

Basic Course Workbook Series



Learning Domain 30

Crime Scenes, Evidence, and Forensics

Version 6.0

COMMISSION ON PEACE OFFICER STANDARDS AND TRAINING

Basic Course Workbook Series
Student Materials
Learning Domain 30
Crime Scenes, Evidence, and Forensics
Version 6.0

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The mission of the California Commission on Peace Officer Standards and Training is to continually enhance the professionalism of California law enforcement in serving its communities.

THE ACADEMY TRAINING MISSION

The primary mission of basic training is to prepare students mentally, morally, and physically to advance into a field training program, assume the responsibilities, and execute the duties of a peace officer in society.

FOREWORD

The California Commission on Peace Officer Standards and Training sincerely appreciates the efforts of the many curriculum consultants, academy instructors, directors and coordinators who contributed to the development of this workbook. We must also thank the California law enforcement agency executives who allowed their personnel to participate in the development of these training materials.

This student workbook is part of the POST Basic Course Training System. The workbook component of this system provides a self-study document for every learning domain in the Basic Course. Each workbook is intended to be a supplement to, not a substitute for, classroom instruction. The objective of the system is to improve academy student learning and information retention and ultimately contribute to you becoming a peace officer committed to safety, and to the communities you will serve.

The content of each workbook is organized into sequenced learning modules to meet requirements as prescribed both by California law and the POST Training and Testing Specifications for the Basic Course.

It is our hope that the collective wisdom and experience of all who contributed to this workbook will help you, the student, to successfully complete the Basic Course and to enjoy a safe and rewarding career as a peace officer.

MANUEL ALVAREZ, Jr.
Executive Director

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Student Workbooks

The student workbooks are part of the POST Basic Course Instructional System. This system is designed to provide students with a self-study document to be used in preparation for classroom training.

Regular Basic Course Training Requirement

Completion of the Regular Basic Course is required, prior to exercising peace officer powers, as recognized in the California Penal Code and where the POST-required standard is the POST Regular Basic Course.

Student Workbook Elements

The following elements are included in each workbook:

- Chapter contents, including a synopsis of key points,
- Supplementary material, and
- A glossary of terms used in this workbook.

HOW TO USE THE WORKBOOK

Introduction

This workbook provides an introduction to the training requirements for this Learning Domain. It is intended to be used in several ways: for initial learning, for test preparation, and for remedial training.

Workbook Format

To use the workbook most effectively, follow the steps listed below.

Step	Action
1	Begin by reading the: Introduction and How to Use the Workbook, which provides an overview of how the workbook fits into the POST Basic Course Instructional System and how it should be used.
2	Refer to the Chapter Synopsis section at the end of each chapter to review the key points that support the chapter objectives.
3	Read the text.
4	Complete the workbook learning activities at the end of each chapter. These activities reinforce the material taught in the chapter.
5	Refer to the Glossary section for a definition of important terms. When first referenced these terms will be bolded and underlined (e.g., <u>term</u>).

Chapter 1

Crime Scenes

OVERVIEW

Learning Need

Peace officers must have a general understanding of the total range of basic criminal investigation procedures in order to make the appropriate decisions regarding the identification and preservation of evidence at the scene of a crime.

Learning Objectives

The chart below identifies the student learning objectives for this chapter.

After completing study of this chapter, the student will be able to:	Objective ID
<ul style="list-style-type: none">Identify the goal of a criminal investigation	30.01.1
<ul style="list-style-type: none">Perform the steps of a preliminary criminal investigation including:<ul style="list-style-type: none">Proceed safely to the sceneDetermine need for emergency medical services and aid any injured personsVerify that a crime, if any, has occurredIdentify and arrest the suspect(s), if appropriateAs soon as possible, provide dispatch with any suspect information including physical descriptions, direction of flight, mode of travel, and other pertinent informationContain and protect the crime scene, initiate a crime scene log and cause the proper collection of evidenceLocate and interview victim(s) and/or witness(es) and identify other sources of informationCollect all available information necessary to write a clear and accurate report (who, what, when, where, why and how)	30.01.2

