Guidelines for Submitting Physical Evidence

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Revisions will be made to this manual as required. Any circumstances not covered in the following pages of this manual may be directed to the Supervisor of the particular Unit involved. Refer to Contact List in Appendix 1.

INTRODUCTION

The purpose of this manual, prepared by Maryland State Police Forensic Sciences Division personnel, is to achieve the following objectives:

- To inform law enforcement agencies in the State of Maryland of the forensic services offered by the Maryland State Police Forensic Sciences Division.
- To outline proper methods for collection and suitable packaging methods of the physical evidence.
- To ensure proper procedures for submission of the evidence.

This document contains detailed guidelines for submitting evidence to the Forensic Sciences Division. Section-specific quick reference brochures are also available from Forensic Sciences Division personnel.

Many types of physical evidence are involved in the investigation of crimes. It is not possible to list in this manual the proper methods for collecting, marking or packaging every conceivable type of evidence that may come to the attention of the crime scene technician or investigator. The suggested procedures concerning the more common types of physical evidence, however, can be applied to practically all exhibits that may be encountered. The technician or investigator who uses common sense and knowledge of the basic procedures suggested should encounter little difficulty in properly collecting and preserving physical evidence, while maintaining its greatest value and significance to both the investigating authorities and the courts.

Any type of evidence not mentioned in the manual may be submitted according to the method specified for an item most similar in nature. Any special problems incurred in evidence submissions may be resolved by contacting the Maryland State Police Forensic Sciences Division in Pikesville, Maryland at 443-357-1300, or the appropriate laboratory section/unit (see Contact List, Appendix 1).

Forensic Sciences Division personnel are available to discuss cases with investigators, helping investigators to prioritize the items to be tested and determining what types of testing is required. The Forensic Sciences Division reserves the right to choose the most appropriate methods and procedures for all tests within its scope and to determine at which Forensic Sciences Division facility (including Crime Scene Offices) the testing will take place. Deviation from test methods will occur only if the deviation has been documented, technically justified and authorized under the Forensic Sciences Division Quality Assurance System.

If a subcontractor is used to test evidence, a competent subcontractor will be used, the customer will be informed of the arrangement in writing, and the Forensic Sciences Division will be responsible to the customer for the subcontractor's work, except in the case where the customer or a regulatory authority specifies which subcontractor is to be used.

Customer feedback (both positive and negative) is welcome and will be used and analyzed to improve the management system, testing activities and customer service. Please utilize Form 21-73 – Customer Satisfaction Survey, available to MSP customers on PowerDMS and to other agencies at http://goo.gl/forms/XzK1Tz8det.

FORENSIC SCIENCES DIVISION ORGANIZATION AND FUNCTIONS

The Maryland State Police Forensic Sciences Division - Pikesville hours of operation are Monday through Friday 0800 to 1700 hours, excluding holidays; inquiries can be directed to 443-357-1300 during hours of operation. The Berlin Laboratory hours of operation are Monday through Friday 0830 to 1700 and the Hagerstown Laboratory hours of operation are Monday through Friday 0800 to 1630, however appointments will be taken up to 1600 only. Any inquiries to these satellite laboratories can be made by dialing 410-641-2961 for Berlin and 301-739-2495 for Hagerstown.

Crime scene processing requests are available through the Maryland State Police Headquarters' Duty Officer- Pikesville. The Duty Officer can be reached by calling 410-653-4200.

The Maryland State Police Forensic Sciences Division is comprised of the following individual units and sections which collectively provide forensic services without charge to Maryland Criminal Justice agencies.

CRIME SCENE SECTION

This Section consists of personnel trained in the recognition, collection, preservation and transportation of physical evidence discovered at crime scenes. They are deployed from several area offices strategically located throughout the state and are available for calls on a 24-hour basis. Crime Scene Section personnel respond to crime scenes investigated by the Maryland State Police as well as other allied agencies that utilize the services of the Forensic Sciences Division. Additional services include bloodstain pattern analysis, bullet trajectory analysis, facial composite sketches, scaled diagram presentations and two regional volunteer crime scene search teams.

Crime Scene Section personnel generally work the early shift Monday through Friday with one technician working per Region on weekends. All calls for service will be made through the MSP Headquarters Duty Officer at 410-653-4200.

FORENSIC SUPPORT SECTION

Central Receiving Unit

The Central Receiving Unit is responsible for the accurate cataloging/documenting of all evidence coming into the possession of the Unit. The goal of the Central Receiving Unit is to administer and adhere to policies and procedures set forth by the Department that will assist in the protection of evidence. The Unit coordinates inventories of all evidence being held at the Forensic Sciences Division. The Unit receives CDS from all Maryland State Police installations for the purpose of incineration. The Unit is also tasked with maintaining all the Division's case files.

Photography Unit

The Photography Unit provides photographic services in forensic photography, aerial and mass disaster photography, formal portraits, employee identification cards, training aids and public relations. This laboratory processes black and white film, and is the Department's VeriPic digital photographic management program administrator.

BIOLOGY SECTION

The Biology Section is divided into an Investigative Casework Unit, a Trial Casework Unit, a Database Unit, and a Technical Unit.

The Biology Section conducts examinations on biological material including body fluid stains, tissue, and touch DNA samples. DNA analysis is conducted on suitable samples and the questioned items are compared to the known standards from the victim and the suspect.

Autosomal **S**hort **T**andem **R**epeat (STR) DNA analysis allows the testing of degraded and/or small biological samples. By determining the DNA profiles of the known reference standards of the victim and the suspect, and comparing them to the evidentiary samples, an individual can be determined to match, or be positively excluded as being a source of the DNA obtained from the evidence. STR analysis is highly discriminating and allows the use of the **CO**mbined **D**NA **I**ndex **S**ystem (CODIS) for storing and comparing the DNA profiles of arrestees, offenders and unsolved crimes in a national database.

Y-chromosome STR (Y-STR) DNA analysis is similar to autosomal STR DNA analysis, but specifically targets the male specific Y chromosome. This analysis is useful to distinguish the male-specific DNA of the Y chromosome in the presence of an overabundance of female DNA. Limitations of the technology include a limited strength of the statistical database, the inability to distinguish men of the same paternal lineage, and the current Maryland state laws that preclude Y-STR data from being entered into CODIS as this is considered "familial searching".

CHEMISTRY SECTION

The Chemistry Section is divided into three CDS Units and one Toxicology Unit.

CDS Units

The CDS Units conduct examinations relating to drug identification. Qualitative analyses are performed by using Gas Chromatography, Ultra-Violet Spectrophotometry, Infra-Red Spectrophotometry and Mass Spectrometry. This service is provided for the Eastern Shore at our regional facility in the Berlin Barrack and for Western Maryland at our regional facility in the Hagerstown Barrack. All other areas are serviced by the Pikesville CDS Unit.

Toxicology Unit

The Toxicology Unit is responsible for the DUI Blood Alcohol and DRE sample testing for all police agencies throughout the State. For information regarding submission of specimens and to obtain results, please contact the Chemical Test for Alcohol Unit at 410-653-4315.

PATTERN EVIDENCE SECTION

Firearms/Toolmarks Unit:

The examination of firearms, bullets, cartridge cases, shotgun shells and ammunition components is conducted by this unit. Obliterated serial number restoration and toolmark identifications are also performed in the unit. The unit is also a participant in the "NIBIN" program (National Integrated Ballistic Information Network), in which cartridge cases are routinely compared throughout the Baltimore-Washington, D.C. area. Non-routine searches of other regions can be requested.

Latent Print/Impressions Units

The Latent Print/Impressions Units (LPIU) examine latent lifts, negatives, photographs and items of evidence for latent prints of value for identification purposes. Comparisons of latent prints with known prints of suspects and/or victim elimination prints are conducted. Additionally, latent prints are evaluated for Maryland and FBI AFIS search compatibility. Shoe prints and tire track examinations are also performed in Pikesville LPIU. A separate digital database, Shoeprint Image Capture and Retrieval (SICAR), is also maintained by the Latent Print/Impressions Unit. Both the Pikesville and Hagerstown laboratories house LPIU.

TRACE EVIDENCE SECTION

Trace evidence is defined as the small particles of matter that are transferred from one location, person or object to another whenever there is physical contact between two surfaces. Instrumentation utilized in these examinations includes Stereoscopic Microscope, Polarized Light Microscope (PLM), Gas Chromatograph/Mass Spectrometer (GC/MS), Fourier Transform Infrared Spectrophotometer(FT-IR), Microspectrophotometer (MSP), and Scanning Electron Microscope with Energy Dispersive Spectrometer (SEM/EDS).

The Trace Evidence Section is divided into units and subunits as follows:

Trace Evidence Unit

Trace Chemistry Subunit

Evidence analyzed in this subunit includes fire debris, paint, fibers and textiles, tapes and adhesives, low explosives, soil, dye packs and chemical composition of other miscellaneous unknowns.

Trace Pattern Subunit

Evidence analyzed in this subunit includes lamp filaments, cordage and knots, nature of damage examinations, fracture matches and plastic bag comparisons.

Trace Biology Subunit

This subunit covers the examination of hair and advanced biological screening.

Questioned Documents Unit

Questioned document analysis consists of examinations involving handwriting, hand printing, typewriting, paper comparisons, writing instruments, check writer machines, copy machines, indented writing, obliterated writing, and carbon paper.

Note: While the Forensic Sciences Division can provide Gunshot Residue (GSR) Collection Kits, the analysis of these kits is not performed by the Division. However, if there is a case requiring the examination for the presence of GSR, please feel free to contact the Trace Evidence Section for information regarding the submission and analysis of the GSR Collection Kit(s) to another examination facility.

EXPERT TESTIMONY

Forensic Sciences Division services include expert testimony of the examiner on the results of his/her examination of the evidence. In the cases of outsourced work, expert testimony fees may be the responsibility of the State's Attorney's Office.

DISASTER IDENTIFICATION TEAM

The laboratory staff consists of personnel that assist the Chief Medical Examiner and his staff at mass fatality disasters that produce deaths beyond normal police and fire service rescue capabilities. Our personnel assist the Chief Medical Examiner in the recovery of victims at the disaster site and their subsequent identification at the Medical Examiner's Office.

GENERAL PROCEDURES FOR PRESERVING EVIDENCE

This section of the guidelines describes ways to preserve evidence and to submit evidence to the Maryland State Police Forensic Sciences Division for analysis. It is your responsibility to make sure that every precaution has been taken to the best of your ability to preserve possible evidence in its original state and condition until its final disposition. The main scientific requirement for handling and preserving evidence is to ***protect the evidence from change***. This change can be natural or induced. You should take every precaution to prevent or to minimize change.

The Forensic Sciences Division reserves the right to reject evidence that does not meet acceptable conditions. Some examples are:

- evidence packaging is not properly sealed,
- evidence integrity appears to have been compromised,
- a discrepancy is observed between the submitted documentation and information on evidence packaging.

Should evidence be rejected, a written record stating the reasons for rejection will be generated.

Evidence should be handled as little as possible. Clean gloves must be used to avoid possible contamination of the evidence. Clean containers must be used to store and transport evidence. Use containers that will help prevent spillage, evaporation, and seepage. Extra steps must be taken to avoid cross-contamination. Each individual piece of evidence must be individually packaged, labeled and documented. If you have to handle evidence without wearing gloves and there is a possibility of you leaving your fingerprints/DNA on the evidence, this fact should be noted and included in your notes as well as on the request for laboratory analysis. An elimination sample should be provided to remove your prints/DNA from comparison.

Preservation of evidence includes preserving the security of each piece of evidence and maintaining the *chain of custody*. Each person in the chain is responsible for the care, safekeeping and preservation of the evidence under his/her control.

GENERAL PROCEDURES FOR SUBMITTING EVIDENCE

As a general rule, evidence submitted to another forensic laboratory will not be accepted for re-examination/analysis by Maryland State Police laboratory personnel.

All evidence submitted to and retrieved from the Forensic Sciences Division must be done by appointment only. Please call the Central Receiving Unit at 443-357-1345 at the Pikesville facility; 410-641-9039 at the Berlin facility and 301-766-3901 at the Hagerstown facility.

Evidence needing analysis at Maryland State Police Forensic Sciences Division must be transported to the laboratory as soon as practical.

All evidence submitted directly to the Forensic Sciences Division must be accompanied by the "Request for Laboratory Examination - Chain of Custody" MSP Form 67. (See below for more details.) Blood Alcohol and DRE samples are submitted to the Forensic Sciences Division by the Maryland State Police Chemical Test for Alcohol Unit (C.T.A.U.) according to their procedures.

