FORENSIC FIELD GUIDE

OREGON STATE POLICE

FORENSIC SERVICES DIVISION

FORENSIC FIELD GUIDE

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1.0 INTRODUCTION

The Oregon State Police Forensic Services Division (OSP FSD) has five laboratories across the state located in Bend, Central Point, Clackamas (Portland Metro), Pendleton and Springfield. These labs provide services in the scientific examination of physical evidence, collection and preservation of evidence, crime scene response and expert testimony regarding scientific examinations. In addition, the OSP FSD manages and administers the DNA CODIS database and the State of Oregon's breath-testing instruments and officer certification.

All five OSP laboratories are accredited by the ANSI National Accreditation Board (ANAB) to the ISO/IEC 17025:2017 and ANAB AR 3125 standards. Additionally, the DNA Unit is accredited to the FBI Quality Assurance Standards (QAS) for forensic DNA testing and databasing laboratories.

The services of the laboratories are available to all local, state, and federal law enforcement agencies in Oregon for the purpose of rendering assistance in criminal investigations and judicial proceedings. Analyses will also be conducted for the defense upon court order.

This guide is intended for use by law enforcement personnel (i.e., evidence technicians, criminalists, officers, etc.) to support the following activities:

1. Ensure proper evidence collection, packaging and storage
2. Communication of evidence acceptance criteria for items submitted to the Laboratories
3. Understanding the testing capabilities of the Forensic Laboratories

Following these guidelines helps to ensure the integrity and security of the evidence, the safety of lab staff members, prevents unnecessary delays and optimizes the quality of the analytical results.

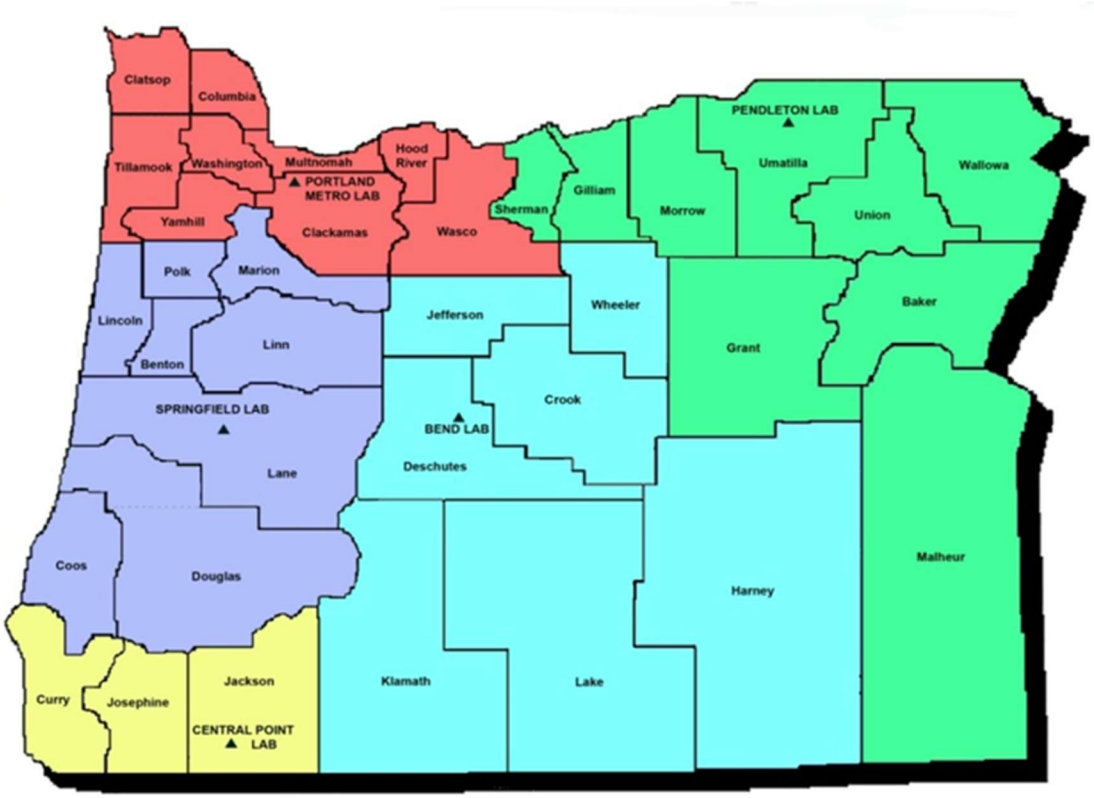
All agencies are encouraged to keep in regular contact with their local laboratory to stay abreast of changes to lab services or submission requirements. Changes are also communicated via the Laboratory Online Information System (LOIS) and posted on the Forensic Services Division website.

This Forensic Field Guide is accessible via the Oregon State Police Forensic Services website:

https://www.oregon.gov/osp/programs/forensics/Pages/Law-Enforcement-Resources.aspx

2.0 LABORATORY LOCATIONS AND SERVICES

General service areas for the Oregon State Police Forensic Services Division Laboratories are shown in the coverage map below.



- Bend Forensic Laboratory: 541-388-6150
  - Crook, Deschutes, Harney, Jefferson, Klamath, Lake, Wheeler
- Central Point Forensic Laboratory: 541-776-6118
  - Curry, Jackson, Josephine
- Pendleton Forensic Laboratory: 541-276-1816
  - Baker, Gilliam, Grant, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa
- Portland Metro Forensic Laboratory: 971-673-8230
  - Clackamas, Clatsop, Columbia, Hood River, Multnomah, Tillamook, Wasco, Washington, Yamhill
- Springfield Forensic Laboratory: 541-726-2590
  - Benton, Coos, Douglas, Lane, Lincoln, Linn, Marion, Polk

LABORATORY SERVICES

Services provided by each laboratory in the Forensic Services Division are shown below. Evidence may be transferred between labs to complete work.

Portland Metro Lab

Biology Processing

Chemistry (Controlled Substances)

- Meth Quant (Purity)
- Cannabis Determination

DNA

- Autosomal DNA analysis (STR)
- Y-STR analysis
- CODIS

Field Investigations/Crime Scene Analysis

Firearms/Toolmark analysis

Implied Consent Program (Breath Alcohol Calibration)

Latent Print and Impressions Analysis

Toxicology

- Postmortem and Antemortem Drug and Volatiles

Trace Evidence analysis

- Arson
- Fibers
- Hairs
- Miscellaneous
- Paint

Pendleton Lab

Biology Processing

Chemistry (Controlled Substances)

Field Investigations/Crime Scene Analysis

Firearms Processing

Latent Print Processing

Bend Lab

Biology Processing

Chemistry (Controlled Substances)

Field Investigations/Crime Scene Analysis

Latent Print Analysis

Central Point Lab

Biology Processing

Chemistry (Controlled Substances)

Field Investigations/Crime Scene Analysis

Serial Number Restoration

Latent Print Analysis

Springfield Lab

Biology Processing

Chemistry (Controlled Substances)

- Cannabis Determination

Field Investigations/Crime Scene Analysis

Firearms Processing

Latent Print Analysis

Serial Number Restoration

Toxicology

- Antemortem Blood Volatiles

3.0 CASE COMMUNICATION AND LABORATORY REPORTS

By submitting evidence for analysis or receiving lab reports, customers agree to certain information regarding confidentiality, reporting, and selection of methods (agreement available at https://www.oregon.gov/osp/Docs/FSD_Customer_Communication.pdf).

Customers of the OSP FSD should be aware of these routine laboratory policies:

- Evidence is typically returned to the submitting agency after lab analysis is complete. Some exceptions apply (e.g., DNA High Throughput Property Crime samples (HTPC).
- Selection of testing methods is at the discretion of the laboratory.
- Analytical lab reports will be provided in a simplified format. If more information about the analysis in a specific case is required, contact the laboratory.
- The OSP FSD complies with guidelines and laws in the release of reports and case information to appropriate law enforcement agencies, district attorney's offices, and other entities as dictated by discovery requests, public records requests, court orders, and subpoenas.
    - Requests for documentation related to litigation discovery, public records or other records in the possession of the division should be emailed to the FSD document request team at FSD.doc.requests@osp.oregon.gov

Laboratory Online Information System (LOIS)

Electronic lab reports and case status updates are accessible through the Laboratory Online Information System (LOIS). LOIS may also be utilized to contact analysts assigned to lab requests. A final report is released electronically through LOIS to the agency/customer that made the request for service. An automatic notification of the report availability is also sent to the District Attorney's office that serves that jurisdiction.

Any member of an agency served by the Oregon State Police Forensic Services Division who needs access to the work done on behalf of their agency may request LOIS access. Access can also be restricted upon request to assist with confidential investigations. The help button at the following website contains the procedure for accessing LOIS: https://xn.osp.state.or.us/LOIS/Login.aspx

For detailed instructions on the LOIS system, please see the LOIS help pages located at: https://xn.osp.state.or.us/LOIS/help/help.htm

Forensic Laboratory Evaluation Form and Surveys

Periodically, the Forensic Services Division will send evaluation forms or surveys to our customer agencies. These evaluations and surveys provide valuable feedback on our goal of providing quality and timely scientific, technical, and investigative support. Should you receive an evaluation form or survey, please take the time to provide feedback. Evaluations may be related to any of the following categories:

- Courtroom Testimony via this link: https://www.surveymonkey.com/r/FSDCourt
- Laboratory Analysis and Reports (sent via LOIS)

4.0 GENERAL EVIDENCE HANDLING AND COLLECTION GUIDELINES

It is important that evidence be collected, handled, and stored in a way that will ensure its integrity.

- Protect yourself and others by using gloves and personal protection. Use sharps-appropriate (or puncture resistant) containers for blades, syringes, and broken glass.
- Protect the evidence from loss, damage, or contamination by packaging it appropriately. Refer to packaging recommendations in the next section.
- Consider collecting all types of forensic evidence that may be meaningful in an investigation, even if it may not initially be submitted to the laboratory. When numerous evidence items are collected, it is strongly recommended that the evidence be triaged with lab staff prior to any evidence submission.
- Before evidence is collected, document its location and condition with notes, sketches, and/or photographs. This establishes chain of custody and the condition of the evidence as it was recovered.
- Obtain appropriate standards, when needed, for comparison to evidence. Examples include DNA standards, victim elimination fingerprints or palm prints, comparison standards of hair, paint, or fibers, etc.
- Evidentiary items such as blood, urine, or tissue should be refrigerated.
- When handling any item that will be submitted for Biology/DNA testing, appropriate measures including wearing gloves and a mask, should be deployed to prevent contamination.
    - Agencies should refrain from conducting any serological pre-testing, including presumptive testing for blood, seminal fluid or microscopic screening. If serological testing has been conducted by a non FSD laboratory or agency, additional requests for testing by the FSD may be limited or declined.

General Packaging Guidance

Appropriate packaging depends on the type of evidence, the condition of the evidence, and the laboratory examination(s) requested. Use the information in the table below (or call the lab) to select the proper way to package items of evidence. All packaging types should be clean and unused.

- Use packaging that is appropriate for the specific type of evidence, such as paper bags, envelopes, plastic bags (for non-biological evidence), cardboard boxes, sharps tubes, metal cans, glass jars, etc. For packaging specific to blood, urine, or tissue samples for toxicological testing, refer to the toxicology section of this guide.
- Choose packaging that is large enough to allow the item to be re-sealed after examination. Conversely, avoid oversized packaging when submitting small quantities of evidence (e.g., drug residues, paint fibers, or small items to be examined for latent prints).
- Ensure a proper and complete seal to prevent evidence loss and/or access.

- Agencies should mark the packaging with the agency's full name (no abbreviations), case identifiers (i.e., case number and item number), description of evidence, name/initials, and date.
    - Package each item of evidence separately.
    - Allow wet biological stains to air dry before packaging. All evidence items with potential biohazards, such as blood, semen, saliva, etc. must be clearly labeled with a "biohazard" label affixed to the outside of the container.
- Multiple sealed items may be stored in a convenience package (e.g., paper bag, or box) to assist with transport. This convenience packaging should NOT be sealed.

Evidence Packaging	
Packaging Type	**Uses**
Paper bags or envelopes	Most biological material and clothing (blood or semen-stained items, condoms, etc.), except clothing submitted for Arson analysis. Items for latent print processing. *If unable to air dry prior to packaging, submit to the laboratory as soon as possible and notify them that it is a wet sample*. Biohazardous materials should be marked accordingly.
Plastic bags or Ziplocs	Dry, non-biological material such as Drug evidence. Fresh plant or fungal material should be dried or packaged in paper.
Lined metal cans, specialized plastic bags, static-proof bags	Arson evidence, some Trace samples
Plastic buckets	Samples from clandestine laboratories that are individually packaged in glass vials and set in an absorbent material (e.g., vermiculite, kitty litter, etc.) in the plastic bucket. Caustic or corrosive liquids.
Leak-proof container (glass or plastic)	Liquid drug samples, syringe contents, samples from clandestine laboratory (glass containers only), miscellaneous trace samples, etc.
Paper folds and Post-It notes, then placed into a clean envelope	Small pieces of trace evidence, hairs, fibers, paint chips, etc. Place inside a larger paper envelope. Use of Post-It notes: use gloved fingers or a clean tool (e.g., forceps, tweezers, etc.) to collect the trace evidence, place it on the adhesive of a post-it note, and then fold the note over on itself and label.
Cardboard boxes	Firearms, knives, large pieces of plate glass (or broken glass), tools such as prybars or golf clubs, a piece of flooring with a shoeprint, etc. Secure items with zip ties when possible.

Evidence Seals

Evidence must be sealed in such a way that any attempt to tamper with the seal is visibly apparent. A tamper evident seal is a seal that is specifically designed to indicate breaking of the seal (e.g., frangible tape, bonded plastic via heat seal). Acceptable types of tamper-evident seals are heat seals, tamper-evident adhesive seals, tamper-evident tape, and a combination of packing tape or staples (for strength) and tamper-evident tape. Gummed-seal bags are not preferred. A proper seal ensures that evidence has not been accessed, altered, compromised, or lost during storage/transportation. A complete and tamper-evident seal is required except for large items that cannot be reasonably sealed (e.g., bicycles, furniture) or items that need to be dried (e.g., marijuana, bloody clothing). Sealed evidence must be initialed (or marked with an equivalent unique identifier) and, when possible, the initials/identifier should cross over the seal in such a way as to provide visual indication of entry into the evidence packaging if the seal is broken. Staples and other fastening techniques can be used **in addition to** the acceptable tamper-evident seal. See examples in the photos below.

Evidence submitted in person that is not properly sealed will not be accepted by the laboratory. Evidence that is not properly sealed and delivered via a commercial parcel delivery provider (UPS, FedEx, USPS) may be shipped back.

Note: If packing tape was used to seal the entire length of the paper bag, evidence tape applied perpendicular to the packing tape would be considered an acceptable seal.

Acceptable

Not Acceptable

5.0 SUBMITTING EVIDENCE

Evidence should be submitted by the primary investigating agency to the local regional laboratory, even if the local laboratory does not perform the requested service, unless it falls under one of the exceptions listed below or there is prior supervisor approval to send the evidence directly to another lab. For example, although DNA analysis is only performed at the Portland Metro Forensic Laboratory, evidence needing DNA analysis, including standards, should be submitted to the local laboratory.

Evidence Submission Exceptions Matrix

Request Type	Laboratory
Arson	Directly to the Portland Metro Laboratory, as soon as possible.
Antemortem Urine	Directly to the Portland Metro Laboratory.
Antemortem Blood	Directly to the Springfield Laboratory.
DNA HTPC Program only	Directly to the Portland Metro Forensic Laboratory.
Criminal Paternity Cases (including products of conception)	Directly to the Portland Metro Forensic Laboratory.

For cases in which multiple agencies are involved in an investigation, evidence should be submitted by the **primary** investigating agency for the duration of the investigation. If evidence is submitted by an additional agency, the primary agency's case number should be listed (as a secondary agency case # box on the Form 49) to assist with relating the cases. Only the primary agency and corresponding DA's office will have access to the lab reports in LOIS unless a secondary agency is listed on the Request for Services Form (Form 49).

Prior to submitting a large quantity of evidence in a single case, a triage discussion with lab staff should occur. OSP Forensic Scientists are trained to manage evidence and ensure that the evidence is referred to the appropriate section for examination. Submitted evidence may be transferred to another laboratory for appropriate analysis.