After completing study of this chapter, the student will be able to:	Objective ID
<ul style="list-style-type: none"> • Demonstrate actions peace officers may employ to preserve possible evidence at a crime scene 	30.01.5
<ul style="list-style-type: none"> • Identify the primary purpose of conducting a(n): <ul style="list-style-type: none"> - Initial survey of a crime scene, and crime scene search 	30.01.6 30.01.7
<ul style="list-style-type: none"> • Identify criteria for allowing crime scene photographs to be admitted as evidence by the court 	30.01.9
<ul style="list-style-type: none"> • Identify elements to be included on a crime scene diagram 	30.01.10

In This Chapter

This chapter focuses on the documentation of a crime scene that must take place prior to the collection of evidence. Refer to the table below for a specific topic.

Topic	See Page
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PRELIMINARY CRIMINAL INVESTIGATIONS

Introduction

The role of responding peace officers to calls involving criminal activity goes well beyond that of making an arrest. The actions taken or not taken by peace officers can greatly influence the prosecutor's success in obtaining a conviction.

Types Of Investigations

An **investigation** is the systematic gathering of information from a variety of sources and the documentation of evidence, observations, and findings.

Law enforcement agencies conduct a variety of different types of investigations including, but not limited to:

- Background investigations (e.g., screening job applicants),
- Internal investigations (e.g., regarding conduct of officers),
- Permit investigations (e.g., prior to issuing business licenses), and
- Criminal investigations.

Criminal Investigations

A **criminal investigation** is a systematic approach to the:

- Establishment of a criminal violation,
- Identification and arrest of a suspect, and
- Gathering of evidence for presentation in a court of law.

The ultimate goal of a criminal investigation is to determine if a crime occurred, provide investigative leads, and assist in the successful prosecution of the guilty and exoneration of the innocent.

Preliminary Investigations

The investigation of a crime often takes place in a number of phases. It begins with the preliminary investigation and progresses through more in-depth follow-up investigations, ultimately leading to the arrest or indictment of a suspect.

The **preliminary investigation** begins when the responding officers first receive the call. It continues through the writing and filing of the primary officer's investigative report.

Involved Individuals

A number of individuals and organizations are involved in the preliminary investigation of a crime. Each person participating must understand and anticipate the needs and requirements of the other individuals involved.

Individuals involved in the investigative process may include, but are not limited to:

- Reporting parties
- Responding officers
- Investigating officers
- Victims
- Witnesses
- Evidence technicians
- Medical examiners
- Forensic scientists, and
- Attorneys

Components Of a Preliminary Investigation

Although no two crime scenes are the same, the components of a preliminary criminal investigation remain similar. The extent that the responding officers are involved in each event is dependent on the nature of the crime, the availability of other officers or specialized personnel (e.g., evidence technicians, etc.), and agency policies.

The following table identifies the components common to all preliminary criminal investigations.

	Action(s)	Guidelines
Approach and arrival	Proceed safely to the scene.	<ul style="list-style-type: none"> • Scan area to identify potential physical evidence of reported crime while en route. • Scan scene(s) for occupational hazard(s). • Position vehicle in such a manner as not to compromise potential evidence and/or officer/public safety. • Stage emergency medical services and/or fire personnel. • Direct back up units. • Initiate a crime scene log for all personnel within the scene perimeter.
Initiate crime scene log		<p>NOTE: For additional information regarding safely responding to a call, refer to LD 19: Vehicle Operations.</p>