- The Maryland State Police will accept evidence in containers (e.g. wrapped packages, evidence envelopes, paper bags or boxes) under proper seal only. Each evidence container must be sealed in such a manner as to prevent loss, cross-transfer, contamination or deleterious change, and insures that entering the container results in obvious damage or alteration to the seal. A proper seal may include a heat seal (required for CDS evidence) or a tape seal with the initials of the person packaging the evidence being placed across the seal onto the container when possible. STAPLING IS NOT ACCEPTED AS A PROPER SEAL.

- When the evidence is transported to the laboratory, its security must be assured and the chain of custody maintained.

- The **MSP Forensic Sciences Division does not accept evidence by interoffice or US Mail or other commercial courier.** DUI blood kits can be mailed to CTAU.

- With the exception of test fires and small firearms evidence, evidence should be submitted in containers no smaller than 6 X 9" envelopes. Latent print card envelopes are also acceptable.

- Each evidence container should contain evidence from only **one** investigation.

- Each item within the evidence container should be in its own separate package and should be clearly identified with your case number, item number and/or description, name of the investigator, date of the investigation and name of the Department. Items that are packaged together will be analyzed as a single exhibit.

- **If the evidence is considered BIOHAZARDOUS, HAZARDOUS or DANGEROUS in any way to laboratory personnel, a biohazard label, or other appropriate warning, must be attached to the outside of the package. All evidence submitted to the Biology Section requires a biohazard sticker attached.**

- Submitting officers should **submit only those exhibits that are essential to the case**. When required (for Biology and Trace Evidence Section case submissions) the casework submission forms should be completed as well as the pre-submission communication with the Unit or Casework Supervisor.

- Any samples of liquid chemicals being submitted as evidence should be placed in a glass container, then placed in a metal can containing an absorbent such as vermiculite to help absorb shock. The can should then be properly sealed and labeled.

- Evidence should be picked up from the laboratory by the contributing agency as soon as possible after receipt of the Laboratory Report unless the report contains information to the contrary. Appointments may be made by calling the Central Receiving office at the respective laboratory: Berlin 410-641-2961, Hagerstown 301-766-3901 and Pikesville 443-357-1345.

Inquiries pertaining to cases or evidence submitted to the laboratory should include case identification information. In making an inquiry, provide the laboratory with the contributing agency name, case number, laboratory number if known, defendant's name, and date submitted to the laboratory. (The "receipt" copy of the laboratory request form contains this information.)

Bloodborne Pathogen Precautions

The following guidelines must be followed in addition to any other guidelines in this booklet.

1. Any evidence contaminated with blood, bodily fluids or any other potentially infectious materials (can include clothing, bloody prints, firearms, CDS, documents, etc.) must be transported and submitted in biohazard labeled bags. The package used to contain the evidence must bear a biohazard label. During transportation only, this evidence must be placed in a plastic biohazard bag. This plastic bag should be removed when evidence is being stored, dried or submitted.

2. Sexual Assault Evidence Collection Kits (victim and suspect) and CDS removed from body cavities must all bear biohazard labels on the outside of the package.

3. When submitting Blood Alcohol or Blood Drug kits, any one of four State approved blood kits may be used for the collection of a sample. The approved blood kits may be purchased at Becton-Dickinson, Lynn Peavey Company, NIK Public Safety, or Tri-Tech, Inc. All departments submitting blood for alcohol testing must comply with instructions supplied by C.T.A.U. A completed MSP Form #34 must accompany each submitted kit.

Required Forms

MSP Form 67 – Request for Laboratory Analysis/Chain of Custody

Items submitted to the laboratory for analysis must be accompanied by the MSP Form 67 Request for Laboratory Analysis/Chain of Custody. Blood tubes for the detection of alcohol or drugs must be submitted to the MSP Chemical Test for Alcohol Unit prior to being submitted to the laboratory.

- The MSP Form 67 is available in both digital and multi-page hardcopy formats. The digital version is available for download at http://mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision/ForensicSciencesSubmissions.aspx.

  [Please note that the digital form must be printed on 4 or 5 part forward carbonless 8 1/2" x 11" paper.]

  MSP personnel can obtain hardcopy forms through the MSP Quartermaster Division. The FSD will provide hardcopies to allied agencies. Please contact the Central Receiving Unit (CRU) at msp.cru@maryland.gov or 443-357-1345.

- The chain of custody portion of the MSP Form 67 should begin with the original source indicated on line 1. Line 2 should indicate the signature of the person taking possession of the evidence at the original source. The signature of the next person handling the evidence, or location where the evidence is placed, for example lock box or property room, will be the next entry. The form will include the signature of the person who takes possession to move the evidence from a lock box to the property room as well. The list of exhibits may contain more than one item with the chain of custody beginning where the Investigative Agency's chain of custody left off. It is not necessary to complete one form for each item. For specific details in completing the MSP Form 67, please refer to the instructions listed on the form.

- All entries, except signatures, on the MSP Form 67 must be legible. Names must be printed alongside signatures. The MSP Form 67 (Revised 3/14) only allows for one suspect and victim to be entered in the designated sections on the form. If there is more than one suspect and victim in the case, please list the name and appropriate information for the additional subjects in the "list of articles" section. This allows the Forensic Sciences Division to search and query the StarLIMS database concerning all persons involved in the case.

- When submitting evidence to the Latent Print/Impressions Unit, complete the Suspect and Victim blocks with the First, Middle and Last names of the subjects, their Dates of Birth, and any identification numbers such as FBI and SID. Complete descriptor information for both victims and suspects permit the Latent

Print/Impressions Unit to comprehensively search available databases for known finger and palm print records.

- Each item must be listed on the MSP Form 67.If applicable the source of the item must be indicated. EXAMPLE: Victim, Suspect, or Control.

- When submitting the same evidence to more than one unit, use one MSP Form 67 and list in the "TYPE OF EXAMINATION REQUESTED" block which type(s) of examination(s) are being requested.

MSP Form 234 – Forensic Biology Section Casework Submittal Form

Prior to submitting evidence to the Central Receiving Unit, the investigator must contact a Casework Supervisor in order to determine which evidence is suitable for analysis. The request will either be approved or asked to be modified. Based on available funding the possibility of outsourcing the case will also be discussed. See Section titled "Biology Evidence: Submission" for Casework Supervisor contact information.

The Casework Supervisor will assist the requesting officer in completing a MSP Form 234 – Forensic Biology Section Casework Submittal Form. This form must accompany the evidence upon submission to the laboratory. Only items approved by the Casework Supervisor should be listed on the form and must coincide with the evidence being submitted. If additional items are required for submission a subsequent form must be completed. The form may be obtained by accessing the PowerDMS or from the Forensic Sciences Division by contacting the Central Receiving Unit at msp.cru@maryland.gov. It is also available from the Forensic Sciences Submissions link on the Maryland State Police, Forensic Sciences Division website at mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision/ForensicSciencesSubmissions.aspx.

MSP Form 239 – Trace Evidence Section Casework Submittal Form

Evidence submitted for analysis by the Trace Evidence Section should be accompanied by a MSP Form 239 – Trace Evidence Section Casework Submittal Form. This includes trace materials and fire debris. The form may be obtained by accessing the PowerDMS or from the Forensic Sciences Division by contacting the Central Receiving Unit at msp.cru@maryland.gov. It is also available from the download link on the Maryland State Police, Forensic Sciences Division website at mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision.aspx.

GENERAL PROCEDURES FOR PRIORTIZATION OF CASEWORK

Expedited Casework

- Homicides, serial crimes against persons, inter-jurisdictional and cross-border crimes, and immediate threats to public safety are top priority and should be assigned immediately for analysis. Such cases may result in the establishment of a case management meeting.

- Casework within the following units will be prioritized as a "Rush" case if it meets one or more of the following criteria and the evidence was submitted at least 30 days prior to the requested due date.

  - **DNA Casework**
    - Final court date
    - Police officer defendant, victim, or subject of internal investigation
    - Cases related to legislative initiatives
    - Threat to a public figure
  - **Latent Prints and Impressions**
    - Final court date
    - Police officer defendant, victim, or subject of internal investigation
    - Request for identification of deceased
    - Threat to public figure
  - **Firearms and Toolmarks**
    - Final court date
    - Police officer defendant, victim, or subject of internal investigation
  - **Controlled Dangerous Substances**
    - Final court date
    - Police officer defendant, victim, or subject of internal investigation
    - The analysis of the case is required for investigative purposes
    - The analysis of the case is required for a public health concern
    - Juvenile defendant
  - **Toxicology**
    - Fatal or serious injury DUI
    - Final court date
    - Charging deadline
    - Police officer defendant, victim, or subject of internal investigation
    - Repeat offender defendant
    - Juvenile defendant
    - Blood drug request for a sample subsequent to a blood alcohol request

- **Trace Evidence**
  - Fatal fires
  - Final court date
  - Police officer defendant, victim, or subject of internal investigation
  - Threat to public figure

<u>Lab-wide Prioritization Scheme</u>

- Two prioritization factors contribute to the prioritization of a case. These are Crime Type and Reason for Analysis.

- Within each of these prioritization factors are four sub-factors that will be used to calculate a prioritization score.

  - **Crime Type**
    - Crimes Against Persons, including homicide, rape, robbery, and assault (4 points)
    - Crimes Against Property, including arson, breaking and entering, theft, and motor vehicle theft (3 points)
    - Controlled substance violations, vehicular violations, and weapons violations (2 points)
    - Other (1 point)
  - **Reason for Analysis**
    - Active investigation (4 points)
    - Trial date set (3 points)
    - No trial date set (2 points)
    - Cold case investigation (1 point)

BIOLOGY EVIDENCE: SUBMISSION

This procedure was developed to actively involve the investigator and ensure that the most useful testing is performed and that it is completed in the timeliest manner possible.

Prior to contacting MSP-FSD, the investigator should contact the appropriate legal office to determine if there is an assigned attorney, develop a list of items needing testing, and discuss a prioritization scheme for the items. The list should only include probative biological evidence with potential to provide information that cannot be obtained through other means.

Before submitting evidence to the Biology Section, a Casework Supervisor must be notified in order to determine which evidence is suitable for analysis. The request will either be approved or asked to be modified. Based on available funding, the possibility of outsourcing the case will also be discussed.

A Casework Supervisor has been assigned a region of Maryland and manages the submission and subsequent assignment of serology and DNA cases from that region. There are two casework supervisors.

Please contact 443-357-1441 for crimes occurring in the following counties:

Allegany	Calvert	Frederick	Montgomery	Washington
Anne Arundel	Carroll	Garrett	Prince George's	
Baltimore	Charles	Howard	St. Mary's	

Please contact 443-357-1431 for crimes occurring in the following counties:

Caroline	Dorchester	Kent	Somerset	Wicomico
Cecil	Harford	Queen Anne's	Talbot	Worcester

* Any case from the Maryland State Police Homicide Unit (no matter which county) and any agencies that serve the entire state of Maryland should use this contact as well.

The number of samples submitted for each case will be limited. The number of items accepted in each case will depend on the nature of the case submitted. This will be determined during initial discussions with a casework supervisor prior to the submission of any case.

A tier evidence approach will be utilized for forensic biology case submissions. This tier approach outlined below defines the maximum number of samples which will be accepted for submission to the laboratory for analysis based on the type of crime.

All necessary known DNA standards must be submitted with each case unless prior approval has been given by the casework supervisor, section manager or designee. This prior approval must be noted on the casework submittal form.

Laboratory personnel will have the authority to make final decisions concerning whether probative evidence exists in a case for initial submission and testing.

If probative information is obtained from tier 1 analysis, no further evidence submissions will be accepted without prior approval of the casework supervisor, section manager or designee.

If no probative information is obtained from the tier 1 analysis, further submissions or testing will be discussed with the investigator/State's Attorney in order to determine if tier 2 analyses should be attempted. Any exceptions to this policy will be considered on a case by case basis and may require the director's approval.

Tier One Submissions

1. Homicides
    - A maximum of 10 probative evidence items will be accepted with all appropriate DNA standards.
2. Sexual Crimes
    - Only the sexual assault kit(s) will be accepted with all appropriate DNA standards.
    a. If no sexual assault kit exists, but underwear is available, the underwear will be accepted with all appropriate DNA standards.
    b. If no kit or underwear is available, a maximum of two probative evidence items will be accepted with all appropriate DNA standards.
3. All Other Crimes Against Persons
    a. A maximum of three probative evidence items will be accepted with all appropriate DNA standards.
4. Property Crimes
    a. A maximum of one probative evidence item will be accepted with all appropriate DNA standards.