Methods of Evidence Submission

To ensure that a continuous chain of custody can be established and maintained, and to protect evidence from loss, damage, or contamination, the following evidence submission methods are allowed:

- Personal/Individual delivery (contact the lab for an appointment)
- USPS Mail (recommend tracking and signature confirmation)
- Commercial Parcel Delivery Provider (e.g., FedEx, UPS)

Content List for Shipped Evidence

Shipped evidence must include a content list of the evidence being submitted so that the laboratory can verify that it has received the intended item(s). The content sheet must include the agency case number and description of the packages. Additionally, the full name of the agency (without abbreviations) should be included on the content sheet. Packages received without a content list (if one cannot be provided) will be returned.

Example Content List:

Agency Case Number	Description (Agency Evidence #, Number and Type of Packages)	Lab Use Only
xx-xxx	#567 – One heat sealed plastic bag #568 – One tape sealed brown paper bag	

A pdf version of the *Submission Packing List Fillable Form* can be found here:

(https://www.oregon.gov/osp/programs/forensics/Pages/Requests-for-Services-Page.aspx)

5.1 REQUIRED SUBMISSION DOCUMENTATION

1. A complete, legible and signed copy of the current version of the Request for Services Form (Form 49) should be submitted with the evidentiary items. Current fillable forms are available here: https://www.oregon.gov/osp/programs/forensics/Pages/Law-Enforcement-Resources.aspx

   Note: Specialized laboratory request forms should be used for the following types of requests:

   - Sexual Assaults/SAFE kits- Form_49-Sexual_Assault.pdf
   - Blood or Urine collected as part of a DUII, MVA, Fatal MVA investigation- Form_49-DRE.pdf
   - High Throughput Property Crime (HTPC)- Form_49-HTPC-DNA.pdf

   All other request types should be documented on the General Request for Services Form.
2. An agency report or narrative that describes the items of evidence submitted must be provided to the laboratory for all requests **except** toxicology, blood volatiles (i.e., blood alcohol), HTPC DNA analysis, and controlled substance analysis including methamphetamine quantitation, cannabis determination, and anonymous analysis. This report/narrative should include necessary context about the collection location, associated individual(s), and other details that clarify the request for lab services.
3. If an item is shipped via commercial carrier, a content list for all items in the shipped package **must** be included.

Cancellation of Lab Requests

The submitting Law Enforcement Agency or District Attorney's Office may cancel a lab request at any time and should notify the laboratory that testing is no longer needed as soon as possible. Timely communication helps prevent unnecessary testing. If at the time of the cancellation, the evidence has been opened or is in the process of analysis, a report describing the work completed to date will be issued.

OSP FSD may cancel a request for analysis and return the evidence to the submitting agency. Reasons for canceling a request will be communicated to the requesting agency and may include but are not limited to the following:

- Notification from the prosecutor (or via online court documentation) that the case has been adjudicated/resolved by dismissal, plea, diversion, etc.
- There is no indication of a crime
- The lab is unable to perform the work requested
- A Sexual Assault Forensic Evidence Kit that meets the definition of an anonymous kit (refer to ORS 181A.323 and 181A.324)
- Evidence is not properly sealed, described and/or package

Avoiding Testing Delays

The following may result in unnecessary testing delays and require resolution prior to initiating the analytical process:

- Omission of required incident narrative or police report. An agency report that describes the items of evidence submitted must be provided to the laboratory for all requests **except** toxicology, blood volatiles (i.e., blood alcohol), controlled substance analysis, methamphetamine quantitation, anonymous analysis, and DNA HTPC analysis. This report should include necessary context about the collection location, associated person(s), and other details that clarify the request for lab services.
- An appropriate standard was not submitted. Examples include DNA standards, victim elimination fingerprints or palm prints, comparison standards of hair, paint, or fibers, etc.
- Evidence was received by certified carrier and did not include a list of the contents, or the content list is inaccurate.
- An obsolete or incorrect version of the Request for Services Form (Form 49) was submitted.

Evidence is not properly sealed and/or packaged.

The description of the evidence on the submission paperwork is too vague or substantially different than the evidence that is received (e.g., missing evidence; dramatic difference in count, color, size, or shape; incorrect caliber or make of weapon; more cartridge cases were received than described; wrong name or case identifiers on evidence)

Excessive packaging and/or extraneous items that do not require testing are included.

6.0 SERVICE TYPES

6.1 FIELD INVESTIGATIONS (CRIME SCENES)

Field Investigations (Crime Scene Analysis) involves the analysis of physical locations or objects suspected of being involved in a crime. Analysis may include recognition, documentation, collection, and preservation of evidence and/or performing scientific analysis, interpretation, and reconstruction.

OSP FSD is available to assist with field investigations at the request of any law enforcement agency, District Attorney's Office or the State Medical Examiner's Office. A request can be made during normal business hours (8:00 a.m. to 5:00 p.m., Monday-Friday excluding holidays) by calling the applicable local laboratory (see laboratory contact information below).

During non-business hours and holidays, call OSP Dispatch and request an OSP FSD crime scene response team. Dispatch will notify the OSP FSD on-call supervisor.

Northern Command Center: 503-375-3555 or 800-442-0776

Southern Command Center: 541-664-4600 or 800-442-2068

FIELD INVESTIGATION RESPONSE COVERAGE

The service area counties for crime scene response are as follows:

Bend Forensic Laboratory: 541-388-6150
Crook, Deschutes, Harney, Jefferson, Klamath, Lake, Wheeler

Central Point Forensic Laboratory: 541-776-6118
Curry, Jackson, Josephine

Pendleton Forensic Laboratory: 541-276-1816
Baker, Gilliam, Grant, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa

Portland Metro Forensic Laboratory: 971-673-8230
Clackamas, Clatsop, Columbia, Hood River, Multnomah, Tillamook, Wasco, Washington, Yamhill

Springfield Forensic Laboratory: 541-726-2590
Benton, Coos, Douglas, Lane, Lincoln, Linn, Marion, Polk

Laboratory management will assess each request based upon the crime type, the complexity of the forensic services needed, available resources within the laboratory, the investigating agency, and the anticipated response time. FSD field investigation response is generally limited to death investigations, missing persons, skeletal remains/buried body recovery, and officer-involved shootings although crime scene assistance may be provided for other person crimes and/or cases in which public safety may be a

concern (e.g., attempted murder, assault, sexual assault, hit and run, kidnapping). In most circumstances, the FSD response team will NOT respond to burglaries, unauthorized use of a motor vehicle, theft, or other property crimes. If special circumstances exist that require the skills of trained forensic personnel, scene assistance may be provided for additional types of crime scenes.

Scene security is required and is the responsibility of the investigating agency. The scene perimeter should be fully secured, and scene entry should be controlled and limited to only essential personnel. Scenes are complex and can take anywhere from several hours to multiple days to process. It is the responsibility of the investigating agency to provide scene security from the time the OSP FSD crime scene team arrives until they depart. Forensic scientists are non-sworn OSP employees, and their work requires a fully secured scene.

Prior to submitting any evidence from a crime scene, it is strongly recommended that agencies contact the primary responding Field Investigator to triage the case. Evidence associated with a scene to which FSD Field Investigators responded will be submitted to the agency's local laboratory even if the response team was dispatched from another region.

Agencies requesting a Field Investigation response team will be asked to provide the following information:

- Name and contact information of requesting official
- Name and contact information for on-scene lead investigator (if different from above)
- Status of search warrant

Reminders while waiting for team response:

- Limit personnel inside the scene
- Do not move items
- Once an FSD Field Investigator has been assigned, they will reach out to discuss scene specifics and estimated response time

Field Investigation Services Offered

- Evidence identification, documentation, preservation, and collection for autopsy, scene, and vehicle processes
    - Biological material (e.g., blood, DNA, semen, saliva, vaginal secretions)
    - Firearms/Toolmark evidence
    - Impression development, casting, and lifting (e.g., shoe or tire impressions)
    - Latent print processing
    - Coordination of personnel for major case prints Trace evidence collection (e.g., hair, fiber, glass, paint, physical fit)

- 3D Scanning/scene diagraming
- Photography
- Chemical testing for blood
    - Visible
    - Non-visible
    - Animal vs. Human
- Use of an Alternate Light Source to search for biological evidence (i.e., bodily fluids)
- Buried body excavation and scattered remains recovery
- Metal Detection
- Trajectory determinations
- Bloodstain Pattern Analysis (at scene or in-lab)
    - Pattern classification
    - Event reconstruction
- Crime Scene Reconstruction

The scene response team can provide the following:

- Media card(s) with images from scene prior to analyst departure
- Assistance with packaging and sealing collected evidence
- Analytical report addressing observations and examinations at the scene, test results, and any conclusions and/or opinions drawn by the analyst
- Expert testimony covering all aspects of scene documentation, analysis, and report
- Vehicle Processing (scene circumstances may determine best location for processing)
    - On scene
    - At agency facility
    - At the Laboratory

6.1.1 Field Investigations (Autopsy)

OSP FSD can provide autopsy assistance even when FSD staff did not respond to the related crime scene. Any OSP FSD involvement in an autopsy must be coordinated with the State Medical Examiner's Office. OSP FSD staff can assist in arranging and coordinating this process. Examples of OSP FSD assistance at autopsy include:

- Non-routine evidence collection and packaging

- Documentation of non-routine evidence (e.g., trace evidence)
- Photography of elements not routinely captured by the Medical Examiner's Office (general autopsy photography may be included if mutually agreed upon)
- Recording Major Case Prints
- Collecting prints using advanced deceased-printing techniques
- Standard fingerprint collection (e.g., 10-prints) is generally an agency responsibility.

6.1.2 Field Investigations (conducted by non-FSD personnel)

Agencies across the state employ crime scene staff with varying roles. The FSD will typically not repeat testing already performed by an agency (for example, latent print processing or phenolphthalein blood testing). Before conducting any testing or processing at a scene, please be aware that doing so may prevent the FSD from performing the same procedures at a later date. In addition, some testing methods may limit or prohibit subsequent testing. For example, latent print processing may preclude subsequent DNA analysis.

Agency Guidance for Capturing Quality Scene Photos

Sequencing of images

- Capture images in a progression which allows for recreation of scene at a later date
- Overall, Mid-range, and Close-up
    - Overall images establish scene context and location of evidence
    - Mid-range images show the item in its immediate surroundings and relative position to other types of evidence
    - Close-up images detail the specific item of evidence and can be used for identification
        - Capture image as close to 90-degrees as possible
        - Use a scale (e.g., ruler, L-scale)
        - Fill the frame (i.e., viewing window) with evidence, scale, and/or placard designation

File Formats

- Lossless format (preferred)
    - RAW (preferred)
        - TIFF
    - Lossy format
        - JPEG- Ensure camera is set to capture the highest resolution JPEG possible

Examples of images to capture

- 360° perimeter view of the overall scene
- Scene location established by landmarks (e.g., street signs, address numbers, adjacent areas)
- Apparent and/or potential access routes to/from the scene
- Entrances and exits to the structure
- Interior overall views with an overlapping series for each room (including ceilings, doorways, hallways, etc.)
- Mid-range and close-up views of individual items of potential evidence
- Continuity should be maintained between mid-range and close-up views
- Overall views that include evidence markers in relation to each other

Agency Guidance for Vehicle Examinations conducted by non-FSD personnel

Note the following information about the vehicle:

- Year
- Make
- Model
- License plate
- VIN
- Color
- Areas and Descriptions of Damage

Based on the case circumstances, consider the items in the following (not all-inclusive) list. It may help to divide the vehicle passenger compartment into quadrants and search each quadrant from ceiling to floor.

- Examine the exterior of the vehicle. Look for transfer evidence relevant to the case (e.g., paint from a hit-and-run vehicle, clothing impressions on the plastic of a front bumper, hair or fibers caught on the broken edge of windshield glass).
- Document tire information for all tires including manufacturer, type, and size. If the tires need to be compared to tire track evidence the forensic laboratory should be contacted to assist in collecting an exemplar from each tire.
- Note the position of seat(s), tilt wheel, accelerator and brake pedals, and rearview mirror.
- Examine the interior of the vehicle and the trunk for potential evidence, including any fiber-plastic fusion which may help determine where persons were located at the time of a crash.
- Examine the engine compartment and undercarriage of the vehicle for potential evidence.

- Take known standards from the upholstery, carpet, or other vehicle for possible later comparisons. Refer to the Trace section of this guide for instructions.
- If paint or glass damage is apparent, take known standards from the broken glass and areas of damaged paint. Each broken window/mirror and each damaged vehicle body panel requires a separate standard. Refer to the Trace section of this guide for instructions.

6.2 BIOLOGY PROCESSING / BIOLOGICAL EVIDENCE

The Biology Processing discipline provides case consultation and triage and is responsible for the processing and sampling of biological evidence, including SAFE kits. The discipline conducts screening for blood, semen, and saliva and collects appropriate samples to forward on for DNA analysis.

List of Services

- Case Consultation/Triage
- Blood Testing
- Saliva Testing
- Semen Testing
- Sampling for DNA analysis
- SAFE Kit Sampling

Case Consultation/Triage and Evidence Submission

Prior to submitting evidence, investigators are encouraged to contact their local laboratory by phone or email for a case consultation/triage. DNA evidence submission follows the “Five at First” referral model. Under this model, no more than five samples are typically sent for DNA testing in a single round, and these five samples may come from fewer than five items and do not include standards. Some items may yield multiple samples for DNA, so taking time to triage a case in advance, particularly when multiple items are involved, helps ensure more efficient processing.

DNA analysis is most successful when the sample originates from a body fluid such as blood, semen, or saliva, though other evidence types—like wearer DNA or items subjected to aggressive handling—may also be suitable for Biology Processing/DNA analysis. Items should be submitted to the local laboratory for examination and sampling.

6.2.1 Baseline Measures for Contamination Prevention

When handling any item that will be submitted for Biology/DNA testing, appropriate measures to prevent contamination should be employed. The following is a list of best practices to avoid contamination:

1. Wear gloves and a mask while collecting biological samples.
2. Change gloves frequently or anytime gloves are contaminated with biological material.
3. Avoid touching the tips of cotton swabs or bringing them in contact with unintended surfaces.
4. Avoid talking over swabs or other evidence, blowing on swabs to make samples dry faster, etc.
5. Consider purchasing individually wrapped sterile swabs (e.g., Bode swabs).
6. Do not touch the water dropper bottle tip to any surface or evidence.
7. Clean tools (such as scissors or tweezers) that you might use to collect evidence with a dilute bleach solution or product containing bleach. Alcohol should be used to rinse residual bleach from those items that will come in direct contact with the evidence. Do not use commercial

disinfectant products (such as Clorox wipes) for the purposes of decontamination unless they contain bleach or are designed specifically for laboratory surface decontamination.

8. Do not lick envelope seals; instead, seal with tape.
9. Package items separately (individual paper bags or envelopes).

Biohazard Materials

All evidence items with potential biohazards, such as blood, semen, saliva, etc. must be clearly labeled with a "biohazard" label affixed to the outside of the container.

Evidence Packaging Considerations

All evidence should be individually packaged in breathable packaging (e.g., paper bags or envelopes), tape sealed, initialed, labeled, and stored at room temperature.

Wet items should be air dried prior to packaging when possible. While air drying, clean paper should be spread under the item to catch any debris, which may be dislodged during the drying process. Clean paper should be placed between items hanging next to each other to prevent cross-contamination.

Evidence that cannot be dried:

- Should be kept cold by refrigeration or freezing.
- May be placed in plastic packaging if placed in cold long-term storage.

Biological Fluids: Blood, Saliva, and Semen

Bloodstains may appear red, red-brown, tan, gray, or yellowish. Bloodstains may be undetectable to the unaided eye depending upon evidence and stain characteristics.

Saliva stains are not typically evident from a visual examination. However, certain types of evidence frequently contain traces of saliva (e.g., cigarette butts, drinking containers, adhesive surfaces of envelopes, chewing gum, bite marks, masks, air bags, etc.).

Semen stains may appear white, off-white, yellow, tan or colorless and may have a crusted appearance. Semen stains may be undetectable to the unaided eye depending upon evidence and stain characteristics.

