Toxicology Laboratory staff are available to advise you on any specific or unusual case. You can reach a forensic scientist to answer any questions you have by contacting the Laboratory.

INTRODUCTION

The Toxicology Laboratory Division provides toxicological services to all medical examiners, coroners and law enforcement agencies within the state. Forensic toxicology answers the question: “Did drug or alcohol use contribute to or cause an individual’s death or suspected intoxication?” In support of that effort, the Toxicology Laboratory provides the following services:

- Performs toxicological examinations of blood, urine and/or other tissues collected during a death investigation; or from living individuals who were either the victim of a crime or were suspected of committing a crime in which drugs and/or alcohol may have played a role. This includes suspected driving under the influence (DUI) of alcohol and/or drugs, victims of suspected drug facilitated sexual assault (DFSA), and miscellaneous drug related incidents or crimes. The Toxicology Laboratory reserves the right to decide which method(s) to use in the detection of alcohol and drugs in submitted casework.
- Provides consultation and interpretation for medical examiners and coroners on the results of toxicology analyses in death investigation cases.
- Provides consultation and interpretation for law enforcement agencies and attorneys on the results of toxicology analyses in driving and drug-facilitated crime related cases.
- Provides expert testimony in court trials, hearings, and depositions.

SAMPLE SUBMISSION

The Toxicology Laboratory provides forensic toxicology services for all law enforcement agencies, coroners and medical examiners within the State of Washington. The laboratory analyzes blood, urine, and other biological tissues or fluids for the presence of alcohol and/or drugs.

Sample Collection Kits

The Toxicology Laboratory may provide user agencies with kits for sample collection. To order any materials, please call or email the laboratory.

NEVER submit the vacutainer collection needle or any other needle with the samples. Asking the nurse or phlebotomist to resheath the needle is subjecting him/her person to unnecessary risks and is against OSHA regulations. The Toxicology Laboratory will not accept any case that includes a needle or a syringe with the needle attached. Similarly, do not submit the betadine wipes or gauze – these are discarded upon receipt.

NOTE: The cutting or shearing of a needle from a syringe is prohibited by federal and state regulations. [WAC 296-823-14010]

Collection and Submission to the Laboratory

Tubes should be completely filled, whenever possible. Submitting partially filled tubes, or using smaller tubes, may result in partial or incomplete testing. Each assay performed requires a minimum volume of blood and the laboratory may not be able to confirm the presence of drugs if insufficient sample is submitted.

All samples should be labeled with the subject's name and/or agency case number. It is important that, when labeling the blood tubes, the printing on the manufacturer's label should not be covered. In addition, the Toxicology Laboratory maintains quality assurance certificates from the manufacturer for specific lot numbers and, if tubes from another source are used, the laboratory may not be able to provide a certificate.

Not only should the proper collection tube be used but it should also be **inverted** after collection to dissolve the container additives within the sample. The additives serve to preserve the sample and to prevent its coagulation; both being requirements under Washington Administrative Code 448-14-020: (<http://apps.leg.wa.gov/wac/default.aspx?cite=448-14-020>).

Once the sample has been collected, place the evidence tape over the top of the tubes/containers. The initials or other identification of the person creating the seal should be placed on the seal or across the seal onto the container.

If urine is collected, please ensure the urine cup cap is sealed correctly to prevent leaking in shipment. This is a commonly encountered and may lead to the loss of the entire sample. **Label the specimen cup with the subject's name and/or agency case number.**

Complete the appropriate Toxicology Laboratory Request for Analysis form and submit along with the samples. Current forms are available online at: <http://www.wsp.wa.gov/forensics/toxicology.htm>. **Do not submit the Crime Lab RFLE forms.** The more information you provide in your request, the more thorough analysis the laboratory can perform. A telephone number and/or email address should be provided should any question arise during analysis. Please note the column on the far right-hand side of the Request for Analysis form is for *laboratory use only*. If the sample is a DRE, a copy of the DRE Face Sheet should also be sent with the completed request form.