Tier Two Submissions

1. Homicides
    - A maximum of five additional probative evidence items will be accepted.
2. Sexual Crimes
    - A maximum of two additional probative evidence items will be accepted.
3. All Other Crimes Against Persons
    - A maximum of two additional probative evidence items will be accepted.
4. Property Crimes
    - A maximum of two additional probative evidence items will be accepted.

The Casework Supervisor will instruct the requesting officer to complete, to the fullest extent possible, a MSP 234 - Forensic Biology Section Casework Submittal Form. This form must be approved with a casework supervisor's signature, and must accompany the evidence along with a Form 67, upon submission to the laboratory.

MSP-FSD Quality Control DNA Database

The "Quality Control DNA Database" consists of all current and past personnel of the Maryland State Police Forensic Sciences Division, Maintenance Contractors, and all additional individuals who enter the R&D Training Laboratory, Biology Laboratory or Trace Evidence Laboratory, including visitors.

If it is suspected that a member of Law Enforcement such as an Allied Agency Crime Scene Technician or Law Enforcement Officer accidentally contributed his/her profile to an evidence sample, an elimination standard from that individual must be provided as part of the case on a Form 67 (Chain of Custody Form). Within the area of the Form 67 entitled "List of Articles", this standard will be designated as "Law Enforcement Elimination Standard 1…" If there is more than one standard necessary for elimination, they will be designated on a separate Form 67 in the same manner with a numerical sequence after the title of "Law Enforcement Elimination Standard". The name of the individual will be present only on line one of the Form 67 which is designated as the "Original Source from which the evidence was obtained". This elimination standard will be present on the casework report and be referred to as "Law Enforcement Elimination Standard 1…" along with the DNA profile of that individual. This elimination standard will then be compared to the evidence sample along with other known standards within the case and conclusions will be drawn if possible.

Note: This elimination standard will not be entered into the Quality Control DNA Database but will be strictly used for comparison purposes for the case in question only.

'Jane Doe' Sexual Assault Evidence Collection Kits

The 2005 reauthorization of the Violence Against Women Act (VAWA) contains a requirement affecting the provision of sexual assault forensic exams that permits a victim of sexual assault to receive a forensic medical examination anonymously and to decline to participate in the criminal justice process, the Sexual Assault Evidence Collection Kit (SAECK) is to be maintained, through chain of custody, and is to be turned over, together with the other evidence, to the law enforcement agency with jurisdiction over the matter. Additional information about the law can be found in the Maryland VAWA Forensic Compliance Guidelines.

If a local law enforcement agency comes into possession of a SAECK and/or other sexual assault evidence that is provided by a victim who opts to remain anonymous under the law, the agency should maintain the SAECK according to the holding period that is established by the agency (minimum 20 years).

The Forensic Sciences Division of the Maryland State Police will *not* receive SAECKs for processing unless and until the victim has provided consent for analysis.

If you have any further questions or concerns, please do not hesitate to contact the Maryland State Police Forensic Sciences Division, Biology Section at 443-357-1300.

BIOLOGY EVIDENCE: COLLECTION AND PRESERVATION

DNA (Deoxyribonucleic acid) analysis is limited to substances that are biological in nature. These include blood and bloodstains; semen and seminal stains; tissues and cells; bones and organs; saliva; hairs; urine.

Polymerase Chain Reaction (PCR) is the technology used to amplify or copy a small amount of DNA. The current methodology in place at the MSP Forensic Sciences Division involves the analysis of Short Tandem Repeats (STRs). STR analysis can be performed on very small and degraded stains. A match with this test provides a very strong link between the evidence and the reference standard.

All DNA tests are comparative in nature. Known reference standards (either blood or buccal swabs) are required from the victim, suspect and any exclusionary samples such as boyfriends or husbands.

PCR based tests are extremely sensitive and precautions must be taken to avoid possible contamination. It is best to collect the evidence in such a manner as to prevent <u>any</u> contamination – either cross contamination between items of evidence or contamination with the DNA of the individuals processing the evidence. Gloves should always be worn and changed frequently i.e. before handling each item of evidence. It is recommended that masks be worn while handling evidence. Instruments used, such as scissors, forceps, and knife blades, should always be cleaned thoroughly with diluted bleach and rinsed with alcohol swabs before and after contacting each item.

When collecting any type of body fluid or tissue, it should be assumed to be infectious regardless of the source. Universal precautions for body fluids should be taken. This includes the use of gloves at all times and the use of eye protection and a face mask when appropriate. Foot coverings and disposable clothing should be worn at bloody crime scenes.

In order for STR analysis to be successful and the results to be accepted in court, the evidence must be collected and preserved correctly and an accurate chain of custody must be maintained. If the evidence is not properly handled or packaged, e.g. packaging items together, contamination and degradation of the samples may occur. This may affect the ultimate results of DNA analysis.

Required Forms	Tags	Packaging Requirements	Precautions
MSP Form 67 MSP Form 234	Biohazard Label	Package items separately in paper, not plastic. Package must be sealed with frangible evidence tape and initialed across seal. Packaging must display agency name, case number, item number or description	Universal precautions, Wear gloves. Wear mask and eye protection where appropriate.

Collection, Packaging, and Preservation of Evidence

A. Liquid Blood

1. Evidence containing liquid blood, body fluids, or other potentially infectious liquids or contaminated sharps (e.g. used needles, knives) must be placed in a leak-proof, non-breakable, puncture resistant container which is labeled with a Bio-Hazard warning label.

2. Liquid blood or a blood clot from a crime scene may be collected in one of two ways:

   a. Pipet the liquid blood into a purple-capped blood tube with a clean pipet. Refrigerate, do not freeze.

   b. Collect the blood onto a sterile swab, air dry, and place in a swab box or an envelope. **Do not package in plastic.** Concentrate stain as much as possible.

3. Blood samples found on snow or soil should be treated the same as listed in #2.

4. Clothing, blankets, sheets, etc. bearing wet bloodstains should be air dried away from direct sunlight. Paper should be placed under the items to catch any evidence that may fall from the items during the drying process (e.g. hairs, fibers). These items should then be wrapped in brown paper or put into a paper bag. Never put bloodstained evidence into plastic bags or containers. The outside containers (paper bags, boxes, etc.) of all evidence must be sealed and labeled as a Bio-Hazard.

5. Small objects bearing wet bloodstains should be allowed to air dry away from direct sunlight, and then packaged in brown paper or a paper bag.

B. Buccal Swabs (As a Reference Sample)

1. MSP-FSD DNA Database Collection Kits should not be used for the collection of standards.

2. Collection must be made onto pre-packaged sterile cotton swabs.

3. The victim/suspect should not be eating or chewing gum at the time of collection.

4. Take 2 cotton swabs and rub the swab up and down and rotate against the inside right and left cheek areas. Enough pressure should be supplied as to remove cells.

5. Place the swabs back into the paper sleeves after allowing the swabs to air dry.

6. Properly secure and label the paper sleeve. **The item must be labeled with the date, time, subject's name, location, collector's name, case number, and exhibit**.

7. Store swabs at room temperature in a dry location. Refrigeration/freezing is acceptable but not required. Transport to the laboratory as soon as possible.

C. Sexual Assault Evidence Collection Kits (Victim and Suspect)

NOTE: Sexual Assault Evidence Collection kits must follow Criminal Procedure Articles §11-926 and §11-927

1. All Sexual Assault Evidence submitted to the Maryland State Police Forensic Sciences Division for analysis should be collected by using a Maryland State Police Sexual Assault Evidence Collection Kit or a kit approved by Maryland State Police Forensic Sciences Division personnel.

2. Collection of victim sexual assault kit evidence should be by qualified medical personnel or by the Medical Examiner's office.

3. Sexual Assault Evidence Collection Kits will be accepted if collected within 5 days of this incident, after approval from casework supervisor. Cervical swabs only (not entire kits) which has been collected between 6 to 15 days after a sexual assault incident will be accepted after approval from casework supervisor. It is acceptable to receive these within the Sexual Assault Evidence Collection Kit (not separated out).

4. Collection of the suspect sexual assault kit evidence should be according to the directions found in the sexual assault evidence collection kit. Strictly adhere to these guidelines.

5. Sexual Assault Evidence Collection forms must remain with the kit. Once the collection of evidence is completed, the sexual assault evidence collection kit should be sealed, with the initials of the collector **through** the seal, and labeled with the case number, item number, location, date, time, and initials of the collector. The kits should not be opened for inventory, but should remain sealed by the collector.

D. Dried Bloodstains and Body Fluid Stains

1. Dried stains found on moveable objects (e.g. knives, tools) could be addressed in one of two ways:

   a. the whole object could be packaged in brown paper, a paper bag, or cardboard box and submitted to the laboratory or

   b. stain could be swabbed off of the item prior to submittal, if this capability exists.

   The decision as to which option to choose should be discussed with the MSP FSD Biology Section Supervisor or designee prior to submission.

2. Dried stains on large or immoveable objects should be removed by dampening a sterile cotton swab with sterile distilled or deionized water. Hold the swab with gloved hand wiping it over the stain and concentrate the stain as much as possible. Air dry the stained swab away from direct sunlight and packaged in a swab box or an envelope.

3. If not able to swab, dried stains found on carpet, upholstery, etc. should be cut out of the item and placed in an envelope or paper bag.

4. Once the item has been packaged, it should be sealed, with the initials of the collector **through** the seal, and labeled with the agency name, case number, item number, location, date, time and initials of the collector.

E. Tissue, Organ, or Bone

1. Each item should be picked up with clean gloves. Evidence still connected should be collected together.

2. Gloves should be changed for every different item to avoid contamination.

3. Each item should be placed into a clean, airtight, plastic container.

4. The containers should then be sealed, with the initials of the collector **through** the seal, and labeled with the case number, item number, location, date, time, and the initials of the collector.

5. Evidence should be frozen and submitted to the Forensic Sciences Division as soon as possible.

   NOTE: The MSP Forensic Sciences Division <u>does not</u> analyze bone samples. Our laboratory can assist law enforcement agencies in selecting a private laboratory to perform testing of bone for a fee.

F. Bite marks

There is a possibility that an assailant can leave behind saliva when biting a victim. This saliva may be suitable for STR analysis.

1. The bite mark should be photographed in color with a scale and color chart in the picture.

2. Dampen a sterile cotton swab with sterile distilled or deionized water. Wipe the swab around the bite mark and inside the bite mark. Air dry away from direct sunlight. Package in a coin envelope; plain envelope; or pharmacy fold.

3. Once each item has been packaged, it should be sealed with the initials of the collector **through** the seal, and labeled with the agency name, case number, item number, location, date, time, and initials of the collector.

G. Other Sources of Saliva

Other types of evidence may contain saliva suitable for STR analysis. These include licked stamps, sealed (licked) envelopes, cigarette butts, chewing gum, straws and drinking receptacles such as bottles, cans, and drinking glasses.

1. Package each item separately in a paper container such as an envelope, pharmacy fold, or brown paper bag.

2. Once each item has been packaged, it should be sealed with the initials of the collector **through** the seal and labeled with the case number, item number, location, date, time, and initials of the collector.

H. Other types of evidence may contain skin cells and may be suitable for STR analysis. These include sweatbands of hats and watchbands, jewelry and other personal effects.

I. Requests for evidence requiring both Serology/DNA and Latent Prints examination should be clearly marked on the Form 67. Examination will be coordinated with each Unit. For safety reasons, any firearms must be submitted to the Firearms/Toolmarks Unit first.

J. CODIS – Cases without a suspect can still be analyzed. DNA profiles obtained from the evidence can be compared to profiles obtained from convicted offenders, qualifying arrestees and evidence from other cases in the CODIS database. However, a database match will only give probable cause for a warrant to collect a standard from the suspect. Therefore, the CODIS database should not be thought of as a replacement for collecting known standards when you do have a suspect. Elimination standards may be necessary in order for the CODIS entry to take place.

K. Touch DNA Submissions

Touch DNA is becoming a more common testing request in cases in which there is no visible staining on a piece of evidence. DNA profiles can sometimes be developed from "touch DNA evidence". Significant contact between a person and an object **may** provide enough skin cells for successful DNA typing.

1. Before requesting touch DNA analysis, the investigator and attorney should consider the type of sample to be tested and the likelihood of someone other than the perpetrator coming in contact with the evidence. The results of such testing can often yield either a large mixture that is not interpretable or a profile of an individual unrelated to the crime.