In addition to DNA, these body fluids contain cells and proteins that allow the laboratory to perform the following examinations:

- Presumptive testing (for blood, saliva, and seminal fluid)
- Testing to indicate human or non-human blood
- Microscopic examination (for spermatozoa)
- Targeted swabbing of areas for potential DNA

Collecting Body Fluid Evidence

If it is reasonable to transport, the **entire item** may be collected and submitted to the laboratory.

- Each item of evidence should be packaged separately and carefully to prevent loss of any trace evidence (e.g., hairs) that may be present.

If the stained object (e.g., installed carpet or flooring) is not being transported, collect the suspected body fluid by swabbing or cutting.

Collection of Body Fluid Evidence via Swabbing

This collection method may be desirable when the body fluid is on an object that is not easily transported and is non-porous (not absorbent) or if the body fluid is liquid or moist.

- Moisten a sterile cotton swab using 1-2 drops of distilled water or tap water. If the body fluid is wet or moist, dry swabs can be used for collection.
- Gently swab the stain with the cotton tip until the swab is saturated. Continue collecting the stain until it is either completely collected or a sufficient number of swabs (up to 4) have been saturated. **Attempt to concentrate the stain on as few swabs as possible.**
- Allow the swabs to thoroughly air dry.
- Place the dried swabs in a paper container (e.g., paper envelope or bag). Swabs collected from the same stain should be packaged together heads facing the same direction.
- Properly label and seal the container.

Collection of Body Fluid Evidence via Cutting

This collection method may be desirable when the dried body fluid is on an object such as the upholstery of a car seat or carpeting. Use a clean, sharp knife, scalpel, razor blade or scissors to cut the stained area, leaving unstained margins surrounding the stain. Package into a paper container (e.g., paper envelope or bag) and properly label and seal the container.

It is recommended that LEA staff consult with the District Attorney's Office before destroying property.

If it is suspected that a semen stain is on an object that cannot be easily submitted to the laboratory, contact the local laboratory for collection instructions.

Sexual Assault Evidence

Adult and Child SAFE kits can be ordered directly from the FSD website here:

https://www.oregon.gov/osp/programs/forensics/Pages/evidence.aspx#safekits

With the exception of rush cases (i.e., cases with a trial date or a public safety concern) or cases previously tested by Sorenson Forensics, the initial submission of sexual assault evidence should be limited to SAFE kits (if collected) and any relevant DNA standards (victim, suspect, and consensual partner). Additional items that are packaged separately may be rejected.

If the investigative questions are not answered by testing the SAFE kit, the lab should be contacted to determine what additional evidence will be examined. Additional item submissions often include:

- Clothing (particularly underwear)
- Condoms, tampons, sanitary pads, etc.
- Bedding

Note: SAFE kits should not be opened by the agency.

6.2.2 SAMS Track

The Sexual Assault Form 49 must be used for all sexual assault evidence submissions. In addition, all

SAFE kits submitted to the laboratory must be registered by the law enforcement agency in SAMS Track (https://sams.osp.oregon.gov). If an agency or user doesn't have the ability to enter a kit into SAMS Track, please send an email to samstrack@osp.oregon.gov to request access. For additional information on SAMS Track please see the OSP FSD website (https://www.oregon.gov/osp/programs/forensics/Pages/publicresources.aspx#sams).

6.2.3 Adult and Child Sexual Assault Forensic Evidence (SAFE-A and SAFE-C) Kits

Biological evidence associated with the body of a potential sexual assault victim requires special attention. The victim should be transported to a medical facility as soon as practicable to preserve biological evidence, and document and treat any physical trauma. Consider having photographs taken of any physical trauma and collecting blood and/or urine for toxicology as applicable. Attending medical personnel should collect the evidence by using the appropriate Sexual Assault Forensic Evidence (SAFE) Kit.

The likelihood of recovering semen evidence from a living victim decreases significantly once more than 120 hours have passed since the assault, though male DNA may still be detectable. SAFE Kit collection is recommended only within this 120-hour window; however, if there is uncertainty about the timeline, collecting a kit may still be appropriate. This time limitation does not apply to deceased victims, for whom SAFE Kit collection is advised regardless of the time elapsed.

Bathing, showering, and douching by the victim does not necessarily eliminate the possibility of finding semen, saliva, or trace evidence on the body. A SAFE Kit should still be collected under these circumstances.

Undergarments worn by the victim during and/or immediately after the assault should also be considered for collection. Package each clothing item separately.

6.2.4 Penile Swabbing Forensic Evidence (PSFE) Kits

If the incident occurred within the last ~24 hours, consider collecting penile swabs from the suspect (swabbing the external portion of the penis). The purpose of the PSFE kit is to collect DNA that may have been transferred to the male subject as a result of sexual contact. In the absence of a PSFE kit provided by the Forensic Services Division, evidence may be collected using sterile cotton swabs and envelopes.

6.3 DNA ANALYSIS

DNA analysis can be conducted on both person crimes and property crimes. DNA analysis is a multi-step process that tests for the presence of total human and/or male-specific DNA. A resulting DNA profile is comprised of genetic information obtained from the human DNA present in the sample. When an interpretable DNA profile is developed from evidence, it can be compared to relevant DNA standards (known-source DNA samples taken directly from an individual). Because no two humans have been shown to be genetically the same except for identical twins, this comparison can be a powerful investigative tool. In addition to direct comparison, evidence profiles can also be searched in the COmbined DNA Index System (CODIS) database. The DNA unit manages and administers the State's CODIS database.

Suitable DNA profiles from qualifying items of evidence can be compared to CODIS, a database that maintains qualifying DNA profiles from convicted offenders and items of evidence. In Oregon, this information is maintained at the state level. Searches of the database also occur at a national level.

DNA is found in most cells in the human body. The best sources of DNA are body fluids (e.g. semen, blood, saliva) but DNA analysis is also possible on samples that contain skin cells from a wearer or handler.

DNA analysis <u>can</u>:	DNA analysis <u>cannot</u>:
Provide an association between an item of evidence and an individual (or individuals) and give a statistical estimate in support of the association.	Determine the age or race of the person who deposited DNA on an item
Exclude a person from being the donor of an evidentiary DNA profile	Determine how old a sample is
Determine the sex of an individual who deposited DNA on an item	Determine how a sample was deposited
Determine that biological material is from a human	Differentiate between consensual and non-consensual sexual contact

Wearer DNA evidence results from contact with an individual's skin. Items considered for wearer DNA analysis should be submitted to the local laboratory for examination. Wearer DNA evidence can also be extended to items routinely handled by an individual but not necessarily worn, such as backpacks and duffel bags.

Evidence submitted for wearer DNA analysis (and possibly trace evidence examination) includes, but is not limited to, shirts, coats, pants, baseball caps, stocking hats, masks, disposable/non-fabric gloves (may also be suitable for latent prints), fabric gloves, and shoes.

Aggressive handling DNA evidence results from contact that is **limited but not casual**, which includes items such as ligatures or victim's clothing where the suspect groped or grabbed violently, or contact that is **casual but not limited**, which includes items such as the steering wheel of a stolen vehicle. Items considered for aggressive handling should be submitted to the laboratory for examination.

Evidence submitted for aggressive handling (and possibly trace evidence examination) includes guns, knife handles, tools used with force, swabs from skin-to-skin contact, etc.

Touch DNA evidence is the category of evidence originating from an item that has had **both limited and casual contact** with an individual. This category primarily includes objects touched by an individual's hand for a short period of time, such as door handles, drawer handles, light switches, countertops, etc. If there is some ambiguity with respect to whether the item falls under the touch or aggressive handling category, the DNA Unit should be contacted for more guidance.

Touch evidence will only be analyzed with prior approval from a DNA Unit Manager (or designee) at the Portland Metro Laboratory. The case should meet all the following criteria:

- The case is a rape, attempted rape, homicide, or attempted homicide.
- All other forensic avenues to identify a suspect or link a known suspect to the crime have been exhausted.
- A DNA result, possibly in conjunction with the CODIS database, is necessary to identify a suspect or link a known suspect to the crime. Evidence items will not be processed to determine, establish, or corroborate path of travel or location.
- There should be a reasonable expectation that the suspect handled the item.
- Every reasonable effort has been made to collect elimination standards from individuals who have routine or recent contact with these items.

Collecting Aggressive Handling or Touch DNA Evidence

Whether touch evidence or aggressive handling evidence, an abundance of caution should be used when swabbing or packaging an item for submission. Touch and aggressive handling evidence should be collected prior to the use of any latent print processing techniques on the item. This technique is intended for non-porous items.

1. Moisten a sterile cotton swab with 1-2 drops of distilled or tap water.
2. Gently swab the area suspected of having been touched or handled.
3. Follow with a dry swab to collect any remaining moisture.
4. Label the swabs as “wet” and “dry.”
5. Allow the swab to thoroughly air dry.
6. Place the dried swabs in a paper container (e.g., paper envelope or bag). Swabs collected from the same area should be packaged together and facing the same direction

DNA standards should be obtained from all listed individuals who may have contributed DNA to evidentiary items if those items will be referred for DNA analysis. This includes victim and suspect standards, and, in sexual assault cases, standards from any recent (within 5 days) consensual sexual partner(s). Elimination standards are especially critical when an item of evidence is collected from a person who can reasonably be assumed to have left their own DNA behind on an item (for example, standards from the regular driver(s) of a vehicle when submitting swabs from the steering wheel of a stolen vehicle). These elimination standards are compared to the DNA profiles obtained from the evidence and enable analysis to focus on DNA from a person of interest.

DNA profiles from convicted offenders will not be used in lieu of DNA standards for direct comparison to evidence profiles.

Standards are required for:

- Samples collected directly from someone’s person (including intimate samples, non-intimate samples such as clothing, or items recovered directly from someone’s pockets).
- Samples expected to have high levels of background DNA from regular use by a particular person or persons (e.g., steering wheel swabs, owned items such as backpacks or personal weapons).
- Samples that are not CODIS eligible (e.g., Felon in Possession gun swabs).

In these scenarios, suspect standards are necessary in addition to any pertinent victim or elimination standards.

If a SAFE kit is submitted without a victim DNA standard (this standard is generally included inside the kit), the SAFE kit will **not** be returned to the agency; instead, the SAFE kit will still be examined as per ORS 181A.324.

For living individuals, oral swabs (also referred to as buccal swabs) are recommended for routine use as a DNA standard. Oral swabs are collected by rubbing the inside of the individual's mouth with sterile cotton swabs. The swabs are air-dried and placed in an envelope. Blood standards (dried onto swabs or filter paper at autopsy) are also acceptable and are preferred as a DNA standard for deceased individuals that are not severely decomposed or have not recently received a blood transfusion. For recently transfused decedents, an oral swab standard is the appropriate DNA standard. If collecting a blood sample, a tube containing the preservative EDTA should be used (i.e., a purple or lavender topped blood collection tube). Liquid blood tubes should be stored refrigerated, never frozen.

The bleeding wounds of a living individual should not be swabbed for submission as a DNA standard in lieu of collecting oral swabs. Depending on the activity that led to the wounds, this type of sample could yield a mixture of DNA from more than one individual, no longer qualifying the sample for use as a DNA standard.

Y-STR testing is a specialized form of DNA testing, which involves the analysis of the Y-chromosome (male chromosome) only instead of all the human DNA in the sample. It is useful in DNA mixtures where there is an abundance of female DNA present relative to the amount of male DNA. Suspect standards are required for comparison, as Y-STR profiles are not entered into CODIS. Because the Y-chromosome is passed from father to son, men in the same paternal lineage (fathers, sons, brothers, uncles, etc., all having a common male ancestor) will generally have the same Y-STR profile. For this reason, traditional autosomal STR DNA analysis is generally preferred over Y-STR analysis.

6.3.1 Criminal Paternity

Criminal Paternity testing services can be provided; however, the FSD does not perform testing for civil paternity matters. To perform paternity analysis, DNA standards are needed from all three individuals in the paternity trio: known parent, alleged parent and child (see below for products of conception). **A reported race for the alleged parent is required**. If a DNA standard from the known parent cannot be obtained, paternity analysis may still be performed. CODIS cannot be used to identify the alleged parent.

OSP Criminal Paternity Product of Conception (miscarriage or abortions) Collection Kits are available at each OSP laboratory. These kits contain the supplies necessary to collect a sample to perform paternity testing on a product of conception (one microtube, envelope, evidence tape, and a copy of the Criminal Paternity Product of Conception Collection Kit Instructions). For products of conception, it is the responsibility of the health care provider to separate fetal tissue from maternal tissue and to submit the fetal tissue in a microcentrifuge tube as provided in the kit. Therefore, it is important that the provider has the collection kit and associated instructions at the time of the procedure. Ideal storage conditions for fetal tissue are refrigerated, not frozen. Once the DNA analysis of the fetal material is complete, remaining material should be kept frozen for long-term storage.

Criminal Paternity Product of Conception Collection Kits should be submitted directly to the Portland Metro Laboratory.

Secondary Standards may be used when a person of interest is unable to be located (e.g., missing person, fled area) or a standard cannot be obtained (e.g., lack of probable cause for a warrant). Suitable secondary standards include cigarette butts, drinking containers, or personal care items (e.g., toothbrush, razor) known to have been used *only* by the person in question. Note that if a mixture of DNA from more than one individual is obtained from a secondary standard, it is no longer suitable for use as a secondary standard. In addition, if a secondary standard is determined to match an evidence profile, a known standard will need to be submitted to confirm this match.

If no suspect standards are available, evidentiary items may still be referred for DNA analysis if the evidence is suitable for entry into CODIS. It is important to note that in the event of a probative association to a profile in CODIS, a known standard (e.g., oral swabs) will be required for confirmation and calculation of statistics to support the weight of the match.

6.3.2 High Throughput Property Crimes (HTPC) Program

This program was developed to help streamline analysis of property crime evidence for DNA. Law enforcement personnel receive training on how to evaluate and collect DNA evidence using a specific swab type and by following strict submission guidelines. Once an item is swabbed, that swab is submitted directly to the Portland Metro Forensic Laboratory, along with any necessary DNA standards (e.g., regular driver or owner of a vehicle when a steering wheel is swabbed) utilizing the HTPC specific Form 49 that can be found on the FSD website.

Each case is limited to one evidentiary swab at a time and must include all necessary elimination standards. If case scenario suggests multiple suspects, the lab should be contacted.

To submit items for HTPC, BODE swabs are required for use on evidentiary items. Only the following types of DNA are accepted under the HTPC program submission rules:

- Blood
- Saliva
- Swabs pertaining to the wearer of an item
- Steering wheel swabs from stolen vehicles
- Grip/handlebar swabs from stolen motorcycles or bicycles

If, after swabbing, the evidentiary item cannot be collected and retained as evidence (e.g., a steering wheel), a second swab should be collected for preservation purposes. Preservation swabs do not have to be BODE swabs and should not be submitted to the laboratory.

Specific to this program, aggressively handled items other than steering wheels and grip/handlebar swabs from motorcycles or bicycles are *not* accepted (e.g., burglar tools, smudge marks, points of entry, bats, lighters, guns, keys, saw blades). Touch items are not accepted for HTPC DNA analysis.

Law enforcement agencies that wish to receive training in the High Throughput Property Crime program should contact the Portland Metro Forensic Laboratory.

Private Laboratory Analysis

The OSP FSD is unable to offer DNA analysis of certain types of evidence (e.g., urine, bones, and drug paraphernalia associated with possession of a controlled substance [PCS]), certain case types, and cases in which there is no victim. The laboratory does not perform mitochondrial DNA analysis or testing for Forensic Investigative Genetic Genealogy.

Information regarding private laboratories available to conduct forensic DNA analysis can be found via an internet search. Please note that if evidence analysis by a private laboratory is performed without prior consultation with the OSP DNA unit, it may be impossible to search any profiles resulting from the private laboratory's analysis in CODIS.

Missing Persons and Unidentified Remains

The OSP FSD provide services related to Unidentified Remains (except for Latent Print Analysis) or Missing Persons (MP) in very limited circumstances. Contact the State Medical Examiner's Office below for additional information.

Missing Persons

For resources and information about CODIS-participating laboratories performing DNA analysis for MP Investigations, please contact the Oregon State Medical Examiner's Office Human Identification Program.