	Action(s)	Guidelines
Assessment	Determine need for emergency medical services.	<ul style="list-style-type: none"> • Officers have a primary responsibility for the preservation of life that must supersede the apprehension of a suspect • Officers should render first aid and request additional emergency medical services when needed • While rendering aid, officers must also remain alert to: <ul style="list-style-type: none"> - Officer safety, - The need to record accidental destruction or alteration of evidence, and - The need to record any medical assistance rendered to injured parties by officers, medical personnel, or others <p>NOTE: For additional information regarding rendering first aid refer to LD 34: First Aid, CPR, and AED.</p>
	Verify that a crime has occurred.	<ul style="list-style-type: none"> • Do not assume that the information that was dispatched will be a valid reflection of the actual event. Information initially given to the dispatcher may not have been complete or accurate • Upon arrival officers should: <ul style="list-style-type: none"> - Visually inspect the scene, - Gather information from involved parties, and - Establish the body or elements of the crime (<u>corpus delicti</u>) to determine if a crime has been committed and, if so, identify the specific crime

	Action(s)	Guidelines
Assessment (Continued)	Identify and arrest suspect(s), if appropriate.	<ul style="list-style-type: none"> Suspect identification may be based on: <ul style="list-style-type: none"> Victim and/or witness statements, Spontaneous confessions and/or statements made by suspects themselves, or Physical, biological, trace, and impression evidence at the crime scene. (e.g., fingerprints, clothing, weapons, etc.) If sufficient <u>probable cause</u> exists to believe the suspect is guilty of a crime, the suspect can be taken into custody A search of the suspect incident to the <u>custodial arrest</u> may include a full search of: <ul style="list-style-type: none"> The arrestee's person, Containers on the arrestee's person, and The nearby physical area that was under the immediate control of the arrestee. <p>NOTE: Searches incident to arrest can be more inclusive than cursory/frisk searches for weapons only.</p> <p>NOTE: For additional information regarding searches and custody, refer to LD 15: Laws of Arrest and LD 16: Search and Seizure.</p>

	Action(s)	Guidelines
Assessment (Continued)	Provide dispatch with pertinent information as soon as possible.	<ul style="list-style-type: none"> • If suspect(s) have fled the scene, officers should provide the dispatcher and other field units with information such as: <ul style="list-style-type: none"> - Physical description(s), including clothing - Direction(s) and route(s) of flight, and/or - Mode of travel. (e.g., on foot, by vehicle, etc.) - Time and location last observed - Information regarding vehicles (if known) • Additional pertinent information may include: <ul style="list-style-type: none"> - Type of crime, - Extent of injuries, - Type of business, (if applicable) - Location of occurrence, - Time of occurrence, - Description of vehicle, (if applicable) - Description of weapon, (if applicable) and/or - Description of property taken, (if applicable) - Need for forensic personnel or criminalists at the scene • Additional broadcasts can be made if/when additional information is obtained during the preliminary investigation

	Action(s)	Guidelines
Preliminary Investigation	Secure and protect the crime scene.	<ul style="list-style-type: none"> The primary responding officer to a crime is responsible for the integrity of the crime scene until that officer is relieved of that responsibility Set up crime scene perimeter tape (if applicable)
	Determine jurisdiction	<ul style="list-style-type: none"> Make appropriate notifications based on agency policies and procedures
	Identify and preserve possible evidence.	<ul style="list-style-type: none"> Proper crime scene management requires: <ul style="list-style-type: none"> Preventing the contamination or destruction of evidence Initiating a crime scene log (if appropriate), documenting all personnel entering/exiting the scene Documenting the crime scene Identifying and preserving evidence, and Protecting the victim's property from damage or theft
	Locate and interview victim(s), and or witness(es).	<ul style="list-style-type: none"> Officers should obtain and document information needed to: <ul style="list-style-type: none"> Determine the crime, Identify and locate the victim(s) or suspect(s), and Generate additional crime broadcasts. Responding officers may be responsible for locating and interviewing all persons present at a crime scene.
	Identify other possible sources of information.	<ul style="list-style-type: none"> As quickly as possible, collect as much information as is available. <p>NOTE: A listing of possible sources of information is provided in the <i>Supplemental Materials</i> portion of this workbook.</p>