2. MSP-FSD may recommend that a request for Touch DNA analysis be withdrawn based on the Casework Supervisor's expert opinion regarding the likelihood of a sample yielding an uninterpretable result.

3. MSP-FSD may recommend that a request for Touch DNA analysis be withdrawn if a known reference sample is not submitted for an individual who could reasonably be expected to come in contact with the evidence.

4. No spent cartridge cases or spent bullets will be swabbed for the presence of 'touch' DNA.

a. Spent cartridge cases and spent bullets may still be examined for the presence of bodily fluids (e.g. blood) and any such bodily fluids may be suitable for further DNA analysis.

b. Unspent ammunition may still be subjected to the analysis of 'touch' DNA as warranted by the needs of the investigator.

5. Rigorous quality assurance policies and procedures have been implemented by MSP-FSD to prevent contamination; however, prior to deciding to submit an item for Touch DNA analysis, the investigator and attorney should realize that the likelihood of contamination from emergency, medical, police, and laboratory personnel increases when performing Touch DNA analysis.

6. Whether to process an item for latent prints or swab for DNA depends on the item being examined.
   a. In general, rough surfaces (unlikely to develop prints) should be swabbed for DNA, while smooth surfaces should be processed for latent prints.

   b. Most items that have been processed for latent prints can be subsequently processed for DNA.

   For cases without suspects, keep in mind that the fingerprint database is much larger than the DNA database. Also keep in mind that useful DNA profiles, i.e. suitable for comparison are unlikely to be obtained from items regularly handled/touched by three or more people.

L. DNA of Latent Fingerprint Evidence Submissions

1. It is possible to obtain DNA results from Latent Fingerprint evidence; however, this will only be attempted as a last resort when there is no other DNA evidence and the Latent Fingerprint evidence did not produce a match.

2. Requests for DNA analysis of Latent Fingerprint evidence will only be considered after consultation with both the DNA Casework Supervisor and the Latent Print/Impressions Unit Supervisor.

3. MSP-FSD may recommend that a request for DNA analysis of Latent Fingerprint evidence be withdrawn based on the Casework Supervisor's or Latent Print/Impressions Unit Supervisor's expert opinion regarding the rationale of the request.

4. The Director will be notified about the decision to proceed with a case involving the DNA analysis of Latent Fingerprint Evidence.

M. Rape Cases

1. Only the Sexual Assault Evidence Collection Kit is submitted if that is available. Refer to the tier approach policy noted above.

2. Any other evidence (clothing, bedding, etc.) remains with the submitting agency.

3. If the Sexual Assault Evidence Collection Kit is negative, then other evidence may be requested.

4. Exceptions to this policy may include cases with evidence related to crimes involving the following: digital penetration, ejaculation on clothing, multiple perpetrators, or other special circumstances.

N. It is preferable to swab food items with potential saliva/DNA rather than submit the food item or attempt to preserve it. The natural breakdown of the food and bacterial growth may interfere with testing.

O. When possible, the known reference samples of both the victim and the suspect should be submitted to the laboratory for DNA Analysis. With few exceptions, no DNA analysis will be conducted without these comparison samples.

If there are any questions regarding evidence collection and/or what type of analysis would be most suitable for your case, please call the Biology Section Manager at the Maryland State Police Forensic Sciences Division at 443-357-1411.

CONTROLLED DANGEROUS SUBSTANCES: SUBMISSION

Required Forms	Tags	Packaging Requirements	Precautions
MSP Form 67 Blue copy of MSP Form 63 (MSP Cases only)	Evidence Label If the evidence is considered a biohazard, hazardous or dangerous in any way, a biohazard label, or other appropriate warning must be attached to the outside of the package	Kapak brand polyester pouch (9.5" x 16"; 4.5 mil) heat sealed at the open end without altering the original size of the Kapak Form 67 must be typed or printed legibly. Separate each item within the Kapak to prevent cross contamination For marihuana/hemp submissions, States Attorney approval is required **Do not submit Field Test Kits** Packaging must display agency name, case number, item number or description. Sealer must initial over the heat seal Double Kapak is required for liquid CDS submissions Contact the Unit Supervisor for repackaging of resubmissions Counts are required for countable items	See instructions for hypodermic syringes See instructions for submissions of less than 10 grams of suspected marihuana Vegetable matter must be dried before submission

The proper collection and preservation of Controlled Dangerous Substances is vital. Many factors including safety of the officer and chemist, proper selection and packaging of the evidence and integrity of the chain of custody are essential to the handling of CDS cases. These guidelines may not cover every situation. Flexibility is essential in any operation. Any circumstances not addressed in these guidelines should be discussed with the appropriate CDS Unit shown below.

Location	E-mail	Fax	Phone
Pikesville	**msp.cdspikesville@maryland.gov**	**443-357-1360**	**443-357-1361**
Hagerstown	**msp.cdshagerstown@maryland.gov**	**301-766-3910**	**301-766-3900**
Berlin	**msp.cdsberlin@maryland.gov**	**410-641-4316**	**410-641-9039**

All CDS and suspected CDS evidence requiring a laboratory analysis should be expeditiously transported to the laboratory within five working days. A delay in transport may be considered by judges as a reason to dismiss the case.

Requests for Rush Analysis of CDS evidence should be emailed to the appropriate email address listed above. Whenever possible, each request should contain the laboratory case number, date of offense, defendant/suspect name, submitting agency name, local case number and trial date. Although not every rush request can be accommodated, the FSD endeavors to meet all reasonable deadlines.

Questions involving the status of a case should be directed to the appropriate laboratory site. If a CDS laboratory report has not been received and is needed for court, please contact the Forensic Sciences Division as soon as possible.

Quantitative analysis of CDS submission is not performed by MSP-FSD. The requesting States Attorney Office must contact the CDS Supervisor (see contact information above) in that region to discuss available options, such as the forwarding of the case to the Drug Enforcement Administration (DEA).

Pre-Approval for CDS Submissions

A. It is rare that the contents of a syringe are required to be submitted to the laboratory for analysis. There is a good probability that positive CDS results can be achieved by analyzing other paraphernalia. If the cap or plunger is already separated from the syringe, these items should be submitted in lieu of the syringe eliminating the need to handle the syringe.

B. If it is necessary to submit the whole syringe:

    1. The CDS Unit at the respective lab site must be notified prior to submission to the Central Receiving Unit.

    2. The syringe MUST be packaged in an approved sharps tube to eliminate potential injuries.

3. The Unit Supervisor has the authority to determine whether or not the syringe is suitable for analysis and will approve or deny the request.

C. Found or abandoned evidence that cannot be linked to a suspect(s) will not be accepted without prior approval from the CDS Unit.

Criteria for Submission of Items for Analysis

A. Only evidence that will be used in a criminal prosecution may be submitted.

B. The Form 67 must contain a count for each countable item listed on the Form 67. If the Form 67 is not completed with accurate quantities for each countable item, then the item(s) affected will not be analyzed. If the officer cannot safely count the evidence, the reason must be documented on the form 67.

C. States Attorney pre-approval is needed for submissions of suspected marihuana/hemp.

D. Do not submit moldy or wet vegetable matter--dry prior to submission. Wet vegetable matter presents a health hazard as well as probable weight changes due to water loss in the drying process. It should also be noted that decomposed vegetable matter may not produce positive results.

E. Do not submit paraphernalia associated with the use or possession of marihuana.

F. The following items will not be analyzed unless they are absolutely essential to the case:

1. Paraphernalia, rolling papers, empty capsules, empty packaging (especially absent evidence of CDS residue)

2. Marihuana seeds

3. Liquids, edibles, oils, and waxes

G. Many chemicals, such as ether, benzene, Coleman fuel, etc., are highly flammable and toxic.

1. If these chemicals are not essential to proving intent or have no probative value, do not submit them.

2. Ascertain from the State's Attorney whether these chemicals are necessary for the successful prosecution of the case. If not, they should be disposed of properly. Call the State Fire Marshal for assistance.

H. The use of field test kits on small samples is highly discouraged because the evidence will be degraded. **Do not include the used test kit with the submission.**

Evidence Packaging

A. Evidence must be packaged in a manner so the contents are visible and to avoid contamination. For large CDS submissions, exceptions may be made with prior CDS Unit approval.

   1. CDS will be packaged in a clear, heat sealed evidence pouch. Pouch specifications are 9 ½" x 16"; 4.5 mil. Kapak brand is recommended.

   2. The sealing officer will heat seal the open end, ensuring the seal is complete, and will initial over the heat seal with a permanent marker. The officer will ensure that there is sufficient space to unseal and reseal the Kapak bag. If the officer needs to remove the seal for any reason, then a new Kapak bag must be used.

   3. The pouch will be identified with an adhesive evidence label placed in the upper right hand corner of the heat-sealed end.

   4. **Punctured evidence pouches will not be accepted.**

B. It is recommended that nitrous oxide be submitted to the laboratory using Tedlar Sample bags which can be purchased at www.skcinc.com. If such bags are not available, please call the appropriate Forensic Sciences Division CDS Unit for other recommendations.

   1. For nitrous oxide samples, a prescheduled appointment will be made with the Evidence Coordinator to bring the whole tank (when possible) to the lab for testing.

   2. The submitting officer will wait while a chemist takes samples from the cylinder and performs the analysis.

   3. The tank will be returned with the analysis in the same visit; therefore, please make arrangements to remain on-site at the Forensic Sciences Division while analysis is being performed.

C. Evidence contaminated with any type of body fluid (including saliva) and/or recovered from a body cavity **MUST HAVE A 'BIOHAZARD' WARNING LABEL PROMINENTLY ATTACHED TO THE KAPAK BAG.**

D. Any CDS evidence that is submitted in liquid form must be packaged in double Kapak bags. Both Kapak bags must have all edges heat sealed. Only the outer most Kapak bag must be initialed across the seal by the submitter.

Submission Paperwork

A. A completed **MSP Form 67** must be attached to the evidence Kapak. Refer to instructions printed on the form. For CDS analysis it must be noted whether the offense is Possession or Possession with Intent to allow the analyst to determine the best method of analysis. Also it should be noted if the CDS evidence is involved with an overdose or death investigation.

1. Each exhibit listed should be described in a manner so that the reader can visualize the item without having it present.

2. Items should be numbered on the form in a sequence to match the identification numbers on the packaging.

3. Weights of CDS **should not** be recorded on the MSP Form 67.

4. If multiple Kapaks are needed, group the items together in the order they are listed on the MSP Form 67.

   NOTE: DO NOT SUBMIT NON-ESSENTIAL ITEMS.

5. Suspect information must be legibly indicated on the MSP Form 67.

   a. In some cases where this may compromise an investigation, it is permissible to use ***"Confidential"***.

   b. Occasionally a suspect's name may not be known at the time of a covert purchase. Frequently several purchases may be made from a suspect at different times prior to an arrest being made. **It is suggested that those cases submitted be limited to only those necessary to ensure full prosecution of the suspect(s).**

6. Evidence whose ownership can be linked to individual suspects should be listed on separate MSP Forms 67. Multiple suspects sharing ownership will be listed on the same Form 67.

B. Attempt to group similar specimens and list them as sub-items of single items on the MSP Form 67.

1. Prior to analysis, the Scientist will visually inspect the drug packaging (bags, packets, capsules, etc.) and contents to evaluate the homogeneity (or lack thereof).

2. After this evaluation and depending on the case scenario, the Scientist may reorganize specimens into logical item categories.

Sample Selection and Sampling Procedures

A. If a statistical analysis (hypergeometric sampling) is required for successful prosecution of the case, the entire population of items/samples must be submitted. Please contact the appropriate CDS Unit for submission instructions. The statistical sampling plan will only be administered if specifically requested by the States Attorney or the courts.

B. Please ensure that there is sufficient space in the Kapak bag to allow for the chemist to unseal and reseal the Kapak bag. For cases in which all seized evidence does not fit into a Kapak, see below for further guidance.

C. Exhibits involving whole plants of a length greater than one (1) foot:

1. Should be submitted by taking parts of the plant and submitting them individually in a ziplock bag.

2. Parts to be included are the leaves, flowering tops and stems. Each sample should be at least one gram but no greater than five grams in net weight.

3. Mature stalks, roots, and soil need not be included.

4. Note on MSP Form 67 that the submission is a sampling.

D. For bulk quantities of plant material greater than one (1) Kilogram (2.2 pounds):

1. Should be sampled by taking three samples from different locations within the exhibit (including the core), packaged in one ziplock bag.