If a Missing Person case remains active and unresolved after 30 days have elapsed, a DNA sample directly associated with the missing person should be obtained. DNA Analysis on the majority of missing person cases will be performed by a designated CODIS-participating laboratory. Instruction regarding the requirements and the necessary forms can be found on the OSP FSD website under the "Missing Persons and Unidentified Human Remains" link.

(https://www.oregon.gov/osp/programs/forensics/Pages/Law-Enforcement-Resources.aspx#support)

Unidentified Remains

Refer to ORS Chapter 146 - Investigations of Deaths, Injuries and Missing Persons. All unidentified human remains will be submitted to and analyzed by the Oregon State Medical Examiner's (OSME) Office. The OSP Forensic Laboratories will not accept human remains except for human hands for identification purposes.

"Unidentified human remains" do not include human remains that are part of an archaeological site or are suspected of being Native American. Archaeological remains are covered under ORS chapters 97 and 390 and ORS 358.905 to 358.961.

Human Identification Program Contact Information:

Oregon State Medical Examiner's Office
ATTN: Hailey Collord-Stalder, PhD
13309 SE 84th Avenue, Suite 100
Clackamas, Oregon 97015
hailey.collord-stalder@osp.oregon.gov
971-673-8200 (General OSME phone)
503-932-8130 Cell phone

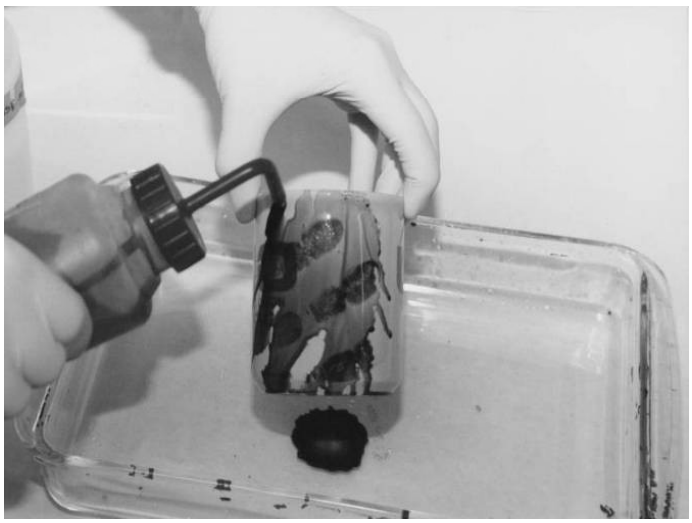
6.4 LATENT PRINT EVIDENCE

Friction ridge detail, also referred to as latent prints, is a widely recognized means of identification. Most crime scene evidence has the potential to reveal comparable latent print impressions; therefore, handle all evidentiary items with caution (i.e., with gloves and minimal contact).

Latent print processing is the physical and chemical processing of evidentiary items to develop and preserve friction ridge detail. The chemical composition of latent print residue is such that chemical techniques can be used to visualize latent prints on both porous and non-porous substrates. Friction ridge detail developed on evidentiary items can be compared to a person or persons of interest. The Western Identification Network (WIN) Automated Biometric Identification System (ABIS) and the FBI's Next Generation Identification (NGI) databases are composed of known fingerprint standards and can be utilized to search latent prints of unknown origin.

The latent print services the FSD provides include:

- Examination and processing of evidence for latent prints.
- Determination of whether latent prints are of comparison quality.
- Comparison of these latent prints to standards provided to attempt to identify a source.
- Search for a possible source by utilizing the Automated Biometric Identification System (ABIS) and/or the FBI's Next Generation Identification (NGI) database.
- Assist with deceased printing upon the request of the agency and/or State Medical Examiner



Collection, Packaging, and Submission of Latent Print Evidence

In most circumstances, smaller items of evidence should be collected and submitted to the laboratory in their entirety for full sequential processing. In these circumstances, no processing (photographs with scales, dusting, etc.) should be conducted by the agency unless absolutely necessary. Latent print evidence should be packaged in a way to minimize the movement of the object without being too restrictive to cause wiping/rubbing (this may destroy latent prints present on the object). Latent print evidence should never be in direct contact with "packing peanuts." Paper items may be placed in a single envelope package for submission

If items have been processed *prior* to submission to the laboratory, information regarding what type of processing was performed should be documented and submitted with the evidence. Chemical processing of evidentiary items should only be done in a laboratory setting.

Exposure of evidence items to water or dampness should be avoided; however, this exposure does not necessarily destroy all latent prints. It is important that any wet or damp object be air-dried before being packed for shipment.

Guide to Collection and Packaging of Latent Print Evidence	
ACCEPTABLE	**NOT ACCEPTABLE**
DO use gloves to pick up items of evidence being careful not to wipe possible latent prints off the surface. **DO minimize handling of evidence.** **DO fasten down large articles to a rigid surface to prevent shifting and contact with other items.** **DO put latent lift cards in envelopes and mark and seal.** **DO take complete and legible inked fingerprint and palm print standards of all subjects without SID numbers and/or FBI UCN numbers who may have handled the evidence.** **DO include full name, date of birth, and SID numbers for all involved persons on the Form 49.** **DO place evidentiary papers and documents in manila envelopes, seal and submit to the laboratory**	**DON'T** apply powder to obviously greasy, wet, or bloody surfaces, or to prints left in dust or soft putty. Photograph these latent prints or submit the items to the laboratory for processing. **DON'T** wrap nonporous items in cotton or cloth as they may damage or destroy latent prints. **DON'T** use "packing peanuts" directly in contact with the evidence. **DON'T** directly cover evidence to be examined for latent prints with evidence tape.

Digital Imaging

Visible latent prints can also be preserved via digital imaging. All digital images **must** be captured in a lossless format (e.g., TIFF or RAW), contain a visible measuring device and have a resolution of at least 1000 pixels per inch (ppi) whenever possible. An overall photograph (in addition to the close-up image of the impression) should be taken of the item (or scene) such that the latent print can be relocated on the item (or within the scene). Image files should be physically submitted to the laboratory (as evidence) via disk or thumb drive.

Latent Print Lifts

Larger objects that cannot be easily transported or packaged may be processed in the field. Processing may be performed by powdering the surface with an appropriately colored fingerprint powder and lifting any visible latent prints using clear lift tape. The tape is then adhered to a lift card. Whenever possible, an image of the latent should be acquired prior to lifting. Multiple prints in close proximity should be collected on the same lift, if possible. In some instances, one may need to perform multiple lifts of the same print to obtain the best quality lift. If multiple lifts of the same print are performed, the lifts should be clearly labeled as such. The location, orientation and any other pertinent information (e.g., multiple lifts of the same impression) should be recorded clearly on the back of the lift card. If it is unlikely that the latent print can be lifted due to the surface (e.g., a highly textured surface), then attempt to collect and package the evidence for submission to the laboratory

Submission of Inked Prints for Comparison Purposes

The investigator should take inked prints from all persons known to have handled the evidence (elimination prints) to permit comparison with any latent prints located on the submitted evidence. If the individual already has prints on file, their **full name, date of birth, and SID number or FBI/UCN number** must be listed on the Form 49.

Often latent prints found at the scene of a crime involve areas of the palms, second and third joints of the fingers, and the finger sides and tips. To aid in comparisons, the analyst may request that the investigator take clear and complete inked standards (major case prints) of all ridges on the hands of suspects or persons known to have legitimately handled the evidence. Palm prints should always include recordings of the lower finger joints, as well as the outer edge of the palm (writer's palm). Inked standards should be submitted with the evidence.

Automated Biometric Identification System (ABIS)

Suitable latent prints may be searched against the Western Identification Network (WIN) ABIS and/or the FBI's Next Generation Identification (NGI) database. Latent prints that remain unidentified after a search in ABIS may be registered in the Unidentified Latent Database (ULD) for future searches against new standards as they are added to the database. The agency will be notified via a report if a registered print in the ULD is later identified. If a case has been resolved and future searching of the latent print is not needed, the agency should notify the laboratory so the latent prints can be purged from the ULD.

Identifying the Deceased

Refer to "Unidentified Remains" section in this manual.

Routine identifications for the purpose of clearing a Computerized Criminal History (CCH) record are made through the Criminal Justice Information Services (CJIS) in Salem. Call 503-378-3070 for more information.

6.5 IMPRESSION EVIDENCE

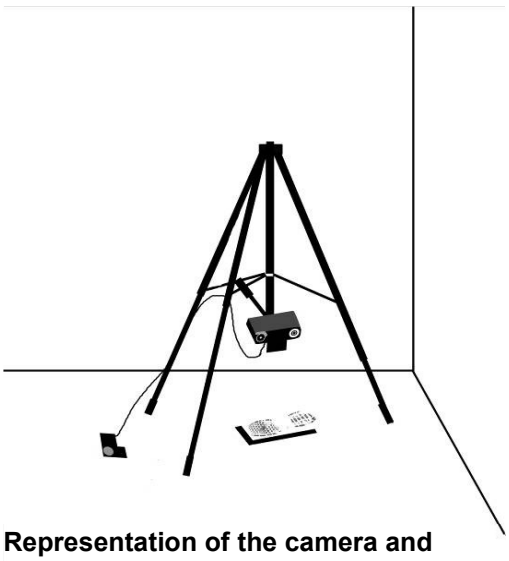
Shoe and fabric impressions are routinely present at crime scenes. Examination of these impressions may provide the investigator with valuable leads such as the type, make/model, and approximate size of the footwear. Even when suspect footwear is not available, images of impressions from scenes may be submitted to the laboratory for search in the Solemate® FPX database for make/model determination and comparison to impressions from other scenes.

Impressions made by other objects (e.g., weapons) may also be encountered and may be collected/documented using the methods described below. If impression evidence can be collected without damage, it should be photographed, packaged, and submitted to the laboratory for examination under controlled conditions.

- Always include a scale when taking photographs of impressions to be used for examination. The scale should be a two-dimensional ruler and should be placed on the same plane as the impression.
- Impressions in soil, sand, snow, or impressions which cannot be sent to the laboratory should be photographed and collected via casting or lifting.

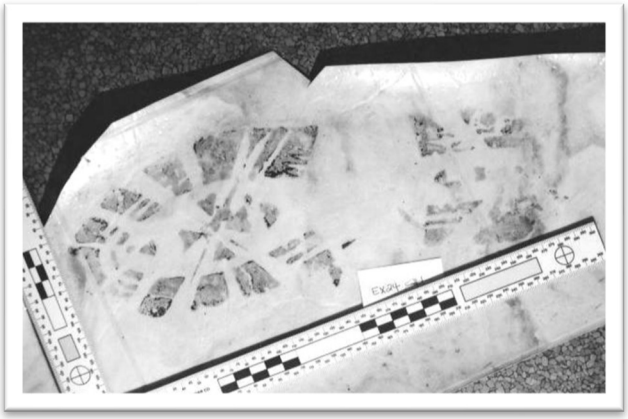
Photographing Impression Evidence

- Photographs of the evidence should always be taken *before* any attempt to collect it.
- Photograph the general scene that contains the impression evidence.
- Impression evidence should be photographed in an uncompressed format (e.g., TIFF or RAW).
- Place the camera on a tripod with the camera directly over and perpendicular to the impression. If the impression is on an angled surface adjust the camera to tilt it to a plane parallel to the impression. It is important to avoid taking the photos at an angle to the impression. This can result in the inability to accurately enlarge the images as needed for comparison.
- Adjust the camera height so the impression and scale fill the frame.
- Use overlapping exposures to record large impressions.
- Use side lighting at various angles and from various directions to illuminate tread design more clearly. This may require shading the camera setup from high, bright sunlight with a makeshift tent and access to a detachable flash unit.



Representation of the camera and tripod setup for shoeprint photography

Photograph of a shoeprint impression. Notice the shoeprint fills the frame, a scale is present, and the camera is directly over the shoeprint, not at an angle.



Three-Dimensional Impressions

Three-dimensional impressions are those that have a significant depth, in addition to the length and width of the impression. Commonly, they may be found in soil, sand, snow or other materials and the detail within the impression may vary according to the substrate. Casting is an effective method of collecting these types of impressions. Impressions should always be photographed prior to casting.

Photographs, however, are not considered a substitute for a cast. Do not clean out debris that is part of the impression or was present when the impression was made.

Casting Methods

Note: The methods described below are not applicable to casting of impressions in snow. Specialized techniques are required for casting of snow impressions. Should the need arise to cast impressions in snow, please contact the laboratory for assistance or advice regarding the casting of snow impressions.

Dental stone or die stone should be used to cast three-dimensional footwear impressions. Plaster of Paris is not recommended as an acceptable casting material. Dental stone can be obtained from local dental supply houses or in pre-made ready-to-use kits at minimal cost.

If using bulk dental stone, two pounds of dental stone may be placed into a gallon-sized Ziploc plastic bag; this amount will cast an average sized shoe impression. In preparation for use at crime scenes, numerous two-pound bags can be prepared and stored.

When using a commercially prepared kit, follow manufacturer instructions for mixing.

The following is the procedure for making a cast from a self-made (bulk) dental stone kit:

- Retrieve a two-pound bag, add about 10 ounces of water, and thoroughly mix in the closed bag. The mixture should have the consistency of thin pancake batter. If needed, add more water or dental stone to create the correct consistency.
- Metal forms may be placed around the impression to contain the casting mixture.
- Open the bag and with the bag at ground level, carefully pour the mixture into or next to the impressions, allowing it to gently flow into it. Fill the impression completely so that the mixture overflows out of the impression.
- When the cast is firm but still soft, scratch identifying marks on the exposed surface or write identifying marks with a permanent marker when the cast is dry.
- Allow the cast to dry for a minimum of twenty minutes in warm weather, longer in cold, wet conditions.
- Carefully lift the cast. **Do not try to clean the cast**; cleaning will occur in the laboratory.
- Package the cast in a large brown paper bag or cardboard box (not plastic) and allow it to dry for an additional 48 hours.

Two-Dimensional Impressions/Prints

A two-dimensional impression is one where there is no significant depth to the impression. A thin deposit of dust, mud, blood, or other material from a shoe onto a hard surface may create these impressions.

- Floors, glass, desktops, doors, paper items, etc. can retain a dust or residue impression at a scene. Some impressions may be clearly visible while others may be partially or totally latent.
- Latent dust shoeprints can often be located by turning out all lights and shining a flashlight across

the surface of interest at a low angle. For example, to search for latent shoeprints on a vinyl floor, place the flashlight on the floor (or near it) and allow the long beam of light to shine across the floor.

- Photograph the impressions before collecting.
- Attempt to enhance or lift the impression **only** if the entire item cannot be retrieved from the scene and submitted to the laboratory.
- Dry dust and residue impressions may be lifted with an electrostatic lifting device, gelatin lift, or adhesive lift. Contact the laboratory for purchasing information.
- Impressions made by wet or damp footwear can sometimes be enhanced by carefully dusting with fingerprint powder. A small portion of the impression should be dusted first to test the success of the powdering technique. The impression is then photographed and can be lifted with a contrasting gelatin or adhesive-lifting material. Contact the laboratory for information on where to purchase lifts.

Collection and Packaging

- Whenever possible, collect the impressioned item and submit it to the laboratory.
- Protect the impressioned item so that the impression does not rub off.
- Package in a cardboard box or paper bag. Carefully securing the item to the bottom of a thin cardboard box is a good way to protect flat impressioned items.
- Submit the photographs of the impression to the laboratory. These should be properly packaged as evidence and submitted along with any casts or lifts.

Exemplars and Standards

Footwear Exemplars

There may be several people who have legitimately walked into a crime scene. These include first responders, medical personnel, members of the field investigation team, funeral home or Medical Examiner's Office personnel, individuals from the District Attorney's Office, etc. These people may leave shoeprints at the scene, and it can become difficult to distinguish evidentiary shoeprints from those that are artifacts of the scene processing.

Exemplars may be collected from people entering the scene in a number of ways. This may be accomplished by:

- Taking a photograph of the shoe sole.
- Greasing the soles with a thin film of petroleum jelly and having the individual step onto a clean piece of paper. Dust the grease print with fingerprint powder for visualization.
- Using a commercially available kit consisting of an ink pad with non-visible ink and foot-sized pieces of paper for collection.