	Action(s)	Guidelines
Report	Collect available information necessary to write a clear and effective investigative report.	<ul style="list-style-type: none"> • Officers should begin taking field notes as soon as possible after arriving at the crime scene. • Notes should reflect information needed to report on the who, what, where, when, how, and why of the crime. <p>NOTE: For additional detailed information regarding investigative reports refer to LD 18: Investigative Report Writing.</p>

Follow-Up Investigations

Actions taken by officers involved in the preliminary investigation can have a direct impact on follow-up law enforcement actions. Further investigative actions that may be required include, but are not limited to:

- Reviewing the original report to develop additional leads
- Viewing all evidence seized and ensuring proper packaging and preservation for submissions to a crime laboratory
- Conducting follow-up interviews with the reporting officer, victim(s), witness(es), and suspect(s)
- Evaluating statements, evidence, and laboratory results
- Gathering additional evidence through surveillance
- Identifying, locating, arresting, or seeking warrants for the arrest of suspect(s)
- Conducting custodial interviews
- Compiling and conducting field show-ups and lineups
- Seeking warrants for searches and recovering stolen property
- Maintaining a liaison with the prosecutor
- Complying with victim/witness obligations

PRESERVATION OF A CRIME SCENE

Introduction

The crime scene itself is a form of evidence and should be treated by officers just as carefully as any other form of evidence.

Role Of Responding Officer

It is the responsibility of the initial primary responding officer to secure and protect the integrity of the crime scene until officially and properly relieved.

Initially, officers should not touch anything or do anything that could alter a crime scene in any way except to preserve life or administer aid to a victim.

Contamination

When two objects touch each other, it is possible for trace substances of one to be transferred to the other. For example, whenever an individual enters a crime scene, it is possible for that individual to introduce physical evidence to the scene (e.g., fibers, hair, fingerprints, DNA, etc.) as well as to remove physical evidence from the scene (e.g., fibers on clothing, soil on shoes, etc.).

Such transfers can take place not only to potential suspects, but also peace officers who enter or leave a crime scene. For this reason, crime scenes must be carefully protected and personnel investigating the scene may need to wear protective gear to avoid any intentional or unintentional forms of contamination.

Protecting The Crime Scene

A crime scene encompasses not only the immediate area where a crime took place, but also other areas related to the crime (e.g., vehicles, escape routes, etc.). The following table identifies actions that can be taken by responding officers to protect the scene of a crime.

Action	Additional Information
Establish a perimeter	<ul style="list-style-type: none">• An <u>inner perimeter</u> should include that area which contains specific evidence of the crime• An <u>outer perimeter</u> may be established as a means of securing and controlling access to the inner perimeter• Access to the inner perimeter should be limited to only those <i>authorized</i> individuals directly related to the criminal investigation• Isolate the scene and deny entry• A perimeter should be larger than is apparently necessary. One rule to follow is to double the distance from the center of the crime scene to the farthest location of any piece of evidence• Prevent all unauthorized people from entering the scene (e.g., family members, neighbors, media, etc.)
Assign personnel	<ul style="list-style-type: none">• The primary responding officer should assign law enforcement personnel to maintain inner and outer perimeters• If necessary, assistance for perimeter containment may be obtained from those other than law enforcement personnel

Action	Additional Information
Place fixed barriers	<ul style="list-style-type: none"> • Police barrier tape can be used to establish and identify clear boundaries to maintain crime scene integrity • Use cones and other traffic barricades to restrict access to the area • Vehicles or other items can be strategically positioned to block traffic
Maintain a crime scene log	<ul style="list-style-type: none"> • Record information on who had access to the crime scene • Include information such as: <ul style="list-style-type: none"> - Date - Time in and out - Name and rank - Badge or ID number - Agency, and - Reason for entry

Evidence Protection

Evidence within a crime scene may be moved, damaged, or obliterated by even the smallest disturbance. Because of this, initial responding officers must take actions to protect physical evidence.