2. Each sample should be at least one gram but no greater than five grams in net weight. Note on MSP Form 67 that submission is a sampling. E.g. Ten bricks of marihuana were seized. For the first brick, take samples from three different places and place in one ziplock bag labeled Item #1. The collective sample from the second brick will be labeled Item #2 and the rest accordingly.

E. For bulk quantities of powders greater than one (1) Kilogram (2.2 pounds), contact the local CDS Unit for guidance, as each submission will vary on a case by case basis.

CDS/Latent Print and CDS/DNA Submissions

A. If FSD is being requested to process CDS packaging for Latent Prints and/or DNA, contact the local CDS Unit for submission guidance.

CDS Submissions for Destruction

The following instructions are for MSP and Department of Public Safety and Correctional Services. All other agencies should contact the Central Receiving Unit at msp.cru@maryland.gov to schedule an appointment for disposal of CDS.

See MSP Directive OPS 17.10 for procedures on destroying marijuana plants and confiscated parcels which have no investigative value.

A. Maryland State Police cases containing suspected CDS and paraphernalia containing CDS which is not needed as evidence will be forwarded to the Forensic Sciences Division for destruction. Arrangements to accept the material will be made in advance with the Forensic Sciences Division, Central Receiving Unit at 443-357-1345.

B. Custodial officers will identify which items are to be destroyed and will coordinate the transport of the CDS to FSD. FSD Crime Scene Technicians can assist in transporting CDS from their assigned areas.

C. Destruction submissions will be by appointment only and are generally limited to CDS listed on 50 property records. In cases where CDS awaiting destruction is creating a storage or security problem, special arrangements may be made by contacting the Central Receiving Unit at 443-357-1345 or msp.cru@maryland.gov for its transfer and immediate destruction.

D. Should a request for the return of CDS evidence be made prior to destruction, a written request must be submitted to the Central Receiving Unit. The request must include the Property Record number (for MSP cases) and agency case number.

E. CDS should be packaged in accordance with established guidelines to protect its security and integrity. CDS cases submitted to the laboratory for destruction must be accompanied by the MSP Form 63 (white, yellow, gold and blue copies).

CDS Destruction for Department of Public Safety and Correctional Services (DPSCS)

Upon request, DPSCS representatives will be given an appointment to submit CDS for destruction. A description of all items within the Kapak must be provided on agency letterhead or MSP Form 67. For CDS, the weight or count must be included. The CDS should be packaged in a container readily visible for inspection by an MSP Forensic Inventory Control Officer.

The MSP Forensic Inventory Control Officer will sign the submitted form and return the original. A copy will be retained in the Forensic Sciences Division Central Receiving Unit for one year after incineration has taken place.

Destruction of Syringes and Needles

Syringes and needles cannot be submitted to MSP-FSD for destruction with CDS.

All syringes and needles fall under the categories of infectious waste or hazardous materials and will be disposed of using an "Infectious Waste" Sharps container located at the submitting agency. When the container is full, it can be forwarded to the Forensic Sciences Division for proper disposal, at which time a replacement container will be issued.

CRIME SCENE SECTION

Processing Of Vehicles

When the need arises for a vehicle to be examined at the Forensic Sciences Division, the vehicle should be transported by a roll-back tow service to minimize the loss of possible evidence. Call the Maryland State Police Headquarters' Duty Officer- Pikesville to coordinate time for examination.

If a car is processed at the barrack or under your agency's supervision, then it is necessary that the vehicle from which evidence has been collected has been in a secured location between the time of vehicle recovery and the time of evidence collection.

Processing of Stolen Vehicles

A. Generally, only those stolen vehicles that are stored at MSP installations will be processed by Crime Scene Section personnel. No processing will be conducted on vehicles that are stored at tow/impound lots.

B. When seizing/towing a vehicle back to an MSP installation for processing by Crime Scene Section Technicians:

    1. The seizing officer will follow the vehicle to maintain the chain of custody.

    2. A MSP Request for Laboratory Analysis/Chain of Custody Form (#67) will be completed and left with the vehicle along with a set of keys if available.

        a. The Form 67 may be hand written or typed and will include the vehicle identification number and tag number if applicable.

        b. Line 1 of the chain will indicate where the vehicle was towed from.

        c. Line 2 of the chain will be the name and signature of the seizing officer, and

        d. Line 3 will be the location of the MSP installation where the vehicle is stored.

C. The Crime Scene Section will only process cars during normal working hours unless it is involved with a crime against person.

Please note that a limited number of Crime Scene personnel are available during dayshift hours on weekends and holidays if needed. All requests for response will be made through the MSP Headquarters Duty Officer and their response will be dependent on availability.

LATENT PRINT/IMPRESSIONS EVIDENCE: SUBMISSION

Required Forms	Tags	Packaging Requirements	Precautions
MSP Form 67, include relevant DOB, SID or FBI number Pre-approval required for tire track/footwear examination	Evidence Label Biohazard label, if contaminated	Package must be sealed with frangible evidence tape and initialed by sealing official	See prior section for submissions requiring CDS analysis

A minimum notice time is required in order for the Latent Print/Impressions Unit (LPIU) to provide quality analysis and to meet any requested deadlines.

The minimum notice times are as follows:

- Latent Print Evaluation and AFIS entry: four (4) week notice
- Latent Print comparison: four (4) week notice
- Completion of a Limited Examination Study: four (4) week notice
- Physical Evidence Processing: six (6) week notice
- Shoe or Tire Track Examinations: eight (8) week notice

Please notify the LPIU of court dates as soon as possible by email to msp.fingerprints@maryland.gov. If notification of a required completion date is not received then the case will be examined according to the FSD Case Management Policy.

The LPIU accepts the following types of evidence:

- Latent print lifts and photographs, digital images (See Submission of Digitally Recorded Latent Print Evidence)
- Shoeprint lifts, photographs, electronic storage media or casts
- Tire impressions, lifts, photographs, electronic storage media or casts
- Physical evidence to be processed for latent friction ridge, shoe, or tire impressions
- Known exemplars (physical or electronic) of finger, palm, and foot prints
- Known exemplars (physical or electronic) of footwear or tires

Pre-submission approval is required for the following examinations. Submit approval requests to msp.fingerprints@maryland.gov.

- Latent print cases not expected to warrant a criminal prosecution (e.g., suicide, found property, suspect is deceased)
- Latent print cases involving constructive possession (e.g., search warrant, vehicle or person searches, controlled purchase)
- All footwear and tire track examinations
- Physical evidence that has not received an initial processing step prior to submission.

When submitting a new examination request to the LPIU that only includes a new suspect comparison and no new evidence, the MSP Form 67 can be e-mailed to msp.fingerprints@maryland.gov. It is not required to be hand delivered.

A separate Form 67 is required for each examination type (latent print, shoe print, tire track) requested.

To permit for retrieval of the correct finger and palm print records for subjects to be compared in the case, complete descriptive information on the Form 67 must include first, middle and last names and a date of birth. A SID or FBI number if known, should also be included. It should be noted on the Form 67 if a record cannot be located for the individual.

Submitted exemplars, latent print lifts, photographs, negatives, digital media and latent print impressions recovered by the LPIU from submitted physical evidence are retained by the FSD. Items submitted for processing to include Gel lifts, electrostatic lifts, and casts are returned to the submitting agency upon completion of the analysis.

All submitted latent print impressions are evaluated for suitability to be searched in the Automated Fingerprint Identification System (AFIS). A specific request to enter a case into AFIS is not required.

The LPIU limits the scope of many examinations to meet the immediate investigative needs associated with the request. When applied, notification of the limited examination and investigative/prosecutorial considerations is included in the final report.

It is common for friction ridge examinations to be reported as inconclusive due to either corresponding areas of friction ridge prints being absent, or detail being considered to be unreliable in the impressions being examined. If additional exemplars are required, the issued report will explain what is needed to complete the comparison (e.g. extreme tips of the fingers or the lower joints).

Requests for re-examinations of previously identified latent print impressions against a new set of exemplars will not be accepted. If requested for prosecution purposes to assure that the individual being charged with the incident is the person reportedly identified, an exemplar to exemplar comparison may be completed using the exemplar prints used for the original exam and a recently recorded set.

A latent print sufficiency reference guide is available for download from the Forensic Sciences Division submissions page at mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision/ForensicSciencesSubmissions.aspx. This guide is designed to assist with the assessment of developed latent prints for purposes of determining if they should be submitted for examination by the LPIU.

Submission of Adhesive Lifts

A. Latent friction ridge impression lifts are to be submitted in pre-stamped latent print envelopes (Quartermaster Division, stock #114140).

   1. Lifts exceeding the size of the envelope should not be folded. In such situations place the lifts and a completed latent print envelope into an appropriate size evidence envelope for submission.

   2. For lifts recovered using gel lifts see Latent Print/Impressions Unit gel lift Submissions at mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision/ForensicSciencesSubmissions.aspx.

B. At a minimum each submitted latent print lift card must be sequentially numbered and include a case number, recovery date, initials of the individual recovering the print, and description of the location from which it was recovered.

C. If used, lifting products such as gel lifts or hinge lifts MUST be no less than 2” X 4” in size with an opaque backing which has been completed with the preceding minimum information requirements. Clear backed lifters and those not meeting the minimum size requirements may be returned to the contributor.

D. Prints left by the processing official during the recovery process (post incident prints) on the submitted lifts should be clearly marked as such. Writing over the impression with an ‘X’ is suitable for this purpose. To help avoid post incident prints the use of gloves during the recovery process is strongly recommended.

E. The use of fluorescent powder alone for the development and recovery of latent print evidence is not recommended.

Electrostatic Lifts Depicting Footwear and/or Tire Track Evidence

A. Electrostatic Lifts depicting footwear and/or tire track evidence submitted through the Central Receiving Unit must be labeled on the accompanying MSP Form #67 as TYPE OF EXAMINATION REQUESTED: Shoe print, or Tire Track.

B. At a minimum the packaging of the electrostatic lift(s) must include a case number, lift number, recovery date, initials of the individual recording the impression(s), and description (or sketch) of the location from which it was recovered. It is recommended that the electrostatic lift itself not be marked with these notations.

C. Secure electrostatic lifts in a rigid cardboard box 'impression-side-up' with the electrostatic lift taped to the bottom of the box to prevent loss of dusty impression details from any sliding or 'flipping' of the evidence during transport and storage. Avoid the use of cardboard boxes with loose cardboard fibers as they may dislodge from the cardboard and deposit on the electronic lift to obstruct any fine impression details.

Casts Depicting Footwear and/or Tire Track Evidence

A. Casts depicting footwear and/or tire track evidence that are submitted through the Central Receiving Unit must be labeled on the accompanying MSP Form 67 as TYPE OF EXAMINATION REQUESTED: Shoe print, or Tire Track.

B. At a minimum the non-impression bearing side of the cast(s) must include a case number, cast number, recovery date, and initials of the recovering person. It is recommended that these notations be etched into the cast just prior to the 'setting' of the casting material. These notations must also be placed on the packaging.

C. Do not remove any soil or sand that clings to the cast upon removing from the ground. This material acts as a protective layer for any fine impression details recorded by the cast. Cast should be permitted to air dry for at least 24 to 48 hours prior to being packaged and transported to the Central Receiving Unit.

D. Package dried casts in rigid, sturdy cardboard boxes. Avoid trying to 'force' casts into snugly-fitting cardboard boxes as this may break the cast. Avoid sealed plastic bags or plastic boxes as they retard the drying process.

Physical Items Depicting Footwear and/or Tire Track Evidence

A. Physical items bearing footwear and/or tire track evidence that are submitted through the Central Receiving Unit must be labeled on the accompanying MSP Form #67 as TYPE OF EXAMINATION REQUESTED: Shoe print, or Tire Track.

B. At a minimum the evidence packaging must include a case number, item number, recovery date, and initials of the individual recording the impression(s).

C. The impression-bearing side of the physical item may include a notation on its packaging of "***This Side Up"*** as to permit the transport and storage of the item in a manner that doesn't disturb the impression's details.

Requests for Brand/Model Name Recognition of Footwear and/or Tire Track Evidence

A. All incoming footwear impression cases are evaluated for suitability to be entered into the ***Shoeprint Image Capture and Retrieval System (S.I.C.A.R)*** without a request. Should a brand recognition be achieved, a S.I.C.A.R. print-out will be provided to the investigating agency.

B. All incoming tire track cases are evaluated for suitability without a request, for manual searching using the tire tread images depicted in the ***Tread Design Guide*** and other databases of tire tread images available at the Forensic Sciences Division. Should a brand recognition be achieved, a print-out will be provided to the investigating agency.