Footwear Standards

If a comparison is to be performed, footwear should be submitted to the laboratory as standards from all individuals thought to have left evidence impressions.

6.6 CONTROLLED SUBSTANCE TESTING

Testing of physical evidence (e.g., white powder, crystalline substance) to determine whether a controlled substance is present. The following are categories of analysis related to controlled substances (the labs that provide each service are notated in parentheses):

- Anonymous Analysis (ALL labs)
- Controlled Substances (ALL labs)
- Cannabis Determination (PDX, SPR)
- Methamphetamine Quantitation (PDX)

Anonymous Analysis

Testing of substances submitted by parents/guardians of minors through the Anonymous Analysis program. These submissions are confidential, results are reported verbally to the submitting LEA representative or directly to the parent/guardian who made the request, and the evidence is destroyed after analysis. The Anonymous Analysis Brochure provides further information.

Controlled Substances Analysis

The reported results are qualitative (i.e., no purity testing). In cases with **multiple suspects**, an indication should be made regarding which evidence is associated with each suspect. If an item is specifically related to a **probable cause** issue, it should be designated as such on the General Request for Services Form (Form 49).

See below for further guidelines on submitting evidence for this type of analysis.

An OSP FSD video training about packaging of drug evidence is available here:

https://www.oregon.gov/osp/programs/forensics/Pages/Law-Enforcement-Resources.aspx

Possession of a Controlled Substance (Typically Two Items Per Suspect):

Each laboratory typically limits analysis to no more than two items per suspect, so the investigating officer should use discretion and submit only those two items that are essential to the case. Exceptions may be granted if weight enhancement levels are of concern or a request is made by the District Attorney's Office for additional analysis. If an exception is needed, the reason should be noted on the Form 49.

Delivery or Manufacturing of a Controlled Substance:

More than two items per suspect may be submitted to the laboratory for cases where delivery or manufacturing of a controlled substance is being investigated. The investigating officer or the District Attorney's Office must contact the laboratory prior to submission of cases that have more than three items or large quantities of suspected controlled substances (500 grams or more) so that the request may be triaged accordingly.

General Submission Guidance:

- Plastic bags are strongly recommended for all drug submissions except biological material (e.g., plants, food), in which case paper packaging is preferred.
- Describe the physical characteristics of the substance and corresponding evidentiary packaging for each item in the evidence description field of the Form 49. Terms should be characterizations, such as "crystalline substance contained in one plastic bag", "a brown tar-like substance wrapped in plastic", or "two plastic zip lock bags each containing a white powdery substance", etc.
- If you have an idea of what the suspected drug may be and wish to relay it, please use the term "suspected" (e.g., suspected heroin, suspected cocaine); however, this type of information is not required.
- If multiple items or units are part of one agency item, the number of items or units ***must*** be indicated in the evidence description field of the Form 49 (e.g., 6 plastic bags each containing white crystalline substance).

Examples of complete and accurate descriptions:

Lab Exhibit	Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
	001	White crystalline substance in a plastic bag	Chem - Controlled Substance ID
Lab Exhibit	Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
	002	A brown tar-like substance wrapped in plastic (Suspected heroin)	Chem - Controlled Substance ID
Lab Exhibit	Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
	003	Two plastic bags each containing a white powdery substance	Chem - Controlled Substance ID

These examples are **incomplete** and do not describe the substance or the packaging, submissions of this nature may be rejected and/or cause testing delays:

Lab Exhibit	Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
	004	Drugs	Chem - Controlled Substance ID
Lab Exhibit	Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
	005	Suspected cocaine	Chem - Controlled Substance ID
Lab Exhibit	Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
	005	3.5 grams heroin	Chem - Controlled Substance ID

For the safety of all staff, every attempt should be made to secure evidence to prevent spillage or mixing; close zip lock bags tightly and package loose or leaking material in individual bags.

- To prevent cross contamination (i.e., the transfer of drug residue or material from one item to another), care should be taken when packaging more than one item in the same evidence bag.
- Only drug evidence that is the subject of laboratory analysis should be submitted. Non-evidentiary or extraneous items (e.g., purses, drug kits) should be removed prior to submission to the laboratory. Do not submit field test kits (e.g., NIK® test kits) or weigh boats to the laboratory.

Tablets/Capsules:

- Tablets must be submitted in packaging such as a clear plastic bag that allows the laboratory staff to visualize the quantity and the imprints. Agencies should package pills, capsules, and/or tablets of differing design or imprint separately.
- For pills, capsules, and tablets, **no more than two of each similar imprint or design** should be submitted to the laboratory for confirmation of the contents. If weight enhancements apply, the submitting agency may submit additional pills to reach an enhancement level if preapproved. **Please call the laboratory to receive submission approval. Document this approval on the Form 49, prior to submission.**
- The accurate number and description (e.g., color, shape, imprint) of pills, capsules and/or tablets must be listed on the Form 49.

Suspected Fentanyl:

The following conditions must be met for evidence suspected to contain fentanyl or a fentanyl derivative:

- Suspected fentanyl submissions must contain two layers of agency packaging, with the outermost layer being clear plastic (e.g., two layers of clear plastic bags, a clear plastic bag containing a manila envelope); this provides extra protection for those handling the evidence.
- The evidence packaging and Form 49 need to indicate the suspected presence of a fentanyl-class compound in addition to the physical description of the drug evidence (e.g., two baggies of white powder; suspected fentanyl).

Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
001-1	Two bags of white powder (Suspected fentanyl)	Chem - Controlled Substance ID

Agency Item #	Description of Evidence (Please associate evidence with appropriate individual, if applicable)	Requested service (Refer to the OSP Forensic Services Website https://tinyurl.com/OSP-Forensic-Documents for further information)
11-1	Three pieces of foil with residue (Suspected fentanyl)	Chem - Controlled Substance ID

- For suspected fentanyl-class compounds in pills, capsules, and tablets, the agency should follow regular laboratory submission guidelines of two pills of similar design. Exceptions (e.g., safety, enhancement level) may apply; however, it is requested that you contact the laboratory to request submission of more than two pills.

Sharps/Biohazards:

- A Biohazard is any item potentially contaminated by a body fluid such as blood, saliva, urine, or feces. Items removed from a body orifice, as well as syringe contents, should be labeled with a "BIOHAZARD" label and the Form 49 should indicate the location where the item originated as well as any identification of known concerns.
- Syringes must be packaged individually in a sharps container.
- Broken glass, razors, knives, etc. must be packaged in a puncture resistant container to protect personnel during handling.

*Both ends should be secured via glue or evidence tape.

- Biohazards should be packaged to prevent exposure and clearly marked with the biohazard concern (e.g., "taken from mouth", "suspect positive for hepatitis C").
- Please do not label typical drug submissions as "biohazard" unless there truly is cause for concern.

Field Test Kits:

- Please ensure enough sample remains for laboratory testing. If the quantity of evidence is limited, and the investigating officer is unsure whether enough sample would remain for laboratory testing, it is recommended a field test not be performed and the evidence be submitted.
- When using field test kits, remember that a positive result only **indicates** the possible presence of a drug. Visible color changes can occur with non-drug substances (false positives).
- Field test kits should be discarded after use. **DO NOT** submit them to the laboratory. Many of these kits contain concentrated acids that can leak, creating a chemical hazard and potentially destroying evidence or packaging.

Other:

- Suspected **LSD** should be packaged in dark packaging to prevent light exposure. Gloves should be worn when handling, as LSD can be absorbed through skin contact.
- **Biological material** (e.g., plants, food, liquids) should be clearly marked to ensure proper storage after submission. Live plant material (e.g., marijuana, mushrooms, peyote, opium poppies) and other damp/wet evidence should be dried prior to submission and packaged in

paper bags. When packaged in airtight containers, such as plastic bags, evidence decays rapidly and can inhibit or possibly eliminate the chance for detecting a controlled substance.

- Potentially spiked liquids should be submitted in a timely manner in leak-proof containers.
- If **Latent Print (LP)** analysis is required, it **must** be indicated on the Form 49. Failure to do so may impact the lab's ability to perform LP analysis.

Cannabis Determination

Cannabis determination is testing of suspected marijuana or hemp plant material to determine whether the level of Delta-9-THC is above a threshold that is higher than the legal definition of hemp. Plant material with THC content above the established threshold are identified as marijuana. This type of analysis is performed at the Portland Metro and Springfield Laboratories. Full THC quantitation is not currently available from OSP FSD.

Submissions of plant material should be between 5g and 200g. Exceptions may be granted if weight enhancement levels are of concern.

- Bud material should be prioritized for submission over leaf material
- Two layers of paper packaging are recommended whenever possible, though dry plant material may also be submitted in plastic.
- Wet plant material should be dried prior to submission or submitted in paper bags

Methamphetamine Quantitation

Quantitative (purity) testing of methamphetamine. This type of analysis is only performed at the Portland Metro Laboratory and is performed for federal prosecution only. Samples requiring purity testing must be accompanied by a request from an AUSA who has agreed to prosecute federally. Please call the laboratory prior to submission.

Avoid submitting more weight than necessary for prosecution.

6.7 TOXICOLOGY

Toxicology is the analysis of biological fluids (e.g., blood, urine) for volatiles, controlled substances, common pharmaceuticals, and poisons. During investigations when it is suspected that an individual may have been under the influence of ethanol and/or drugs, efforts should be made to obtain blood and/or urine for toxicological analysis.

Testing for controlled substances will ONLY be performed on either blood OR urine, not both; therefore, the submitting agency should only submit one specimen type per individual. An exception applies for sexual assault cases; submit both blood and urine samples for testing

The following toxicology services are offered by the FSD:

- Analysis of postmortem toxicology cases for the State Medical Examiner's Office
- Analysis of antemortem blood specimens for the presence of drugs
- Analysis of antemortem blood specimens for volatile determinations
- Analysis of antemortem urine specimens for the presence of drugs

Blood and Urine Specimen Kits for packaging and securing evidence are provided by the Oregon State Police. To order kits go to the following link:
https://www.oregon.gov/osp/programs/forensics/Pages/evidence.aspx

Blood specimens which are **below 0.15% BAC** will automatically be forwarded for controlled substance testing. Blood specimens **at or above 0.15% BAC** will NOT be tested for controlled substances and will be returned to the requesting agency. If the requesting agency would like to request an exception for additional testing, please send all requests to Tox.info@osp.oregon.gov.

For cases with multiple draw times (e.g., exigent vs. warrant), the laboratory may test both draws for Blood Volatiles, but ONLY the specimen with the draw time closest to the incident for drugs.

Depending on the sample type, the analysis may be quantitative or qualitative. Quantitative analysis is only performed on blood specimens and determines how much of a drug or ethanol is present in a specimen. Qualitative analysis simply determines whether a drug or volatile is detected in a biological specimen or not. Qualitative analysis may be performed on any sample type.

Toxicology Request for Service Forms

Toxicological samples may be submitted to the lab on one of two versions of the Form 49 based on case circumstances.

The Tox/DRE version of the form is to be used for DUII or other motor vehicle related cases (e.g., Fatal MVA). For non-DUII or MVA cases (e.g. Death Investigation,) use the offense code "Other". If GHB use is suspected, note it on the Form 49. If a DRE evaluation was performed, note it on the Form 49.

The Sex Offense version of the Form 49 should be used for submitting urine samples collected for drug-facilitated sexual assaults. Blood samples may be submitted on this form for alcohol-facilitated sexual

assaults. Do not submit toxicological evidence in the same packaging as SAFE kits. If GHB use is suspected, note it on the Form 49.

Testing Guidance

Volatiles

In cases where it is necessary to determine the concentration of ethanol, **blood** is the specimen of choice. Urine may be tested for the *presence* of ethanol; however, it is not a legally recognized testing medium for blood ethanol determinations and therefore a percentage of ethanol will not be reported. The laboratory is also able to determine the ethanol concentration of unknown liquid samples and the presence of other volatiles.

Drugs

In cases where the use of controlled substances or other drugs are suspected, **urine or blood may be collected for testing.** For drug-facilitated crimes, such as drug-facilitated sexual assault, blood should be collected for volatiles (e.g. ethanol) analysis **AND** urine collected for drug testing.

For DUII related crimes, blood is the preferred specimen for drug testing. Submitting agencies should evaluate case circumstances and only submit one specimen type (blood OR urine) for controlled substance testing. If both a urine AND blood are submitted for a DUII case, the urine will be rejected and returned to the submitting agency.

Collection, Packaging, and Storage of Urine and Blood

Blood

Ideally, two gray-stoppered 10 milliliter tubes with both preservative (Sodium Fluoride) and anticoagulant (Potassium Oxalate) will be collected **at the same time**. If two 10 milliliter tubes are not feasible, **collect at least 4 milliliters of blood** for volatiles and drug analysis.

Best **Good** **Acceptable**

These tubes do not contain an anticoagulant, but are also acceptable:

- Red-top
- Gold/yellow-top containing serum or plasma
- Green-top containing serum or plasma

- Blue-top containing serum or plasma
- Gray-stoppered Sodium Fluoride (NaF) preservative only

Each blood tube should be labeled with the following:

- The subject's name (not just initials)
- The date of collection
- The time of collection

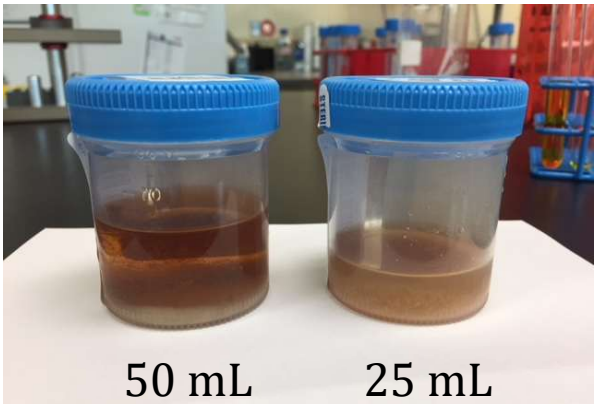
If two or more blood tubes are collected consecutively during the same blood draw, they should be labeled with the same time. The FSD does not recommend the collection of **multiple** sequential blood draws.

Urine

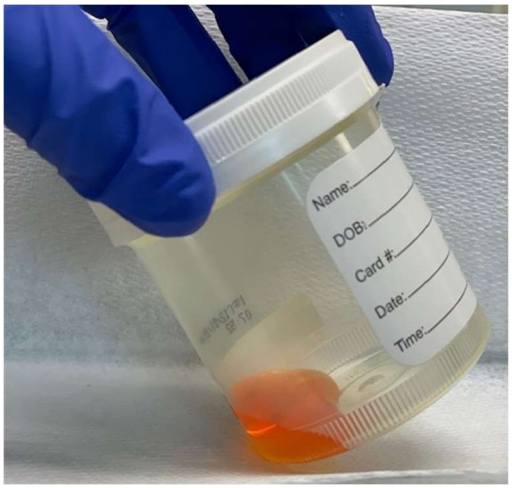
Urine specimens should be collected in the plastic screw-top container provided in the kit. Be sure the lid is secured, and **the container is labeled** with the following information:

- The subject's name (not just initials)
- The date of collection
- The time of collection

It is recommended to submit at least **30 mL of urine** for a complete toxicological analysis. Below are examples of 50- and 25-mL specimens.



Examples of **insufficient** urine specimen volume:

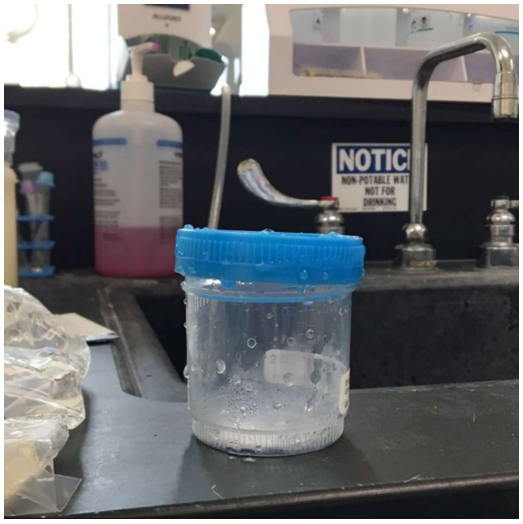


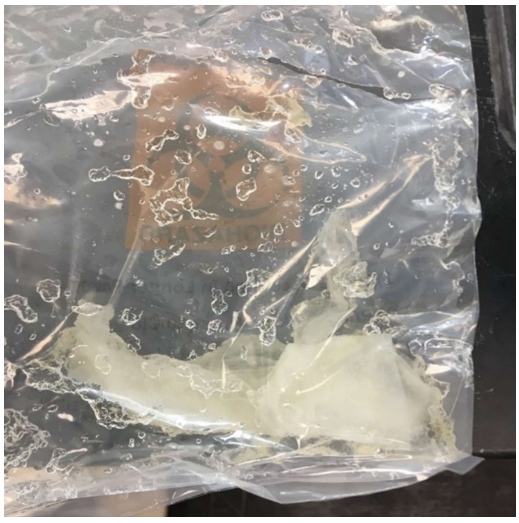
If there is a reason to suspect tampering of the urine specimen, obtain another sample from the subject, and send both samples to the laboratory.