IF...	THEN...
<ul style="list-style-type: none">• The crime scene may be affected by:<ul style="list-style-type: none">- Environmental factors, (e.g., rain, wind, etc.) or- Individuals not authorized to participate in the investigation, (e.g., bystanders)	<ul style="list-style-type: none">• Action may be necessary to protect the evidence such as, but not limited to:<ul style="list-style-type: none">- Providing a tent covering to protect from rain or sunlight,- Erecting temporary walls or barriers to reduce wind contamination, or- Using cardboard to temporarily cover tire tracks or footprints
<ul style="list-style-type: none">• Movement of evidence, if required (e.g., to transfer a victim, officer safety, etc.)	<ul style="list-style-type: none">• Officers should:<ul style="list-style-type: none">- Verbally notify appropriate personnel of the action taken- Document and photograph, if appropriate, and condition of the evidence, and- Document all actions taken

Evidence Tampering by Peace Officers

Penal Code Section 141(b) states a peace officer who knowingly, willfully, intentionally, and wrongfully alters, modifies, plants, places, manufactures, conceals, or moves any physical matter, digital image, or video recording, with specific intent that the action will result in a person being charged with a crime or with the specific intent that the physical matter, digital image, or video recording will be concealed or destroyed, or fraudulently represented as the original evidence upon a trial, proceeding, or inquiry, is guilty of a felony punishable by two, three, or five years in the state prison.

CRIME SCENE SURVEYS AND SEARCHES

Introduction

Movements at a crime scene should be carefully planned. Prior to any crime scene search responding officers must determine if the crimes committed are major crimes or minor crimes and then develop a specific search plan.

During Major Crime Investigations

The **initial survey** should consist of securing the scene, noting visible evidence, calling for necessary resources, and controlling entry into the scene until properly relieved.

A major scene is defined by the need for specialized investigators and forensic personnel.

Initial Surveys

Once a crime scene has been secured, an initial survey should be undertaken to identify the kind and amount of evidence that may exist in the designated area. The purpose of conducting such a survey is to give responding officers an opportunity to assess the amount of time, equipment, and personnel that may be needed to actually collect and process the evidence.

Officers should proceed cautiously through the crime scene area, being careful *not to touch, step on or disturb, or remove* any possible evidence when conducting the initial survey.

NOTE: For personal protection and for the protection of the evidence itself, officers may be required to wear items such as latex gloves, shoe covers, or other forms of protective clothing when conducting an initial crime scene survey.

Crime Scene Search

A crime scene search is a systematic, coordinated effort conducted in order to:

- Locate evidence (physical, trace, impression, or biological) that indicates a crime has taken place, and
- Identify individual(s) who were present at the scene or may have committed the crime.

Search Plans

Prior to conducting a crime scene search, all involved law enforcement personnel should have a clear understanding of the search plan. Everyone assisting in the search for evidence should be made aware of the:

- Type of crime that has taken place
- Type of items that may be associated with the crime
- Perimeters of the area to be searched, and
- Searching pattern that will be used

NOTE: Searching officers should not limit themselves to collecting only items that they *think* are evidence. They must keep in mind that everything found in the crime scene should be considered evidence.

Selecting A Search Pattern

There are a number of different search patterns that can be used when attempting to locate evidence at a crime scene. The selection of a specific search pattern used at a crime scene should be based on the:

- Location and configuration of the crime scene
- Number of personnel available for the search, and
- Personal preference

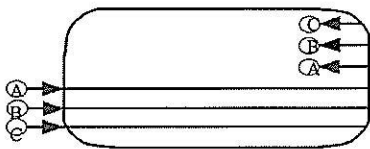
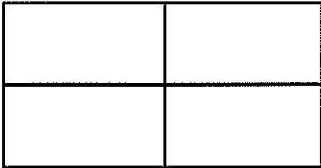
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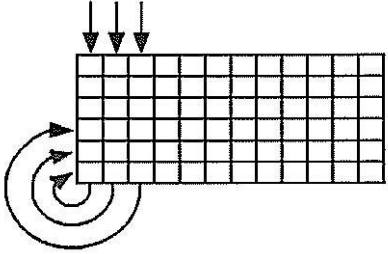
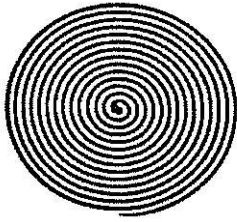
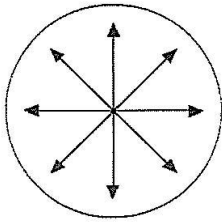
The condition of the crime scene along with the location and description of items of possible evidence identified during any search should be documented in:

- The officer's field notes
- Photographs
- Crime scene diagrams, and
- The officers' original report and other supplemental reports

Search Patterns

The following table identifies five such patterns commonly used.