Digitally Recorded Latent Print Evidence

All digital image submissions intended to be used for a comparative analysis must meet all current relevant standards/guidelines. For digital submission guidelines, see Latent Print/Impressions Unit Digital Submission Guidelines at mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision/ForensicSciencesSubmissions.aspx.

Re-Submission of Latent Print and Footwear/Tire Track Cases

A. Should an agency develop suspects or obtain the known prints of persons having had legitimate access to the areas from which the latent prints or footwear/tire track evidence were recovered, it shall be the responsibility of the agency to complete and forward a new MSP Form 67 to the LPIU requesting comparisons and listing the suspect(s) and/or victims(s) and/or elimination standards in the List of Articles section of this form.

B. Any MSP Form 67 requesting an examination relating to an earlier submission should include the submitting agency's **original** case number, the **original** victim's name, along with any case numbers previously assigned by the Forensic Sciences Division. Any MSP Form 67 that is only requesting an examination and not including new evidence can be e-mailed to msp.fingerprints@maryland.gov. It can be hand delivered to Central Receiving but is not required.

FIREARMS AND TOOLMARKS EVIDENCE: SUBMISSION

FIREARMS EVIDENCE

ALL FIREARMS MUST BE UNLOADED PRIOR TO SUBMISSION.

Firearms that cannot be rendered safe by the submitter (e.g.: rusted, damaged) or those submitted for examinations not involving the FATMU will require a safety check upon submission.

Required Forms	Tags	Packaging Requirements	Precautions
MSP Form 67 MSP Form 21-30 Firearms Test Fire Certificate, when applicable.	Evidence Label Biohazard label, if necessary	Firearms must be contained in approved firearms boxes. Strapped down in box as described below. **Only one firearm per box.** Package must be sealed with frangible evidence tape and initialed by sealing official.	When possible, firearms must be unloaded prior to submission. Central Receiving personnel must be notified if it might be considered loaded.

The following types of Firearms/Toolmark Unit (FATMU) examinations can be requested:

- **Firearm Operability/Functionality Testing-** FATMU will test fire firearm
- **Operation Test Shot-** test fires are performed in field by submitting agency, then test fires are submitted to FATMU
- **Walk-In Test Fire-** By appointment only. Submitting agency witnesses test fire at FSD with the understanding that the witness will testify to the operability of the firearm(s).
- **Comparative Analysis of Fired Ammunition Components-** FATMU microscopically examines bullets, cartridge casings, etc.

- **Firearms Serial Number Restoration**- FATMU will attempt to restore obliterated serial numbers on firearms

- **Expedited Workflow for Law Enforcement Weapons**- An expedited workflow is available for cases involving law enforcement weapons. For police involved shootings, contact FATMU via email at msp.fatmu@maryland.gov for further instructions.

Any of the above listed examinations may result in an entry into the National Integrated Ballistic Information Network (NIBIN). A NIBIN entry by FATMU will be automatically searched against the Maryland, DC, Virginia, and Delaware systems. Other states can be searched upon request.

- **Comparative Analysis of Toolmarks and Toolmarked Items**- FATMU will microscopically examine toolmarks and toolmarked items. The suspect tool must be submitted for these examinations.

Pre-submission approval for the following examinations must be obtained by e-mailing msp.fatmu@maryland.gov **:**

- FATMU cases not expected to warrant a criminal prosecution (e.g., suicide, emergency petitions, domestic petitions, found property)
- All toolmark case examinations

A minimum notice time is required in order for the FATMU to provide quality analysis and to meet the requested deadlines.

The minimum notice times are as follows:

- Functional/Operable test fires: six (6) week notice
- Bullet/Cartridge case identification: eight (8) week notice
- Serial number restoration: six (6) week notice
- Toolmark Examinations: eight (8) week notice

Please notify the FATMU of court dates as soon as possible by email to msp.fatmu@maryland.gov. If notification of a required completion date is not received, then the case will be examined according to the FSD Case Management Policy.

For more information on Walk-In Test Fire and Operation Test Shot, please contact FATMU via email at msp.fatmu@maryland.gov.

FATMU Submission Instructions:

A. Items being submitted for examination that may be considered for DNA, trace evidence and latent print analysis should have this evidence collected from them prior to submission for a firearm or toolmark examination. This workflow will help to prevent contamination and degradation of the samples, which may affect the ability to obtain other results. If a magazine was obtained, you must submit this with the firearm.

B. Firearms must be unloaded and packaged in an approved gun box.

1. Only one firearm per box.

2. Do not place firearms in a plastic bag.

3. When a gun box is used, most firearms can be secured to the bottom of the box by simply using two straps: one around the muzzle end of the barrel and one around the weapon's grips behind the hammer and OUTSIDE of the firearm's trigger guard.

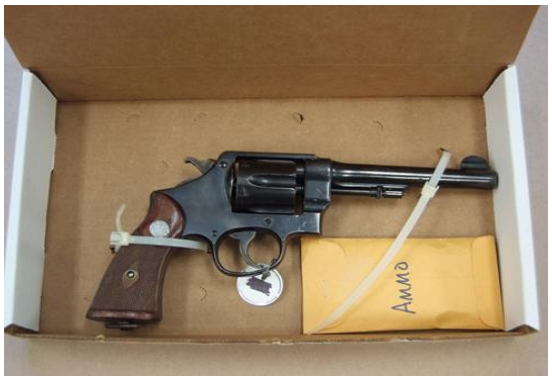
4. Do not apply markings to a firearm. Identifiable marks should be placed on the gun box.

UNDER NO CIRCUMSTANCES WILL THE STRAP PASS THROUGH THE WEAPON'S TRIGGER GUARD.

NO FOREIGN OBJECTS ARE TO BE INSERTED INTO THE BARREL OR EJECTION PORT AREA.

Revolvers:

- Visually and physically inspect the chamber to ensure the firearm is not loaded.
- Remove any cartridges or fired cartridge cases from the cylinder.
- Package ammunition in a labeled envelope and place inside the gun box with the secured firearm.



Semiautomatic Firearms:

- Remove the magazine and/or cartridges from semiautomatic firearms.
- Lock the action to the rear, if possible.
- Visually and physically inspect the chamber and magazine well to ensure the firearm is not loaded.
- Remove any cartridges from the magazine.
- Package ammunition in a sealed and labeled envelope and/or container and place inside the gun box with the secured firearm.

C. In those rare instances when it is not possible to unload the firearm:

1. The firearms will be transported to the laboratory with extra caution.

2. The words in large printed block letters "DANGER - LOADED" will be printed in red, if possible, on the upper right portion of the top of the box.

3. The weapon will then be unloaded by FATMU personnel, who will render the weapon safe for processing.

D. The Laboratory will, when requested, process firearm exhibits and related items for fingerprints and trace evidence.

E. All exhibits collected should be properly inventoried on the MSP Form 67.

F. If the weapon is contaminated by a body fluid, the fluid should be allowed to dry prior to placing it in the handgun box. A "biohazard" warning label will be affixed to the left exterior portion of the top of the box.

G. For rusty firearms or those found in liquid, immediate attention must be given to prevent further damage to the firearm.

1. Whenever a firearm or other metal object is recovered from liquid, it should be ***immediately*** placed in a container completely submerged in the same liquid.

2. If submission in liquid is not practical, the firearms should immediately and thoroughly be sprayed with a water-displacing product, such as WD-40 or other similar product, to prevent further deterioration. It should be noted that the firearm might be too rusted to be functional.

Bullets, Fragments, Cartridge Cases, Shotgun Shells, Pellets, and Unfired Ammunition

Do not apply markings directly to this type of exhibit. Place the exhibit into a suitable container, which is then sealed and marked for identification purposes by the recovering officer or person. **Never package these items in cotton or sealed in plastic.**

Toolmark Evidence

Types of Toolmarks

Impressed toolmarks - (also called compression marks) are produced when a tool is placed against another object and sufficient force is applied approximately perpendicular to the object to leave an impression (e.g. impressed marks from pliers on a doorknob).

Striated toolmarks – (also called striae or scratch marks) are produced when a tool is placed against another object and moved parallel to and across the object with pressure applied (e.g., scratch marks on a window frame from a screwdriver).

Location of Toolmarks

Toolmarks may be found at points of entry and exit at victimized premises and upon objects that have been damaged.

Recovery of Toolmarks

- Submit the object containing toolmark(s) to FSD.
    - If not practical to submit the entire object, remove section of material containing the toolmark(s) and submit to FSD.
    - Make a cast of the toolmark(s) only as a last resort.
- Each item containing toolmark(s) should be individually packaged and labeled prior to submission.
- Label any toolmarked areas that are NOT to be examined (e.g. areas cut by investigator or technician).

Casting of Toolmarks

Silicone plastic-type materials are satisfactory for casting toolmarks. They are available through scientific and law enforcement supply houses. Directions for their use are contained in each kit.

- Package casts individually in paper, NOT plastic.
- Seal and label containers.

Do not use plasticine, Plaster of Paris, patch plaster, and similar materials which have a tendency to shrink.

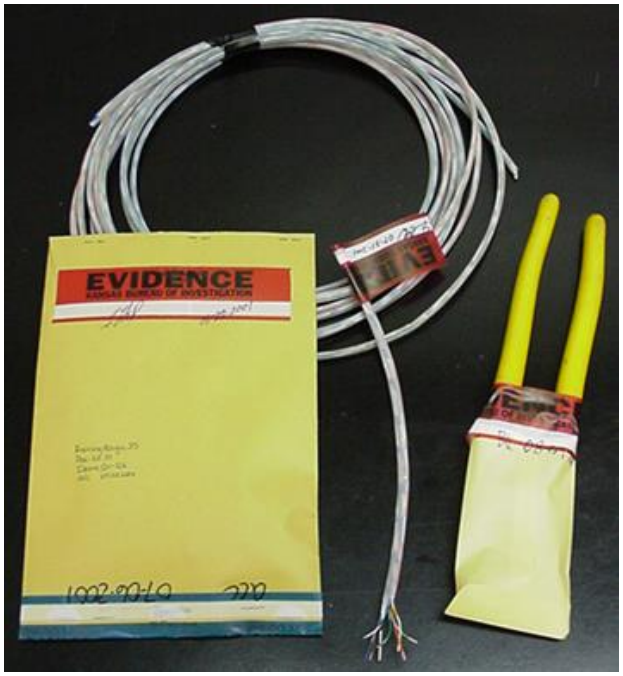
Tools

Recover suspect tools and submit them for examination/comparison to the toolmarks.

- Suspect tools should be individually packaged, protecting the integrity of the marking

surface (e.g. coin envelope placed over the marking and questioned surfaces) in sealed and labeled containers.

- Never place a suspect tool in contact with a questioned toolmark or cast.



PHOTOGRAPHIC EVIDENCE: SUBMISSION

Required Forms	Tags	Packaging Requirements	Precautions
None		None	**Seized digital cameras/media must be submitted to Computer Crimes Unit.**

Submission of digital images or requests for prints or CDs by MSP personnel through the VeriPic system is detailed in OPS 13.13.

States Attorney's Offices may make requests following the below listed criteria:

- For MSP cases, contact Central Records Division 410-281-2700 (Accident cases must be faxed on letterhead to 410-298-3198, Criminal cases can be faxed to 410-281-2730 or emailed to msp.pia@maryland.gov)
- For Allied agency cases, send an email request to msp.photolab@maryland.gov. Provide contact information (phone number, full mailing address), the case number, and details of the request. Please be sure to include a deadline. Ten working days' notice is required.
- An electronic slide show from VeriPic can be provided via email, but please note that the photos cannot be extracted from the show.
- Any cases that are film will be printed only, they will not be converted to digital. The Photo Lab can print 4x6, 8x10 and/or make a CD/DVD.

Office of the State Fire Marshal (OSFM) cases will be requested through the Regional offices and approved by the Regional Supervisors. States Attorney's Offices may make direct requests via email to msp.photolab@maryland.gov.

Allied law enforcement agencies may make direct requests for photos via email to msp.photolab@maryland.gov.

All other outside entities (Lawyers, Insurance Companies, etc.) must make requests via Central Records Division (410-281-2700).

TRACE EVIDENCE: SUBMISSION

Required Forms	***Tags***	***Packaging Requirements***	***Precautions***
MSP Form 67 TES Casework Submittal Form (MSP Form 239)	Evidence Label Biohazard Label, if contaminated	Package items separately in paper, not plastic. Package must be sealed with frangible evidence tape and initialed by sealing official. See descriptions below for further details pertaining to different types of evidence	Universal precautions, wear gloves Clean collection instruments between items.