If a Drug Recognition Evaluation (DRE) has been completed, please include a copy of the DRE face sheet when submitting the evidence to the Laboratory.

If drug use is known or if the suspect has offered statements regarding drug use, it is recommended to include that on the Tox/DRE Forensic Services Request (Form 49). **GHB is not detected in our routine analysis.**

Secure the urine cup in the plastic bag provided. Specimens that leak completely into the biohazard bag will not be analyzed. Be sure to secure the specimen lid. **Aligned threads are more important than being super tight.**





General Guidance on blood and urine collection, packaging, and storage:

USE blood and urine kits provided by the OSP Stockroom

It is very important that the specimen cup and/or blood tube(s) are labeled with the individual's name, date, and time of the blood draw or urine collection. If two or more blood tubes are collected consecutively during the same blood draw, they should be labeled with the same time.

DO NOT put evidence tape anywhere on urine cups or blood vials

Seal evidence as shown (with provided tape, or your own)

Do not place evidence tape or other seals over the stopper of the vial or specimen cup, as the tape can obstruct the information on the vial label and can interfere with resealing of the tube. Instead, **the kit should be securely sealed with evidence tape and initialed**.

Do not include extraneous kit items such as used needles, tourniquets, etc. when submitting a blood volatiles specimen. These are not considered evidence and can be hazardous to laboratory personnel.

Care must be taken to maintain proper chain of custody. Blood and urine should be submitted to the laboratory as soon as reasonably possible and should be refrigerated. Blood evidence returned to the submitting agency should be stored under refrigeration.

Where to Send Toxicology Evidence:

Specimen Type	Type of Testing	Submit to:	Notes:
Blood	**Alcohol and/or Drugs**	**Springfield Lab**	**Blood will automatically be tested for drugs if BAC is <u>below</u> <u>0.15%.</u>**
Urine	**Drugs only**	**Portland Metro Lab**	**Urine should be collected for drug facilitated sexual assaults**

6.8 BREATH ALCOHOL PROGRAM (IMPLIED CONSENT UNIT)

The Implied Consent Unit services Oregon's Breath Alcohol Program. The unit approves breath alcohol instruments, calibrates and certifies the instruments, provides instrumentation, training and certification for the users, and offers expert testimony.

Questions regarding the Breath Alcohol Program should be directed to the following email Implied.Consent@osp.oregon.gov. For pressing matters, please call the Portland Metro Forensic Laboratory.

6.9 FIREARMS EVIDENCE

Firearms Evidence

Firearm examinations compare marks or impressions which result when two objects make contact with each other. These resulting impressions are characteristic of the "tool", which is usually the harder of the two objects. When a bullet, which is composed of relatively soft metals, travels through the harder barrel of a firearm, the barrel leaves markings on the bullet. These markings are unique and can often be associated with a specific firearm. Fired cartridge cases can also be identified to a firearm in a similar manner. Questions concerning firearms evidence should be directed to the local forensic laboratory.

Integrated Ballistics Identification System (IBIS)

OSP FSD no longer provides IBIS services. Examination of suitable evidence can be requested through Salem Police Department. For information, contact NIBIN.ADMIN@cityofsalem.net

IBIS is a system that captures and compares images of known test-fires and unknown fired cartridge cases. These images are searched against a database. When similarities are observed, the submitting agency is notified.

Firearms eligible for IBIS entry generally include the following:

- Centerfire and rimfire semiautomatic pistols
- 7.62x39mm, 5.56x45mm/223 REM, and 22 LR caliber semiautomatic rifles

When an agency requires a physical confirmation of an IBIS notification in order to obtain a search warrant, or for court testimony, the agency must submit the evidence to the OSP FSD for comparisons by the Firearms Unit.

Agencies with evidence that requires forensic analysis on firearms beyond IBIS entry (e.g., firearms comparison, latent print analysis, DNA analysis) should consult with their local OSP FSD laboratory PRIOR to submission to the Salem Police Department, in order to facilitate proper preservation of any associated evidentiary items.

Firearms Analysis

Services provided by the OSP FSD Firearms Unit include:

- Determining functionality/operability of a firearm in the manner in which it was designed by the manufacturer, or whether any modifications have been made. Note: This analysis is not required for Felon in Possession charges in Oregon.
- Determination of manufacturer and type of ammunition.
- Test fires of firearms to obtain known specimens for comparison with evidence ammunition, such as bullets, cartridge cases, and shotshell casings.

- Intercomparison between fired bullets, cartridge cases, or shotshell casings to determine if they were fired from the same firearm.
- Determining the presence/functionality of a sound suppressor. Testing can determine whether a muzzle attachment can be classified as a suppressor based on observable physical features and sound reduction capability.
- Generating a list (for investigative use, not all-inclusive) of possible source firearm(s) based on the class characteristics found on fired bullets and/or cartridge cases. Class characteristics include features such as weight, caliber, bullet design, general rifling characteristics, gauge, manufacturer, and presence/type/extent of mechanism marks.
- Generating a list (for investigative use, not all-inclusive) of possible source firearm(s) from individual or unassembled firearm parts/components, based on the physical characteristics of the part. Similar lists may be generated for unfired ammunition, cartridges/shotshells.
- Examinations of shot pellets, buckshot, or slugs to determine the size of the shot, the gauge of the slug, and/or the manufacturer. Examination of shotshell wadding components can determine the gauge and the manufacturer.
- Estimation of distance from muzzle to target based upon gunshot residues and/or shot pellet patterns on evidence such as clothing items, furniture, bedding, and wallboard.
- Examinations and conclusions regarding the identification of gunpowder.
- In certain circumstances, accidental discharge or silencer testing.

OSP FSD does not perform routine screening for the presence of gunshot residue particles or muzzle-to-target distance determination on skin.

For Trajectory analysis refer to the Crime Scene section in this manual.

Collection, Packaging, and Submission of Firearms Evidence

The primary concerns when packaging firearms are safety and the preservation of the evidence including blood/DNA, trace evidence, and latent prints that may be present. The firearm must be handled minimally to avoid loss or destruction of evidence.

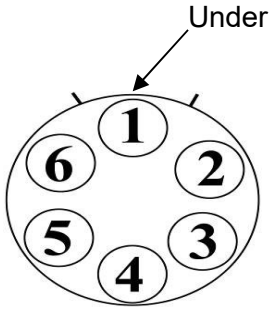
- Never insert anything into the barrel of a firearm. This could alter the microscopic features of the barrel.
- All firearms must be submitted in unloaded condition, made safe (e.g., action secured open with a zip-tie), and secured in a sealed box. The box must be marked to indicate that the firearm has been made safe.
    - Note 1: If the submitted firearms packaging is not marked as rendered safe or unloaded, and the condition of the firearm cannot be visually confirmed to be safe, the evidence must be opened and examined. Submitting agency personnel or a qualified laboratory

staff member must break the seal and visually confirm that the weapon is in a safe condition.

- Note 2: If unable to render the firearm safe, hand-deliver the firearm to the laboratory and inform lab personnel immediately of the firearm's condition.

- Do not remove cartridges from magazines when latent print examination will be requested; however, do remove the magazine. Ensure that magazines and any recovered ammunition are all submitted with the firearm. The submission of unfired ammunition used with the firearm is essential to give accurate results in muzzle-to-target proximity test. When latent print examination is not needed, remove the cartridges from the magazine to obtain a count for the Form 49.
- When submitting loose cartridges, cartridge cases, bullets, fired bullets, waddings, shotshells, etc., the number of each type needs to be listed on the Form 49. Refer to Appendix C for photos and firearms terminology.
- Do not directly mark on firearms, bullets, cartridges, cartridge cases, shotshells, or other firearms-related evidence. Instead, mark the packaging with a description of the evidence, the case number, and the evidence number. (Note exception below)
- Exception: Mark the position of the cylinder on both sides of the top strap before opening the cylinder of a revolver and make note of the position of fired and unfired cartridges in the cylinder. This is so the position of the cylinder, as recovered, can be determined after the cylinder is opened.

Example of how to note the positions of cartridges and cartridge cases in the cylinder of a revolver.



1 Rem 38 Spl (fired)
2 W-W 38 Spl (fired)
3 F-C 38 Spl (unfired)
4 F-C 38 Spl (unfired)
5 W-W 38 Spl (unfired)

- Any evidence with possible blood or body fluids should first be air-dried, then packaged in paper bags, envelopes, or cardboard boxes labeled as a biohazard.
- For firearms recovered from bodies of water, submit the firearm in a watertight container that will keep it submerged in the water it was recovered from. **Do not** dry the firearm out prior to submitting to the lab.
- Clothing with blood must be air dried and marked "Biohazard".

6.9.1 Toolmark Examination

Tools may have unique microscopic features from both the manufacturing process and acquired from wear during use. Toolmarks are the impressions or marks produced when a tool comes into contact with an object; the tool is generally the harder of the two objects. Physical contact between a tool and a surface may produce marks not only characteristic of the type of tool used, but marks that may be uniquely associated with an individual tool.

In the absence of a suspect tool, toolmark impressions can be examined in an attempt to determine the type of tool(s) that may have produced them and whether the toolmark is of value for further comparison. Examples of tools that may be encountered include hammers, screwdrivers, pry bars, knives, bolt cutters, pliers, tin snips, pipe wrenches, axes, and hatchets.

Do not attempt to determine if a found tool fits in the toolmark. This may alter or obliterate the toolmark and trace evidence may be lost or contaminated. Be aware that paint may also transfer between tools and surfaces and may be suitable for a paint comparison.

Collection and Packaging of Toolmark Evidence

The recovered tool should be carefully packaged to prevent the prying blade or cutting edges from having contact with any other objects that may cause an alteration of the tool. Securing tools (e.g., zip ties) inside boxes is recommended.

If possible, submit the entire item with the toolmark impression. If this is not possible due to the size of the object, contact the local laboratory for casting instructions. Alternatively, photograph the toolmark, and carefully cut out the area with the toolmark, being cautious to avoid distorting the impression.

Mark the cast or cut object with appropriate information indicating its orientation such as up/down, inside/outside, and left/right directions. Package the object containing the toolmark in such a manner as to prevent alteration or damage during shipment and storage.

6.9.2 Serial Number Restoration

Firearms, bicycles, motorcycles, chainsaws, boats, and cameras are all evidence items on which serial numbers can be restored.

The obliteration of serial numbers and manufacturer's marks may be done to prevent tracing ownership of items. Depending on the type of metal surface, specialized techniques and/or chemical methods can be utilized to restore and visualize all or part of an obliterated number.

Package the evidence in a manner that will protect the area where the serial number has been obliterated. Contact the laboratory prior to delivering large items.

6.10 TRACE EVIDENCE

NOTE: As of January 2026, the FSD no longer performs Glass analysis. However, this type of evidence may still have investigative/forensic value. Guidance on evidence collection is provided in a subsection below. Please contact the Portland Metro Forensic Laboratory with questions about evidence and standard collection and to assist with finding an outside laboratory for analysis.

Trace evidence is physical evidence such as glass, paint, fibers, or hair that may transfer between one person or surface to another during the course of an event. Trace evidence also includes chemical analysis of evidence such as: ignitable fluids found at an arson scene, poisons or toxins, pepper sprays or other volatile compounds. The trace discipline may also be able to provide investigative lists of source vehicle makes and models that could have left paint chips or vehicle parts at a scene. In addition, the trace unit conducts physical fit analysis that can show that two broken pieces were originally part of one item.

Plastic fusion marks might be present on an individual's clothing as a result of a high-energy impact with a plastic component of a vehicle interior. Because a variety of different plastics may be present on the interior of the same vehicle, it may be possible to establish the position of the individual within the vehicle by comparing the plastic fusion mark to standards from the vehicle interior. A high-energy impact can cause a plastic component in a vehicle interior to have fibers or a fabric impression from the clothing, as well.

Each type of trace evidence has specific collection and packaging needs. These are outlined in detail in the following sections. Very large items such as vehicle bumpers or windshields, bicycles, safes or cash registers may be impractical to entirely contain within normal packaging. If necessary, create custom package from a roll of paper "sleeve" or sheets of butcher paper. As a last resort, paper can be used to cover the area(s) of interest on the large object, taking care to cover a sufficient area that tape does not interfere with the surfaces to be examined.

For all types of Trace requests, an incident report that describes the evidence items being submitted and gives their context at the scene is required.

A Trace Collection Kit may be helpful in responding to scenes presenting trace evidence. Please contact the Portland Metro Forensic Laboratory to request assistance in developing a kit.

OSP FSD recommends the "Trace Evidence Collection App" by RTI International, which can be found in iOS and Android app stores.

6.10.1 Arson and Fire Debris

Arson analysis to test for the presence of ignitable liquids may be helpful in an arson investigation. The recognition and interpretation of scene phenomena that may indicate an arson took place are often the subject of specialized agency training programs.

Ignitable liquids readily evaporate and are lost; therefore, arson evidence should be collected and packaged in an airtight container as soon as possible to prevent loss and possible contamination.

An arson investigator should be contacted with specific questions regarding the type of scene being worked, what evidence collection is appropriate, and how to package/preserve evidence for submission to the laboratory. Arson analysis is conducted in the Portland Metro Forensic Lab only.

Collection of Evidence

The following are examples of evidence suitable for testing for the presence of ignitable liquids. Note that for each type of fire debris for testing, a comparison sample-- a sample of uncontaminated carpeting and/or padding, drywall, wood, etc.-- should be collected and packaged separately. In addition, control samples – new, unused gauze, bags, swabs, etc. – are needed when these materials are used to collect or package evidence from the scene of a fire.

- Charred debris and related material from the origin where the accelerant was placed
- Igniting devices (fuses, rags, candles, etc.) including mechanical and electrical devices
- Samples of upholstery, drywall, plaster, wood, or other material that may have been penetrated by flammable liquids
- Samples of soil that may have been penetrated by flammable liquids (these samples should be frozen to prevent degradation that can hamper analysis)
- Suspect clothing worn at time of crime, including shoes. Nylon fire debris bags are the preferred packaging for clothing items. Paper bags should be avoided as they allow potential evidence to evaporate.
- Liquids containing possible accelerants (for comparison to unknown samples) and containers that may have been used to transport them
- Material used as a wick (shirt, sock, towel, etc.) from an incendiary device. This material may be analyzed for DNA comparisons.

In addition to samples for ignitable fluids analysis, be aware of trace evidence possibly left by the arsonist such as hairs, broken glass, toolmarks, shoe impressions, clothing fibers, matches, etc. These may be suitable for other types of trace analysis or comparison.

Packaging of Evidence

- Use airtight containers. Flammable liquids readily evaporate and thus arson evidence should be collected and packaged in an airtight container to prevent loss by evaporation and possible contamination between samples. Unused, clean metal ***lined*** paint cans without ears are highly preferred. Unlined cans may corrode over time and should be phased out as a packaging option for fire debris. The adhesive used in the manufacturing of cans with “ears” may result in the introduction of background contamination that may affect reported results. Heat sealed bags specifically manufactured for flammable evidence collection may also be used. When these bags are used, submit an unused bag as a control. Contact the laboratory for information on where to purchase these packaging supplies.
- *Moisture is not a problem; do not dry arson evidence as this may cause volatile liquids to be lost.*
- Do not use paper bags (volatile vapors can escape or enter through paper).
- Do not put gloves used by the investigator while collecting evidence into the container with the evidence. Throw them away.
- Gauze pads can be used to soak up or collect residual liquid. Unlike biological materials such as blood, arson evidence should not be collected with Bode or other types of swabs, as they are not large enough to absorb an adequate sample for testing. Seal each collected item separately and securely.
- Mark all containers with appropriate identifiers.
- Document locations from which evidence samples were collected by notes, sketches, and/or photographs.