Pattern	Description	Diagram
Line	<ul style="list-style-type: none">• Officer begins at one corner of the crime scene and searches back and forth across the area, moving in parallel straight lines (in the same manner as if mowing grass).• The search can be modified for use by two or more officers walking side by side when the crime scene is a large open area (e.g., open field, street, etc.).	
Quadrant	<ul style="list-style-type: none">• Crime scene area is divided into fourths or specified quadrants.• Quadrants are searched one at a time by the officer(s).	

Pattern	Description	Diagram
Grid	<ul style="list-style-type: none"> • An imaginary grid is superimposed on the crime scene area. • All blocks within the grid are the same size. • Officer(s) begin searching at one corner and proceed, searching one block at a time. <p>NOTE: A variation of this pattern is the sector search where a large area is divided into designated sectors and searched one at a time (e.g., searching a building by floors or by rooms).</p>	
Spiral	<ul style="list-style-type: none"> • Officer begins searching by circling the outer perimeter of the crime scene. • Officer continues spiraling in an ever-smaller circle toward the center of the crime scene area. • Useful when: <ul style="list-style-type: none"> • searching a small crime scene area alone, or • it is believed that evidence that once was centrally located has been moved or hidden some distance from the original point of the crime. 	
Wheel	<ul style="list-style-type: none"> • An imaginary circle is superimposed on the crime scene area. • The circle is divided into manageable pie-shaped wedges (or “spokes” as on a wheel). • Each wedge or section between spokes is searched one at a time. 	

Introduction

Photographs of a crime scene can record how the scene appeared and how the evidence was found at the scene.

Benefits

Crime scene photographs can:

- Provide investigators with a visual record of the crime scene.
- Allow the court to visually see the crime scene and the position and the state of each item of evidence at the scene.
- Serve as a means of preserving fragile evidence.
- Be stored as evidence indefinitely and be readily available if needed later.
- Negate or validate statements made by suspects or witnesses.

Photographs As Evidence

Crime scene photographs are often used in a court of law as a form of demonstrative evidence. Photographs may be admissible as evidence if they:

- Show an object or person relevant to the crime,
- Accurately represent, without distortion, the object or scene photographed,
- Are marked properly to identify contents and location, and
- Are not used solely to appeal to the emotions or prejudice of the court or jury.

Types Of Photographs

The following table identifies the four primary types of photographs taken to document a crime scene.

Type	Example
Location	<ul style="list-style-type: none">External view of the building, vehicle, or area where the crime has taken place (i.e., address, license plate)
Witnesses	<ul style="list-style-type: none">Candid photographs of groups of bystanders, witnesses, etc.
Evidence	<ul style="list-style-type: none">All visible items of evidence at the scene
Close-ups	<ul style="list-style-type: none">Close shots showing details of injuries, bodies, or individual items of evidence

General Guidelines

Cameras can be used along with lighting equipment, tripods, and measuring devices to create images of the crime scene.

Peace officers should ensure the accuracy and credibility of all photographs taken at a crime scene.

Guidelines	Rationale/Description
Take photographs prior to conducting any detailed search for evidence.	<ul style="list-style-type: none">Such action helps ensure that the photographs record how the evidence was found at the crime scene.