The Trace Evidence Section (TES) will perform physical and chemical analyses on macroscopic and microscopic traces of physical evidence not generally conducted by any other discipline within the FSD. A wide range of evidence is brought into the TES including, but not limited to, the following types of evidence:

- Fire Debris - identification of ignitable liquid - liquid form or as residue in burned debris
- Paints - both automotive and architectural for paint identification and comparison.
- Hairs - suitability for DNA typing, macroscopic and microscopic examinations of hair characteristics; i.e. human or animal, cut, forcibly removed, etc.
- Fibers and Textiles - identification of fiber type and a comparison to known.
- Physical Matches - association between cut, broken or torn pieces of material.
- Plastics and Tapes - comparison to known, physical match.
- Lamp Filaments - determination of whether lights were on or off at the time of impact.
- Miscellaneous Unknowns - identification of unknowns using microscopic techniques, chemical tests, instrumentation, etc.
- Low Explosives – identification and comparison of explosive material and components
- Soil – preliminary analysis for the presence of trace evidence within the soil
- Dye Packs – identification of known dyes on stolen money and/or the suspect's clothing
- Cordage and Knots – determination of the type of knot and the composition of the material used
- Nature of Damage – determination of the mechanism for physical separation of an item; including determination of whether fabric damage is due to tearing or cutting and determination of the direction of the force causing glass breaks
- Plastic Bag Comparisons – determination of whether a questioned plastic bag came from a known source of bags

NOTE: The TES **does not** analyze evidence that is a food or beverage(s) suspected of being tampered with or adulterated.

For additional questions regarding trace evidence submissions, please contact the Trace Evidence Section at 443-357-1402 or msp.trace@maryland.gov.

TRACE EVIDENCE: COLLECTION AND PRESERVATION

Due to the wide variety of evidence brought to the TES there is no single way to collect and package the evidence. Each scene should be carefully examined for the presence, identification, and collection of probative evidence in such a manner as to not contaminate, lose, or harm the integrity of the evidence. When selecting the collection and preservation methods one should consider the circumstances of the case. Different types of evidence require special handling and packaging. Collection techniques include picking, lifting, scraping, vacuum sweeping, combing and clipping.

Fire Debris Evidence

Fire Debris evidence is any debris or liquid sample that is relevant to the origin, cause, spread and motive of the fire. Fire Debris evidence must be submitted in a timely manner (ideally within two weeks of the collection date) to ensure the integrity of the container (metal cans may corrode over time) and the evidence (prevent evaporation).

A. Evidence to Collect

1. Samples that are protected from the fire can better retain ignitable liquid residues (ILR) than those that are exposed to the fire.

2. Igniting devices (fuses, rags, candles, etc.) including mechanical and electrical devices

3. Samples of upholstery, drywall, plaster, wood, or other material that may have been penetrated by ignitable liquids

4. Samples of soil that may have been penetrated by flammable liquids

5. Trace evidence possibly left by the arsonist such as hairs, clothing fibers, matches, etc.

6. Suspect clothing worn at time of crime, including shoes

7. Liquids containing possible ignitable liquids

B. Comparison Samples

1. Known and comparison samples are needed, especially with building materials or upholstery materials.

2. Known samples include liquids suspected of being used to start the fire (e.g. containers found at or near the fire scene.)

3. Comparison samples include unburned materials at the scene used for comparison to burned samples submitted for analysis (e.g. wood, carpet, drapes, linoleum, etc.)

4. Comparison samples are not guaranteed to be free of ignitable liquids that may have been used as an accelerant. Only true control samples from the manufacturer can ensure that.

5. If swabs or plain gauze (i.e. no gauze from bandages that have a sticky backing) are used for evidence collection from melted plastic or concrete, a clean gauze pad or swab is required and must be submitted in a separate container that is the same size as that used for the evidence.

C. Packaging Fire Debris Evidence:

1. A lined, unused, clean airtight metal can is used to eliminate the escape of any volatiles. If the item is larger than can fit in a can (e.g. bulky clothing or towels), cut the article up and place in several cans. For shoes or boots, please cut off the sole and only submit the tops for analysis.

2. Fill container no more than 2/3 full. If necessary, divide the evidence into multiple cans.

3. A sample of identical material uncontaminated with suspect accelerant must be collected as a control if possible.

4. Package evidence from different locations separately. Be sure to package the control/known sample separate from the questioned evidence.

5. Seal each collected item and mark container with the appropriate information.

D. Packaging Liquid Samples:

1. Collect the liquid sample in a glass container suitable for volatiles. Liquids **should not** be added directly into a metal can for submission.

2. The volume collected **MUST NOT** exceed 1 oz.

3. The glass container should then be placed and secured in a clean, unused metal paint can to prevent breakage. Add an adsorbent, such as vermiculite, to help absorb shock or pad with paper toweling.

4. If gauze (or other absorbing material) is used to collect a liquid sample, a comparison sample must be submitted in a separate container. Any other collection tools, i.e. syringe, eye dropper, gloves etc., should be discarded and NOT included with the evidence sample.

5. Package evidence from different locations separately. Be sure to package the control/known separate from the questioned evidence.

6. Seal each collected item and mark container with the appropriate information.

E. Packaging Soil Samples:

1. Soil readily absorbs and retains ignitable liquid residue which makes it a good source for laboratory analysis. However, soil contains bacteria which will destroy hydrocarbon products. Therefore, soil samples should be refrigerated or frozen to minimize bacteria degradation and preserve the integrity of the evidence.

2. Fill container no more than 2/3 full. If necessary, divide the evidence into multiple cans.

3. A sample of identical material uncontaminated with suspect accelerant must be collected as a control if possible.

4. Package evidence from different locations separately. Be sure to package the control/known sample separate from the questioned evidence.

5. Seal each collected item and mark container with the appropriate information.

Paint Evidence

Paint samples collected should represent all the layers of the paint present. The sample should be chipped off down to the unpainted surface.

A. If possible, submit the entire object on which the paint is observed, including smears and transfers. **DO NOT** attempt to remove paint from clothing, tools or objects where smears and transfers are deposited.

B. If it is not feasible to submit the entire object, use a clean knife blade or scalpel to remove the area of interest including all the layers possible.

C. Small samples can be retrieved using forceps or tweezers.

D. Place sample in a paper bindle or pharmacy fold or vial. **DO NOT** use an envelope. Small samples may be lost among the folds, openings and seals of the envelope.

E. Place different samples in separate containers to avoid contamination.

F. Be sure to seal the container and record the proper identifying information on the container and exterior packaging.

G. Collect a paint standard. A paint standard is a known sample of the undamaged paint collected from the same area as that of the damaged paint being analyzed.

    1. Standard paints should be at least ½ square inch of solid paint with all layers represented (down to the substrate).

    2. Take standard paint samples from near the damaged areas. Paint may vary in type or composition in different locations on a vehicle or item even though the color appears to be the same. Therefore it is important that known paint standards be collected from **each separate panel or area** of the object showing fresh damage.

    3. Place each paint standard in a different paper fold, seal and label.

    4. In addition to the case and investigator information, the label must include the specific source of the sample, including vehicle identification number (VIN), e.g. "Left front quarter panel, 2007 Toyota Matrix, VIN ABC123456789".

    5. Known Paint samples must be collected from every vehicle or painted object involved in the incident, even if some known paint standard is included during the removal of questioned transfers.

Hair Evidence

The TES will evaluate human hair evidence only to determine the potential for obtaining a DNA profile and whether nuclear or mitochondrial DNA testing should be pursued. Such an evaluation includes examining the hair characteristics to determine animal versus human and growth phase.

Hair evidence can be collected in a number of ways including the following methods:

A. Picking (For visible hairs):

    1. Using clean/disposable tweezers or forceps, retrieve the hair without crushing, pinching, or stretching it.

2. Place the hair into a paper bindle, pharmacy fold or vial. Low-tact tape may be used, if available.

3. Hair collected from different sources must be packaged separately.

4. Be sure to seal as well as include the proper identifying information on the container and exterior packaging.

B. Tape Lifts (For hairs you cannot see or are too numerous to collect by picking. This method is **preferred over vacuuming.**):

1. Use low-tact tape such as 3M brand 3051.

2. Take a clean portion of tape from roll and pat over the entire item. Be sure not to overload the tape.

3. Place the adhesive tape side onto a clear, colorless plastic sheet such as transparency film or inside of plastic bag.

4. Place the tape into an envelope or bag and seal the container.

5. Be sure to include the proper identifying information on the container and exterior packaging.

C. Vacuum sweepings (For hairs you cannot see or are too numerous to collect by picking):

1. Use a portable vacuum cleaner equipped with special traps holding a piece of filter paper.

2. Lightly vacuum the surface of interest. You want to collect the trace evidence that is on the surface of the object.

3. Remove the filter trap and cover with a lid or cap.

4. Package in a paper or plastic bag.

5. Be sure to seal as well as include the proper identifying information on the container and exterior packaging.

D. Scraping (For hair you cannot see), preferably done at the Trace Evidence Unit:

1. Hold or hang the object vertically over large, clean craft paper.

2. Using a clean spatula scrape the surface of the object onto a large, clean piece of craft paper.

3. Carefully shake the trace evidence towards the center of the paper and fold.

4. Seal the paper-fold and place it into a paper envelope or bag.

5. Be sure to seal as well as include the proper identifying information on the container and exterior packaging.

If the entire object, such as an article of clothing, containing possible hair evidence is to be submitted to the lab, place the object onto clean craft paper and make a paper fold. Seal the fold and place in a paper bag or envelope. Seal the container and include the proper identifying information.

Fiber Evidence

Fiber evidence may be collected in the same manner as hair evidence. These methods include picking, vacuum sweeping, tape lifts, and scraping. Please refer to "Hair Evidence" section.

DO NOT place fiber evidence loose in an envelope, but in a paper pharmacy fold.

A. Fiber standards should be collected from each source that the victim and suspect are suspected of contacting.

B. Submit the entire item to be used as a fiber standard. If this is not possible cut a small swatch (i.e. for a car seat), or pull random samples of fibers (i.e. for carpets).

C. When collecting fiber standards from a vehicle, be sure to collect samples from all areas which may have transferred fibers (i.e. front and rear floorboard carpeting, all mats, front and rear seat upholstery and any trunk liners). These areas may appear the same but may be manufactured differently from each other and laboratory analysis may be needed to tell them apart.

Note: The more matching fiber types that exist in a case, the stronger the evidence of association. Remember that fiber matches between two individuals who share the same environment (e.g. live together or drive/ ride in the same car) are essentially meaningless.

Glass Evidence

A. Glass samples may be collected using clean/disposable tweezers. If the glass is a large fragment one may collect the fragment by hand (wearing a clean disposable glove) using caution.

B. Collect a representative glass standard sample from the scene. If more than one type of glass is broken and present on the scene, collect a representative sample from each different type

(e.g. windowpane, vehicle lamp, container, etc.). Be sure to package each type separately, labeling the source of each known standard.

C. Collect and submit all glass pieces if you believe numerous glass pieces were from the same object, such as a bottle, and request the TES to attempt a physical match.

D. Place glass fragments into a paper pharmacy fold or pill box. If small particles of glass are collected, one may place the glass onto low tact tape and circle around the area containing the glass particle. Larger fragments should be packaged in a manner to prevent rubbing, shifting, or breakage.

E. If an article of clothing is being submitted for the examination of glass by the lab, allow the item to dry if it is wet. Then package the item by paper fold into clean craft paper. Seal the paper fold and place into a paper bag. DO NOT attempt to remove the glass from the clothing unless absolutely necessary for its preservation.

F. Package glass pieces from different locations into different containers.

G. Be sure to seal as well as include the proper identifying information on the container and exterior packaging.

Note: If the determination of "direction of force" is necessary for identifying which side the force was applied to break the glass, all broken glass must be recovered and submitted for analysis. Leave the remaining glass in the window or doorframe intact and mark as to exterior and interior surfaces.

Lamp Filament Evidence

The primary purpose of a lamp examination is to determine whether a lamp was lighted or unlighted at the moment of impact or breakage. The filaments can sometimes give data that can answer this question. The crime scene investigator (or officer) needs to determine whether the light switch is "on" or "off". However, **DO NOT**, under any circumstances, turn the switch "on" if in the "off" position. Also check the possibility of blown fuses, broken wiring, and dead batteries and note this information on the Trace Evidence Submittal form.