6.10.2 Physical Fit

Physical fits are made when the contours of broken pieces are sufficiently unique and fit together so that it may be concluded that both pieces were originally one object. Broken pieces left at a scene may be suitable for a physical match request when a suspect is found, or a suspect vehicle is developed.

A physical fit is the strongest level of association between two objects in the Trace Evidence disciplines. The use of microscopes and specialized lighting conditions allows an examiner in the laboratory to photograph the details of the edge contour that may not be obvious to the naked eye.

If a physical fit is unable to be made between evidence items, it may be possible to compare the overall construction and composition of the pieces to determine if they are similar or dissimilar. This analysis of class characteristics would fall under a Trace Miscellaneous exam.

Evidence Types

Any piece of a rigid or pliable object has the potential to make a physical fit to another object. Examples of rigid objects include paint chips, broken glass, car parts (e.g., taillight, paint chips, bumpers, and side mirrors), and weapons. Examples of pliable objects include paper, tape, fabric, garbage bags, matches from matchbooks, etc.

Collection and Packaging

Take photographs of objects before packaging to assist the physical fit examiner with the analysis. Care must be taken to avoid damaging or altering the edges of the evidence during collection and packaging.

Attempt to collect as many broken pieces that appear related as possible. These can be packaged together if found in the same vicinity (e.g., broken lamp base, pieces of vehicle light assembly, several sheets of torn notebook paper in a garbage can). Items collected from different areas or locations should

be packaged separately. Housings, such as that from a headlamp or taillight, can be removed from a vehicle and submitted in its entirety to the lab.

Caution: General handling and other laboratory examinations (e.g., processing for latent prints) can alter the edges used in physical fit analysis. Communication with lab personnel regarding a possible physical fit should be done before other work is performed.

Online OSP training in Physical Fits and Make/Model/Year searching is available here: Webinar #3: Physical Fits & Make/Model/Year searches April 22, 2021 (75 minutes) https://youtu.be/tiZcmLlfOvQ

6.10.3 Glass Evidence

OSP FSD no longer performs glass analysis; however, this section may aid in assessing and collecting evidence for testing by another laboratory. Glass is frequently encountered in burglaries and hit and run cases, and glass fragments may be found adhering to garments, hair, embedded in shoe soles, or may be transferred to other property belonging to the victims and suspects. Tiny glass particles may not be visible to the naked eye. Comparisons of fragments as small as 0.5mm in size are possible, about half the thickness of a credit card.

Glass evidence cannot be individualized to a single source; however, there are some instances where two fragments can be physically fit together, and a common origin can be conclusively established.

Glass examinations may demonstrate the following:

- The presence and number of glass particles recovered from clothing or other surfaces.
- Whether or not fragments of recovered evidence glass are indistinguishable from glass from a known source of broken glass
- The type of glass found (e.g., tempered window glass, container glass, smartphone screen)
- The direction of force (from inside or outside) used to break a window
- The order of shots fired into a window or windshield

Consider that large glass pieces may have latent prints present and the broken edges of glass may have other trace evidence present such as blood, hair, traces of bullets, or snagged fibers.

Collection and Packaging of Glass Standards

A comparison of evidence glass to a possible source requires the submission of glass standards for comparison.

For each glass standard, collect <u>at least</u> ten fragments of broken glass from that item; 20-50 fragments are preferred. These fragments should represent the entire broken area of the item (taken from different areas of the broken item, if possible) since physical properties may vary even within a single glass object.

For window glass standards, collect the glass that is still adhering to the window frame whenever possible. Collecting glass standards from the ground increases the likelihood of introducing contaminant glass into the standard. A second comparison standard may be collected from the ground and submitted separately.

Some structural glass may be double paned, meaning that two different panes of glass are present. A standard should be collected from multiple areas on *each* glass pane. Package the standards from each pane separately, if possible, and mark the packaging to indicate the interior and exterior panes.

Vehicle windshields are double-paned with a polymer sheet between them. To collect a windshield standard, cut out a square (2”x2”) of the double-thickness windshield from the center area of the windshield. Mark the interior (IN) and exterior (EX) sides with a permanent marker. Repeat by cutting out and marking a second square near the driver’s or passenger’s side edge of the windshield. Both squares can go into the same evidence packaging.

Submit glass evidence in packaging that reduces the chance for further breakage and prevents sharp edges from cutting through the packaging. Sharps tubes may be used.

Collection and Packaging of Recovered Glass Evidence

- Package recovered glass pieces from different locations into different containers, clearly marking the outside packaging as to the location and description of the evidence.
- Depending on the size, small glass pieces can be packaged in envelopes, bags, paperfolds, or on Post-It notes. For very small glass particles, place the particle onto the adhesive of a Post-It note and use a pen to circle around it. Fold the note in half, covering the glass particles, and then put the labeled folded Post-It note in a paper envelope. See Appendix B for paperfold instructions.
- Tape over any holes in the packaging through which small glass particles could be lost.

- Glass pieces that are slightly bigger can be packaged in envelopes or bags and then secured in a padded envelope to protect from further breakage or injury to those handling the evidence.
- Collect and submit *all* glass pieces if you believe numerous glass pieces were from the same object (e.g., a window, a bottle, vehicle headlights, etc.) and request the laboratory to attempt a physical fit.
- Label large glass pieces with orienting marks (e.g., up/down, inside/outside) when applicable.
- Collect and package a large glass piece in a rigid container such as a cardboard box. Protect the broken or fractured edges of the glass from any additional damage or breakage.

Clothing Items and Hair Combings

An individual who breaks a window with force or who is in contact with or nearby a breaking glass object may have very small particles of glass on their clothing and hair. Walking over broken glass often embeds glass in the soles of the shoes; this glass may later drop off inside vehicles or residences.

Collect clothing items, taking care not to shake or handle the clothing more than necessary. Doing so may dislodge these small glass particles. If the clothing is not stained with biological material (e.g., blood), package in a paper bag carefully sealing all possible openings. If the clothing is stained with biological material, allow the clothing to air-dry on a clean, dry surface and package in a paper bag. If this is not possible, collect *and submit it to the lab ASAP.*

To collect glass particles from hair, have the person stand or lean over a large clean sheet of examination or butcher paper. Using a new comb, comb the hair to dislodge any particles so that they will fall onto the paper. Fold the paper to enclose any debris from the hair and tape closed. Package inside a larger envelope or bag.

Vacuum Sweepings / Large Objects

In some cases, it is useful to screen large objects such as carpets, car mats/vehicle flooring, or backpacks for glass particles. The entire object may be collected, or a vacuum sweeping may be collected from these objects. Adhesive lifts are not recommended for collection of glass evidence from these surfaces, as the lifts too quickly become saturated and lose the ability to pick up any glass present.

Please contact the Portland Metro Forensic Laboratory for assistance in locating another laboratory to assist with Glass Analysis.

6.10.4 Paint Evidence

Paints are applied to surfaces such as vehicles, structures, safes, and appliances. Spray paints and nail polishes are also types of paints suitable for trace analysis. Many crimes, such as burglaries, hit and run vehicle incidents, and others involve forceful activities that can result in the transfer of paint from the original source to another place, person, or object. Paint transfer may also occur if wet paint is applied in the commission of a crime. Depending on the case scenario, some polymer analysis may be performed under a paint request.

If painted objects come into contact with each other, paint may be transferred in both directions. This often occurs in vehicle collisions or when a painted tool such as a prybar is used to force open a painted object like a safe, filing cabinet or window/door frame. Paint evidence may be transferred from one object to another from contact or loose paint chips may be collected at the crime scene for later comparison with a suspected source. Paint chips may also fracture in such a way that a conclusive physical fit can be made between the loose chips and the object they came from.

Paints contain a multitude of components, many of which may be detected in very small samples such as those encountered as evidence. Analysis and comparison of paint samples can be useful even when they are extremely small in size.

Paint examinations can determine:

- Whether evidence paint sample(s) are indistinguishable from a paint standard
- The type of paint (vehicle, architectural, etc.)
- Lists of makes and models of possible source vehicles by using the Paint Data Query (PDQ) database. This analysis requires layers of original factory paint to be present in the evidence paint sample. This may be encountered as paint chip left at the scene of an impact or as smeared paint layers on objects or clothing.
- If a physical fit exists between paint coatings on broken pieces of an object that was at one time joined

Online OSP training on Trace Paint is available here: Webinar #2: Trace Paint, April 15, 2021 (90 minutes) https://youtu.be/z2vPptyLTuM

Collecting and Packaging Paint Evidence

Paint comparison standards from a known object are required when the laboratory is required to perform a paint comparison. Paint comparisons are performed on a variety of paint types including vehicle paints, architectural paints, spray paints, cosmetic lacquers, etc.

A painted item such as a car or door frame may have layers of different kinds and colors of paint. Because of this, it is important to obtain paint standards that adequately represent all the paint types present on a potential source. To do this, the paint should be scraped in such a way that it includes all the layers of paint present. In addition, if multiple body panels of a vehicle show damage, a paint standard should be collected from each; car body panels often have different paint on different body panels (such as a hood versus a bumper), even if it appears to be the same color to the eye.

If paint transfer is loosely adhering to a surface, place a loose paper cover or Post-it note over the area to protect it during packaging and transport. Do not place tape directly onto an area of paint transfer. Tape adhesive can contaminate paint evidence; never collect or package paint evidence onto tape or other adhesive—except Post-it-type notes.

Collection Procedures:

Small Items (Easily Transported)

If an item that is a potential source or recipient of paint transfer is small enough to be easily packaged and transported, then it should be submitted in its entirety (e.g., tools, keys, knives, spray paint cans). Paint chips should be folded inside a paperfold, or a Post-it-type note and then into a larger envelope for submission. See the Glass section for more packaging instructions and Appendix B for paperfold instructions.

Large Items (Not Easily Transported)

- If the potential paint source or paint transfer is on a large object or one not easily transported, such as a vehicle part or a door from a residence, use the following method for sample collection:
  - Locate the area of damage. If paint transfer from one object to another is suspected, collect both the area of suspected paint transfer and a nearby area of a paint standard that shows no paint transfer. Collect a standard from an area as close to the point of damage as possible; on vehicles, they should be from the same body part (i.e., hood, right front quarter panel, driver's door).
  - When contact between two painted surfaces is suspected, the possibility of cross-transfers must be considered. Collect both objects or collect areas showing paint transfer and standards from both surfaces.
  - Use a clean razor blade, scalpel, or sharp knife to gently pry, carve, or chip the paint from the surface down to the foundation or substrate.
  - Always clean collection tools or use disposable blades between each use to avoid cross-contamination of one sample with another.

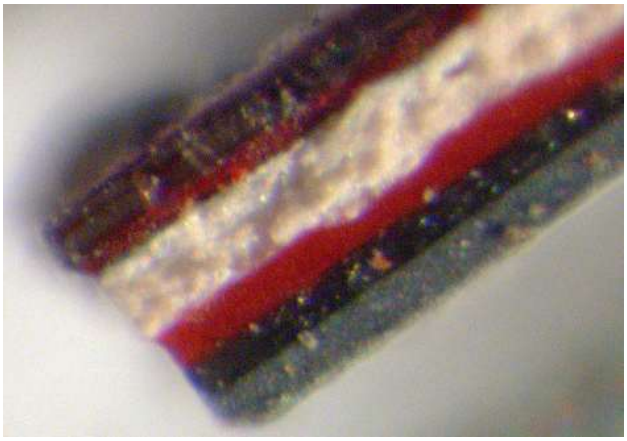
- Collect a total of about a nickel-sized amount of paint from each damaged area, when possible.
- Place each paint sample into a paper fold or small paper envelope. Securely seal all possible openings in the packaging, including seams and corners if necessary.
- Securely seal and label the package(s) with a description of where the sample came from.
- Continue to collect paint from each damaged area in the same manner, even if the object appears uniformly painted. Also collect any samples that are visually different. Package and label each area separately.
- Paperwork should clearly document the locations of collection of any paint evidence to be submitted to the laboratory.

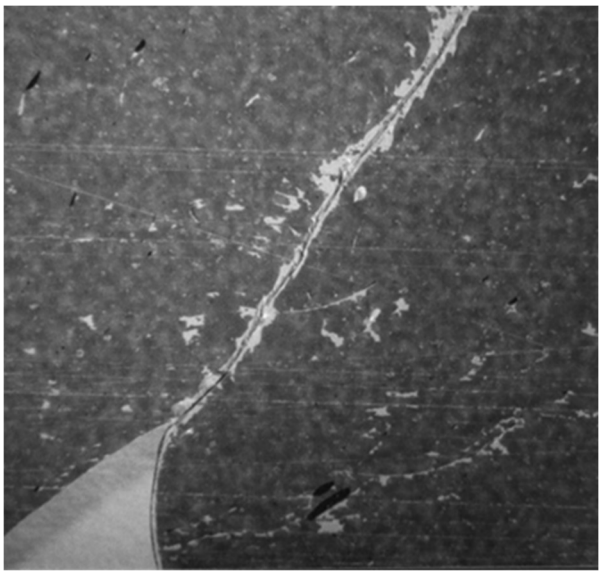
Cautions:

- Do not package paint standards in the same envelope as recovered paint evidence. This could allow cross contamination to occur.
- Do not collect paint evidence on tape. The adhesive from the tape may interfere with instrumental analysis of the paint. Post-it-type adhesive notes are acceptable.
- Substantial variations in thickness and layer sequences over short distances can exist across a painted surface. This is particularly true in architectural paint and for vehicle paint where curves, corners, and edges are often impact points and may have been subjected to previous damage, sanding, or over-painting. Known paint samples should be collected from these areas, when recognized.
- Do not use plastic bags (including evidence bags) or boxes that have small holes in them. Such bags are manufactured to allow excess air out; however, they are not appropriate for trace evidence collection as small particles may be lost. At a minimum, tape over the holes, or include a second, inner layer of packaging.
- Be aware that when a vehicle's clear topcoat of paint is abraded, it may appear white to the naked eye.
- When observing road debris, be on the lookout for paint chips and plastic parts that may form a physical match with a damaged vehicle. Collect these items for later comparison to a suspect vehicle.

Micro-droplets of spray-paint on fibers of a sleeve cuff

Layers of original and aftermarket paint from a red vehicle





A physical fit of two paint chips. Paint chip “A” was recovered from the scene of a hit-and-run; paint chip “B” was collected from the damaged area of a suspect vehicle. Note the microscopic scratches in the paint extending across the break.

6.10.5 Miscellaneous Trace Evidence (Including Poisons and Inhalants)

A number of forensic examinations do not fall neatly into one of the other laboratory categories. These are assigned to Trace Miscellaneous. Common miscellaneous request examples include analysis of food for suspected poisons and of cosmetics and household products for harmful tampering.

Case details should be submitted with the evidence so forensic analysis can proceed efficiently. It is extremely helpful to the examiner to receive a complete police report that details the suspected poison or adulterant and any symptoms of the person(s) exposed. If the type of chemical is unknown, the examiner will perform general screening tests that will include, as appropriate, controlled substances, heavy metals, volatiles, and some pesticides/organics. It is not possible to screen evidence for every possible poisonous substance.

In addition to the item in question, the lab may request the submission of a control sample. For instance, were you to suspect that a beverage had been contaminated with antifreeze, you would submit the beverage in question, plus an untainted sample of the same beverage. If a sample of the contaminant is available, it should also be submitted.

Miscellaneous Trace examination also includes the general chemical identification of unknown solids, inhalants, liquids and gases, chemical irritants such as pepper sprays, measurement of physical, chemical, or elemental properties, and the comparison of contents to product labeling. Again, case details should be submitted with the evidence in order for the forensic analysis to proceed efficiently.

Miscellaneous Trace also encompasses the comparison of two materials that are outside the other trace protocols. Materials such as plastic bags or gloves, tapes, and other plastic items can be compared to one another to see if they share class characteristics or are different from one another.