Verify that the subject's first and last name on the request form and the samples are the same. When there is a discrepancy between the request form and the sample tubes, it is the Laboratory's policy to use the name on the sample tubes.

The request form should be packaged on the outside of the box containing evidence. This allows the Property and Evidence Custodian to access the request form without handling the specimen itself. All specimens should be refrigerated until sent. Specimens may be shipped to the laboratory or hand delivered Monday through Friday during business hours.

CASE TYPES

There are four main case types submitted to the Toxicology Laboratory: Driving Under the Influence (DUI)/Drug Recognition Expert (DRE) cases; Death Investigation cases; Drug Facilitated Sexual Assault (DFSA) cases; and Drug Investigation cases. Use the appropriate form for each type of case: <http://www.wsp.wa.gov/forensics/toxicology.htm>. If you have questions about which form to use, contact our office.

Driving Under the Influence (DUI)/Drug Recognition Expert (DRE)

Only blood/breath alcohol and blood THC test results are admissible in court as *per se* evidence of intoxication, so when alcohol is suspected and a legal breath test is not conducted, obtain a blood sample and not urine.

Death Investigation

For deceased subjects, blood is typically the most valuable sample for postmortem toxicological testing. Since peripheral blood is less susceptible to postmortem changes, it is the specimen of choice and is considered the most reliable for interpretation of toxicological testing.

Where available, vitreous humor fluid should be routinely collected (all available fluid should be collected, typically 3-5 mL in each eyeball). It is more than 98% water, and any drugs present in the blood will eventually equilibrate in the vitreous. Vitreous is a particularly useful sample for testing for alcohol to distinguish between postmortem production of alcohol and alcohol ingestion, since the eye as an enclosed organ is generally more resilient to microorganism infestation than other tissues.

Urine, liver, cerebrospinal fluid, gastric contents, other tissues and maggots may also be useful specimens for analysis depending upon the circumstances of the case.

Whenever a death may involve unusual circumstances or unusual drug(s), it is advisable to contact the Toxicology Laboratory for guidance in sample collection.

Drug Facilitated Sexual Assault (DFSA)

Urine is typically the specimen of choice for drug facilitated sexual assault testing because it provides the longest window of detection. For the best toxicological interpretation, a urine specimen should be obtained within 120 hours of incident.

Blood should additionally be collected if the patient presents within 48 hours of the alleged incident or if the patient appears sedated and/or intoxicated.

Ensure all specimen containers are properly documented and labeled with the victim's name, date and time of collection, and approximate time after the alleged assault.

Drug Investigation

Non-driving related cases on living subjects where drugs are suspected (i.e. homicide suspect) are considered Drug Investigations. It is important to collect two full gray-top vacutainer tubes of blood whenever possible as drug testing consumes more sample than alcohol testing.

If there is a significant delay between the incident and the blood collection (> 2 hours), a urine specimen may also be useful in Drug Investigation cases. In general, blood provides better evidence of drug influence than urine, but drugs will be detected for a longer time in urine than blood.

TOXICOLOGY LABORATORY FORMS

Current Toxicology Laboratory Request for Analysis forms can be obtained electronically at <http://www.wsp.wa.gov/forensics/toxicology.htm> or by emailing your request to toxlab@wsp.wa.gov. DO NOT SUBMIT CRIME LAB FORMS. Please note that the column on the right hand side of the form is for "Laboratory Use Only". Forms include:

Driving Under the Influence/DRE – Request for Analysis

Death Investigation – Request for Analysis

Drug Facilitated Sexual Assault – Request for Analysis

L.C.B/Drug Investigation – Request for Analysis

TOXICOLOGY LABORATORY DRUG SCOPE

A list of drugs the laboratory tests for can also be found at <http://www.wsp.wa.gov/forensics/toxicology.htm> This list may change as additional methods are developed.