A. All lamps in the damaged area should be collected and submitted to the TES for analysis. In some circumstances, even with no filament present, a conclusion of "on" or "off" can still be determined.

B. Intact lamps may be submitted as is, well packed with soft cotton or paper cushioning and placed in a firm container.

C. Broken lamps:

1. All parts of the broken lamp from the scene must be collected for examination. A physical match of the broken glass to glass remaining in the lamp of a hit and run vehicle can sometimes be achieved which positively links the vehicle to the scene.

2. Carefully remove the complete lamp unit/housing, if possible, insuring that all filaments, filament posts and glass are included. Whenever possible or practical send in the whole assembly so that the least amount of physical damage is done.

3. Broken lamp units and parts should be marked with the location of the lamp on the vehicle and the orientation of the bulb in the socket.

4. If the glass envelope is broken, observe the filament location and determine if the filaments are attached to the filament posts. If the filament is unattached, attempt to locate the filament since most of the important information is detectable only with the filament.

5. Carefully package any separated posts and filaments. Use disposable foam cups or small boxes to prevent further damage. Use cotton gauze or tissue padding if needed.

   Note: Styrofoam cups are used for packaging of bulbs by cutting a hole in the bottom of an inverted cup and inserting the bulb, wrapping it with gauze or tissue, and then suspending another cup over top and securing it so as to minimize shifting of the bulb and therefore minimizing any additional damage to the glass globe and/or filament. The cups can also be used by placing gauze or cotton in the bottom and laying the broken pieces on top, covering with additional gauze or cotton and then sealing the cup in a manila envelope.

D. Carefully package the components in a manner to prevent further damage during shipment such as securely in a box or suspend the bulb in a foam cup. Each item for examination must be identified by vehicle and position of origin on the vehicle.

E. Be sure to seal as well as include the proper identifying information on the container and exterior packaging.

F. When available, it is best to also include a copy of the accident report and any accident photographs depicting the position of each submitted lamp and the overall damage of each vehicle.

Plastic and Tape Evidence

A. Leave plastic and tape evidence intact.

B. Large pieces of plastic and tape evidence may be collected and packaged into paper envelopes or bags.

C. Smaller pieces should be placed into a paper envelope.

D. Tape pieces, that have exposed adhesive, should be affixed to a clean, colorless plastic sheet (or interior of heavy plastic bag) prior to packaging.

E. Package evidence from different locations separately. Be sure to package the control/known separate from the questioned evidence.

F. Be sure to seal as well as include the proper identifying information on the container and exterior packaging.

Miscellaneous Unknown Evidence

The category of "Miscellaneous Unknowns" covers all other types of physical evidence that cannot be analyzed under any other category. This includes but not limited to analyses concerning chemical bank dyes; polymers and plastics; abnormalities in soil; minerals; wood; building materials; cosmetics; and miscellaneous chemical and biological materials.

When collecting such evidence that falls in this category, use a container appropriate for similar evidence listed under the above trace evidence collection categories. If any questions on collection, and/or, packaging please call the TES at 443-357-1393.

Low Explosives Evidence

A. The explosive device (and/or explosive chemicals), precursors or post-blast residues are to be deemed safe by a bomb squad technician prior to submission to the TES or else an analysis will not be conducted (i.e. all triggering devices shall be disarmed).

B. Low explosives include commercial as well as homemade explosives consisting of black powder, black powder substitutes, smokeless powder, fireworks and other explosive chemical mixtures in which the chemical reaction is subsonic in respect to the unexploded material. It is combustible and contains its own oxygen source.

C. Explosive devices include pipe bombs and fireworks.

D. All explosives evidence should be packaged in sealed containers such as paint cans. Do not

place large quantities of explosives (powders) in paint cans. Powders should be no more than one half ounce. If possible separate out powders from post blast fragments.

Gunshot Residue (GSR) Evidence

The MSP TES does not analyze Gunshot Residue (GSR) Collection Kits. However, if there is a case requiring the examination for the presence of GSR, please feel free to contact the TES for assistance regarding the submission and analysis of the GSR Collection Kit(s) to another examination facility.

The use of GSR kits approved by the FSD is recommended. GSR Kits may be obtained from the Maryland State Police Crime Scene Unit assigned to your geographical area.

Questioned Document Evidence

Required Forms	Tags	Packaging Requirements	Precautions
MSP Form 67 MSP Form 70 for sample checks	Evidence label Biohazard label, if contaminated	Known standards and samples in question should be listed on separate MSP 67 Forms Evidence must be sealed with frangible evidence tape	Evidence should not be folded, torn, marked or stamped

A. For specific guidance on packaging evidence, how to take comparable suspect samples and victim elimination standards, contact the TES at 443-357-1395.

B. Multiple items of questioned documents involving the same criminal suspect will not be accepted. Only a minimum number of items sufficient to bring about a successful prosecution will be examined.

C. The known samples or known standards should be listed on a separate MSP Form #67 from the questioned documents.

D. The evidence **must not** be folded, torn, marked or stamped.

E. If more than one examination is requested, list this under TYPE OF EXAMINATION REQUESTED.

Handwriting/Handprinting

This is the most common type of examination requested. It usually consists of the comparison of specimens from a known individual with questioned material in order to determine common authorship. Alternatively, examination may consist of comparison of only questioned material in order to determine if all or part is by one author.

ALWAYS SUBMIT ACCOUNT HOLDER VICTIM/ELIMINATION HANDWRITING to provide the Forensic Document Examiner a basis for a determination whether or not the suspect made any attempt to imitate the letter formations or writing features of the account holder/victim. (Cancelled checks are a good source and should be near the date in question.)

Obtaining Known Handwriting/Handprinting Samples

Handwriting identification depends on the quality of the known writing.

A. Results of handwriting examination depend on the quality of the known writing samples obtained from suspects for comparison with questioned (disputed) writing. Always try to submit originals as they are the best evidence.

B. Concentrate on taking specific samples/standards that approximate the questioned writing conditions.

   1. Duplicate the original writing conditions as to questioned wording and writing instruments, etc.

   2. Provide the same amount of writing space that was provided on the questioned documents (charge slips, gas station invoices, etc.).
      a. If the questioned document is a lined note tablet, have the suspect prepare his or her samples on lined note paper.
      b. If the questioned document is a check, then collect the standard on a sample check. Provide copies of the sample checks from Form 70.
      c. To replicate endorsement signatures, use the narrow end of an unlined 3x5 index card (i.e. not across the entire width of the card).

C. Dictate the text to be written or printed by your suspect.

   1. Do not let your suspect view or copy the questioned writing during the process.

   2. Do not provide your suspect with a format guide during the taking of sample/standards.

   3. Give no instructions as to spellings, punctuation, etc.

   4. Each sample should be on a separate piece of paper.

   5. **Remove each sample from view as they are completed.**

   6. For checks, dictate what is to be printed or written cursive on each line of the check sample without allowing the suspect to view the questioned documents or copy from a sample guide.

   7. In hand printing cases, both upper case (capital) and lower case (small) samples should be obtained.

   8. In forgery cases, obtain sample signatures of the person whose name is forged.

   9. Have writer prepare some specimens with hand not habitually used.

10. As a general rule, obtain at least twenty samples with the full wording of each questioned document. Obtain 20-30 repetitions when the questioned writing is relatively brief, such as a signature. For checks, eight to ten repetitions should be sufficient.

11. Number in an inconspicuous place on the evidence in the sequence in which they were obtained.

12. In the case of large volumes of documents, obtain as much known writing as is feasible in a period of two hours.

13. Dictate the exact wording in the questioned writing whenever possible.

In certain investigations, it may not be possible to have the suspect prepare specimen writings. For this purpose, a list has been prepared giving the investigator sources for obtaining standards for comparison (see 101 Sources of Handwriting Specimens at mdsp.maryland.gov/Organization/Pages/CriminalInvestigationBureau/ForensicSciencesDivision/ForensicSciencesSubmissions.aspx).

If you have any questions as to how to collect samples or what to obtain, please contact the TES directly.

Typewriting/Machine Printing

This type of examination is usually an attempt to determine if a particular machine was used to produce the document in question. Paper cutters, punch holes, and check writers are also included in this category. Do not type any samples of type on the questioned document. Package in a solid container.

A. If the typewriter has carbon film ribbon, remove it from the typewriter and submit it to the laboratory. Also, submit the correction tape. Insert a new ribbon in the typewriter prior to obtaining exemplars.

B. If the typewriter has a fabric ribbon, remove it from the typewriter and put the typewriter in the stencil position. Place a sheet of carbon paper over the sheet of blank paper and insert both into the typewriter. Allow the typeface to strike the carbon paper. Submit the fabric ribbon strike and the carbon paper strike exemplars to the Laboratory.

C. Obtain two full word-for-word texts of the questioned text and type the entire keyboard (all symbols, numbers, upper and lower case letters) two times.

D. Record the make, model, and serial number of the typewriter on the exemplars. Also, record the date the exemplars obtained and the name of the person who directed the exemplars.

E. Obtain the typewriter service and/or repair history.

F. It is not normally necessary to send the typewriter to the Laboratory; however, in some cases, the examiner will request the typewriter. It should be packaged securely to prevent damage during shipping. Typewriter elements (ball, printwheel, or thimble) should also be submitted to the lab.

G. Do not disturb inking mechanism or printing devices.

Rubber Stamps

An impression can sometimes be identified with the stamp that produced it. Submit the un-cleaned rubber stamp to the laboratory.

Erased or Altered Documents

This type of examination determines if there has been any alteration to an original document. If there has been an alteration, can the material (which has been obliterated) be deciphered? The reconstruction of parts of writings by the examinations of indented writings, residue or the use of alternate light sources are all part of the examination process.

Paper

Paper can be examined for many aspects, such as manufacturer, material contents, watermarks and other specific features which would be unique. Edges and tears can also be used to place a bit of paper back to the original sheet. In counterfeit money, the cut edges can be useful in identifying the paper cutter used and, hence, the shop where it originated.

Ink

This examination is an attempt to determine origin through the components used in its manufacture. Most likely the examination can determine that two inks are not the same through special comparisons.

Burned or Charred Documents

This examination attempts to determine the content of the document residue. Photography and other areas of the examination may allow the examiner to determine the original text of the document. Entire documents have been reconstructed in this manner. Slip cardboard under the document and pack in rigid container between layers of cotton to restrict movement.

Photocopy Exemplars

Photocopies can sometimes be identified with the machine producing them if the exemplars and questioned copies are relatively contemporaneous.

A. Record the make, model and serial number of the photocopy machine, information about the toner supplies and components, if the paper supply is sheet or roll fed, and options such as color, reduction, enlargement, zoom, mask, trim, or editor board.

B. Obtain at least ten exemplars with no document on the glass plate, with the cover down.

C. Obtain at least ten exemplars with no document on the glass plate, with the cover up.

D. Obtain at least ten exemplars with a document on the glass plate, with the cover down.

E. Record on each exemplar the date the exemplars were obtained, the name of the person who directed the exemplars, and the condition under which the exemplars were made.

F. Do no store or transport photocopies in plastic envelopes.

REVISION HISTORY

REVISION NUMBER		REVISION DATE		HISTORY
1		3/7/05		Latent Print Section (Page 27 - #4)
2		12/1/06		Annual Review Update new facility info.
3		9/10/07		Update Superintendent Information
4		1/15/2010		Annual Review, updated job titles, section/unit organization and Biology & Trace submission procedures; added ISO requirements
5		3/31/2010		Pg 13: added requirement to label packaging with item number and/or description; Pg 34: added requirement to indicate if film contains images of shoe prints, tire tracks, or both
6		12/17/2012		Removed Form 67A; updated contact information; added QC DNA Database; added policy of touch DNA for spent cartridge casings and bullets; updated CDS sampling, sample selection and quantitation policies; updated LPIU requirements for submission of gel lifters and digital image submission limitations; updated FATM notification and pre-submission approval policies; added VeriPic; added Form 239
7		8/28/2015		ADDED Y-STR and low explosives analyses, requirement to ensure Chain of Custody for vehicles, instructions for submission of less than 10 g of marihuana, notification times for LPIU cases, latent print sufficiency information, analysis workflow recommendation; UPDATED syringe acceptance policy, Quality Control DNA Database policy, timeline for collection of sexual assault kit samples, CDS sample selection and sampling procedures, submission of CDS for destruction procedures, firearm safety check requirement; REMOVED requirement to record number of packages on Form 67, reference to BI photos
8		07/19/2019		Major revision to entire document- clarifying submission guidelines and removing additional language for proper collection of certain evidence.