If an incident involving a vehicle leaves behind broken vehicle parts, those parts may be useful for a physical fit attempt, a make/model/year search based on the painted surface or may have imprinted codes that can narrow down the type of source vehicle. Product sourcing based on manufacturer's codes or other features falls under Miscellaneous Trace.

Plastic fusion (melting and adhering) marks might be present on an individual's clothing as a result of a high-energy impact with a plastic component of a vehicle interior. Because a variety of different plastics may be present on the interior of the same vehicle, it may be possible to establish the position of the individual within the vehicle by comparing the plastic fusion mark to standards from the vehicle interior. A high-energy impact can cause a plastic component in a vehicle interior to have fibers or a fabric impression from the clothing, as well.

Online OSP training on Trace Miscellaneous is available here: Webinar #4: Trace Miscellaneous April 29, 2021 (75 minutes) https://youtu.be/WBoKCCq6Ttc

6.10.6 Fiber Evidence

Textile fibers can be exchanged between individuals, between individuals and objects and between objects. When fibers are associated with a possible source, such as fabric from the victim, suspect or scene, it can help corroborate case information and/or provide a potential link between items, persons, and/or places.

A fiber that is transferred and detected is also dependent on the nature and duration of the contact between the suspect and the victim and/or scene or object and the persistence of the fibers after they have been transferred.

Research has shown that with few exceptions, the largest quantity of fibers on an object is from the last object to be in contact with it. Therefore, it is advantageous to consider collecting fiber evidence prior to processing for other types of evidence. Caution should be used to prevent cross contamination of evidence collected for fiber examinations, particularly when crime scene personnel will also be responsible for collecting suspect or victim clothing items or for the processing of related scenes or vehicles. Caution should also be used to not add fibers from your own environment and clothing to the evidence (e.g., fleece coat, wool sweater).

Fiber examinations involve a comparison of samples from known and questioned sources to determine whether they are consistent with having originated from the same source (e.g., carpet from a suspect's car compared with fibers removed from the victim's clothing). Laboratory analysts examine various physical, chemical, and microscopic properties of fibers when performing a comparison between evidence fibers and a potential source. Common conclusions include statements regarding the similarity or dissimilarity of the evidence fiber(s) to the possible source or standard. This comparison involves the recognition and evaluation of class characteristics, which associate materials to a group, but never to a single source due to the mass production of textiles in society.

Determining whether a textile has been cut, torn, or otherwise damaged may be a probative question for a piece of evidence. It may be possible to distinguish the type of damage depending on the object used, the textile type, and other factors.

Fiber Examinations

The following may be determined from fiber examinations:

- The type of fiber (e.g., natural or synthetic, animal fiber, glass fiber)
- The possible end uses for the fiber (e.g., carpet fiber, clothing fiber)
- The degree of similarity between evidence fiber(s) and a fiber source
- Whether a textile has been cut, torn, or otherwise damaged and if a particular object could have been used to create the defect

Collection of Fiber Evidence
Fiber evidence can be collected in a number of ways, as described in the table below.

Fiber Collection Methods			
Method	**Description**	**Packaging**	**When to Use**
Particle Pick method	Using tweezers or gloved fingers, carefully retrieve the fiber taking care not to pinch, crush, or stretch it.	Place the fiber into a paper fold, in a folded Post-It note, or paper envelope. (See photos under Paint section.)	For fibers you can see.
Adhesive lifts*	Use an adhesive sheet, fingerprint tape, cellophane tape, or other clear adhesive substrate and pat over the item. Take care not to miss any areas or allow the tape to become "overloaded." Post-It notes may also be used for small areas.	Stick adhesive tapes onto a clear, colorless plastic sheet (transparency film). Place into a paper envelope or bag. Fold Post-It notes in half and place into a paper envelope.	For fibers you cannot see, or to be sure you have not missed any. Useful on car seats, feet/shoes of dumped bodies, surfaces of clothing, and other medium to large surfaces.
Vacuum sweepings	Use a portable vacuum cleaner equipped with special traps holding a piece of filter paper. *Lightly* vacuum the surface of interest. The goal is to collect fiber evidence that is on the surface of the object, not to clean it. Take care not to overload to ensure the filter paper doesn't lift allowing material to pass into the vacuum.	Carefully remove the filter trap, cover with the lid or cap, and package in a paper or plastic bag.	For fibers you cannot see, or to be sure you have not missed any. Good on car seats, sections of carpeting, and other large surfaces.

* Gridded template for adhesive lifts can be found under "Trace Collection Forms" at https://www.oregon.gov/osp/Docs/Tape%20Lift%20Grid%20Template-ACTUAL%20SIZE.pdf

Cautions:

- Care should be taken to store adhesive lifting materials in such a way that they will not become contaminated prior to use
- Use of tools, such as forceps and tweezers, may cause damage to the trace evidence.
- Clean any collection tools thoroughly between samples to prevent cross-contamination.
- Avoid serrated tools as they may be more difficult to clean thoroughly.

Collection of Fiber Standards

A fiber standard (or a possible source) is required when the laboratory is requested to perform a fiber comparison. If the possible source can be packaged and transported to the laboratory with ease, submit the entire object (e.g., clothing items, throw rugs).

If the fiber source is believed to be from a large object or one not easily transported, such as car upholstery or carpeting from a dwelling or vehicle, cut representative samples from various areas. Be sure to collect samples from areas that are visually different (e.g., different colored areas, faded areas due to sunlight, worn sections). Samples should be about 1x1 inch unless you see variations in the item that would warrant a larger sample cutting.

Package the garment, object, or sample cuttings in paper envelopes or bags and clearly label with a description of where the standard came from.

Do not package standards with evidence fibers, nor allow them to be near or in contact with each other. This could allow cross contamination to occur.

Adhesive lifts are **NOT** acceptable for collection of standards.

Fabric Damage

If it is necessary to determine if textile defects are the result of a cut or puncture by a specific item, the item suspected of creating the defect (e.g., knife, scissors, screwdriver) should also be submitted.

6.10.7 Hair Evidence

Hair evidence can be obtained from the victim, the suspect, a crime scene, or from other evidence such as clothing. Hair is valuable evidence, particularly in cases where the perpetrator is a stranger to the victim or an environment. Note that except in specific circumstances (victim refusal, person is bald, incident occurred more than 6 months prior, clear documentation that fewer than five hairs are present), it is expected that head and/ or pubic hair standards from individuals involved are collected and submitted along with the hair evidence in question. Contact the Portland Metro Forensic Laboratory Trace Supervisor for other considerations.

Hair Examinations

The following may be determined with hair examinations:

- Determination of human or non-human origin
- Limited determination of animal species
- Determination of human body origin (e.g., head hair, pubic hair)
- Whether there are indications that a human hair was forcibly removed
- Alterations exhibited in a human head hair (e.g., bleached, dyed)
- Whether the root of a hair appears appropriate to attempt nuclear DNA analysis or if another type of DNA testing would be more appropriate

Head and pubic standards can be used to determine a target when screening evidence consisting of numerous hairs (e.g., vacuum sweeping, tape lift). However, the FSD does not perform morphological hair comparisons.

DNA Analysis of Human Hairs

The hair examiner will evaluate the hair for nuclear or other DNA testing. Suitability for nuclear DNA testing of hairs is based on the growth phase of the hair and/or presence of tissue at the root. Most hairs encountered in casework are not suitable for nuclear DNA testing. Other types of DNA analysis of hairs (e.g., mitochondrial DNA) can be performed on the root or the shaft portion of the hair and does not require nucleated tissue to be present. The FSD does not perform other types of DNA analysis, but we can assist with the transfer of evidence to another laboratory (i.e., FBI or a private laboratory).

The amount of DNA in a hair is very small and therefore contamination may occur if precautions are not taken. Do not touch hair evidence with bare hands or contaminated gloves.

Collection of Hair Evidence

Hair evidence can be collected in a number of ways. The table below lists the various methods and when they are appropriate.

Hair Collection Methods			
Method	**Description**	**Packaging**	**When to Use**
Particle Pick method	Using gloved fingers or tweezers, carefully retrieve the hair taking care not to pinch, crush, or stretch it.	Place hair into a paper fold, in a folded Post-It note, or paper envelope.	For hairs you can see.
Vacuum sweepings	Use a portable vacuum cleaner equipped with special traps holding a piece of filter paper. *Lightly* vacuum the surface of interest. The goal is to collect trace evidence that is on the surface of the object, not to clean the object. Take care not to overload to ensure the filter paper doesn't lift allowing material to pass into the vacuum.	Carefully remove filter trap, cover with the lid or cap, and package in a paper or plastic bag.	For hairs you cannot see, or to be sure you have not missed any. Useful on car seats, sections of carpeting, and other large surfaces.
Adhesive lifts*	Use an adhesive sheet, fingerprint tape, cellophane tape, or other clear adhesive substrate and pat over the item. Take care not to miss any areas or allow the tape to become "overloaded." Post-It notes may also be used for small areas.	Stick adhesive tapes onto a clear, colorless plastic sheet (e.g., transparency film). Place into a paper envelope or bag.	For hairs you cannot see, or to be sure you have not missed any. Useful on car seats, surfaces of clothing, and other medium to large surfaces.
Scraping	Use a clean spatula or long, flat tool to scrape the surfaces of an object onto a large, clean piece of paper. For this to work well, the object should be hanging or held up vertically over the paper, scraping downwards.	Carefully shake any trace evidence on the paper to the center and fold the paper. Seal the paper fold and place into a paper envelope or bag.	For hairs you cannot see. Works well on clothing or other pliable objects.

* Gridded template for adhesive lifts can be found under "Trace Collection Forms" at https://www.oregon.gov/osp/Docs/Tape%20Lift%20Grid%20Template-ACTUAL%20SIZE.pdf

Cautions:

- Care should be taken to store adhesive lifting materials in such a way that they will not become contaminated prior to use.
- Use of tools, such as forceps and tweezers, may cause damage to the trace evidence.
- Clean any collection tools thoroughly between samples to prevent cross-contamination.
- Avoid serrated tools as they may be more difficult to clean thoroughly.

Collection of Hair Standards

Because of the variation in characteristics among different hairs from the same body region of one person, it is important to obtain a sufficient number of hairs in order to adequately represent the ranges of all characteristics (e.g., color, length) present. If the ranges of characteristics are large, it becomes necessary to obtain a large number of hairs.

Hairs should be collected from the head and pubic area, if appropriate. Hairs from different regions have different characteristics. A head hair standard cannot be used for comparison to pubic hair evidence.

Collect hair standards in the following manner:

- Obtain standards from all persons who might reasonably be considered a source of an unknown hair (e.g., suspect, victim, and other individuals common to an environment).
- Obtain standards as soon as possible after the crime occurred. Hair naturally changes in its characteristics over time because it is constantly growing. The standards should reflect the individual's hair as close to the date of the crime as possible.
- It is recommended that a known head hair sample consists of at least 24 hairs collected from 5 different areas of the scalp (center, front, back, and both sides). These hairs should be obtained by both pulling and combing. The recommended procedure for obtaining combed hairs is to use a clean, unused comb and repeatedly comb the hair over a large sheet of clean paper.
- If appropriate to the case, a pubic hair standard should consist of at least 24 hairs obtained by both pulling and combing from different areas of the pubic region
- Gather all the hairs collected from a single body region and place into a paper fold or paper envelope
- Seal and label the envelope with the individual's name, date, and the body region it was collected from.
- Do not package paper folds enclosing different individual's hair in the same envelope, or package hair standards with hair evidence. This could allow cross-contamination to occur.

Secondary Standards

A secondary standard is not obtained from an individual directly, but from an object or location where the individual is believed or known to have deposited hair (e.g., a hairbrush). Necessity should be the only reason to obtain secondary hair standards vs. pulled/combed hair standards (e.g., missing person, person buried/cremated before collection could occur).

Secondary hair standards may be acceptable if it can be demonstrated or documented that the hair collected from the object/location is unlikely to include hair(s) from other individuals. The acceptance of a secondary standard for comparisons will be evaluated by the hair examiner on a case-by-case basis.

6.10.8 Computer Evidence

The FSD does not examine this type of evidence. The Federal Bureau of Investigation (FBI) accepts this type of evidence at its regional laboratory in Portland, Oregon. Please refer to the FBI's Northwest Regional Computer Forensics Laboratory website: http://www.nwrcfl.org/.

APPENDIX A: FREQUENTLY ASKED QUESTIONS

1. Who can submit evidence for testing to the FSD?

Any Law Enforcement Agency that has collected evidence related to a crime.

2. Is there required documentation to submit a request to the Lab?

Yes, a Request for Services Form (Form 49). This form is available on the OSP Forensic Services Division website at https://www.oregon.gov/osp/programs/forensics/Pages/Requests-for-Services-Page.aspx. Please only include one incident per form.

3. How do I know what services to select?

Refer to the Forensic Service Request Guidance document (https://www.oregon.gov/osp/Docs/Form_49-Instructions.pdf) to assist in selecting the appropriate service type.

4. Is there any associated cost for analytical testing?

No. Testing services performed by the FSD are provided to all state, local, tribal and federal law enforcement agencies at no cost.

5. Where can I find information about current testing turnaround times?

The OSP FSD maintains an online dashboard that is updated monthly on the Forensic Services Division website. Information regarding a specific case can be reviewed in LOIS or you may call the local service area laboratory.

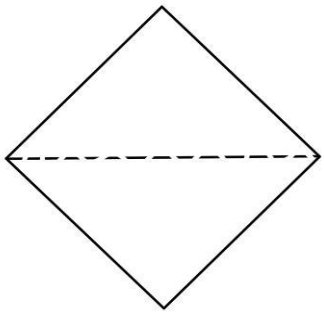
6. Where can I get access to an analytical report for a case that I submitted to the Lab?

The Laboratory Online Information System (L.O.I.S). A web-based tool, LOIS allows authorized users to check the status of lab requests, retrieve signed copies of final lab reports, and allows access to ICP certifications and assessments. Login information, access, and information on how to search LOIS are available here: https://xn.osp.state.or.us/LOIS/Login.aspx

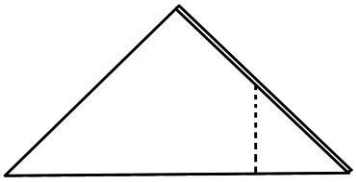
7. What is the best way to submit evidence?

Evidence can be submitted to the lab in-person by appointment or shipped via a commercial courier.

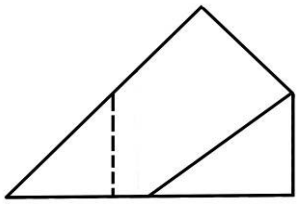
APPENDIX B: HOW TO MAKE A PAPERFOLD



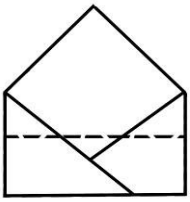
1. Fold a square piece of paper into a triangle. If using a rectangular piece of paper, make the same fold as above and then cut off the excess.



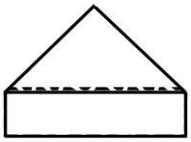
2. Take one corner at the folded edge and bring the corner just past the center point, keeping the two folded edges together.



3. Take the second corner at the folded edge and bring the corner just past the center point on the opposite side, keeping the two folded edges together.



4. Bring all folded edges up together to the point where the top of the paper starts to angle.



5. Take the top center point and tuck into the opening created by the folded edges.

6. Crease the fold and enclose this paperfold in another layer of packaging such as an envelope or plastic bag for submission.

APPENDIX C: FIREARMS AND TERMINOLOGY

Shotshell

Cartridge

Cartridge Case

Wad

Shot

Bullet

APPENDIX D: FORENSIC FIELD GUIDE HISTORY

Revision #	Summary	Date Effective
Original	Manual Created and Adopted as the Physical Evidence Manual	May 2002
1	Revision	February 2004
2	Revision	January 2006
3	Revision	October 20, 2006
4	Revision	December 11, 2006
5	Revision	October 26, 2007
6	Revision	January 31, 2008
7	Revision	December 13, 2011
8	Revision	June 3, 2014
9	Revision	September 10, 2015
10	Revision	September 17, 2018
11	Revision - renamed from Physical Evidence Manual to Forensic Field Guide	January 1, 2023
12	Revision	October 1, 2024
13	Revision	September 1, 2026