Guidelines	Rationale/Description
Take numerous different types of photographs.	<ul style="list-style-type: none"> • Include: <ul style="list-style-type: none"> - Location (e.g., scene address) - Witnesses and bystanders, - Items of evidence, and - Close-up images of evidence showing details
Use markers and scale measures in the photographs.	<ul style="list-style-type: none"> • Take initial photographs prior to placement of any marker(s) and after placing markers • Place sequentially indexed markers next to items to: <ul style="list-style-type: none"> - Identify and call attention to the items, and - Identify the order in which the photographs were taken • Place measuring devices next to items to show: <ul style="list-style-type: none"> - Relative size of the items, - Distances between objects, - Degree of photographic enlargement, or - To call attention to particular trace evidence
Use a tripod when possible.	<ul style="list-style-type: none"> • Use of tripods or other stable items can help hold the camera steady and improve the quality of the photograph • Tripods are especially beneficial when taking close-up shots of evidence
Prepare a written log of all photographs taken.	<ul style="list-style-type: none"> • Do not rely on memory • Accurately record all information that will be needed to properly label finished prints
Avoid photographing extraneous persons.	<ul style="list-style-type: none"> • Do not include persons in the shot except when specifically photographing: <ul style="list-style-type: none"> - The body of a victim, - Close-ups of an individual's injuries, or - Onlookers and/or witnesses at a crime scene

Photograph

For a photograph to be useful, the conditions under which it was taken must be properly documented.

Guidelines	
Photographer	<ul style="list-style-type: none">• Full name, rank, identification number
Time	<ul style="list-style-type: none">• Time and date the photograph was taken
Location	<ul style="list-style-type: none">• Address of the crime scene and where the particular photos were taken
Camera Position	<ul style="list-style-type: none">• Distance from the camera to the subject• Height of the camera from the ground when the photograph was taken
Equipment	<ul style="list-style-type: none">• Type of camera and lens• Camera settings (e.g., shutter speed, lens setting, etc.)• Light source (e.g., natural light, electronic flash attachment, etc.)
Other Information	<ul style="list-style-type: none">• Name of individual if appropriate (e.g., witness, victim, etc.)• Any additional remarks pertaining to the case

Digital Photography

Digital photography often provides easy means for documenting a crime scene.

When digital photography is used, images should be preserved and their storage location clearly noted in the officer's documentation.

NOTE: It is unprofessional and creates a loss of public trust when officers take unofficial photographs.

CRIME SCENE SKETCHES AND DIAGRAMS

Introduction

While photographs capture the position and state of individual items of evidence, they do not offer a “bird’s eye view” of the layout or the relative position of items of evidence or the spatial relationship of items of evidence. Sketches and diagrams can be used to supplement photographs and provide this additional information regarding the crime scene.

Benefits

Crime scene sketches and diagrams can:

- Display a crime scene as a whole or in part
- Provide clear and concise descriptions of all pieces of evidence
- Show the relationship of items to each other
- Show measured distances between items
- Illustrate positions and movement of involved parties (e.g., victims, suspects, witnesses)
- Provide a permanent record of the conditions not easily recorded in words
- Aid in reconstructing the crime scene
- Supplement written field notes
- Assist the reporting officer in writing comprehensive investigative reports
- Illustrate the crime scene without extra clutter

Rough Sketches

A **crime scene sketch** is a rough drawing created by an investigating officer at the crime scene. It contains details and measurements that will be used when the final accurate diagram is later drawn. Rough sketches should be included in an officer's field notes.

A crime scene sketch should:

- Be drawn at the crime scene,
- Be complete enough to stand alone, and
- Include measurements pinpointing the location of all major items of physical evidence and critical features of the scene (e.g., furniture, plants, personal possessions, etc.)
- Geographic direction arrow with "n" indicating where the "north" compass point would be

Diagrams

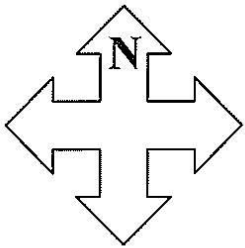
A crime scene diagram is a measured drawing showing the location of all important items, particularly items of physical evidence.

A crime scene diagram should show the:

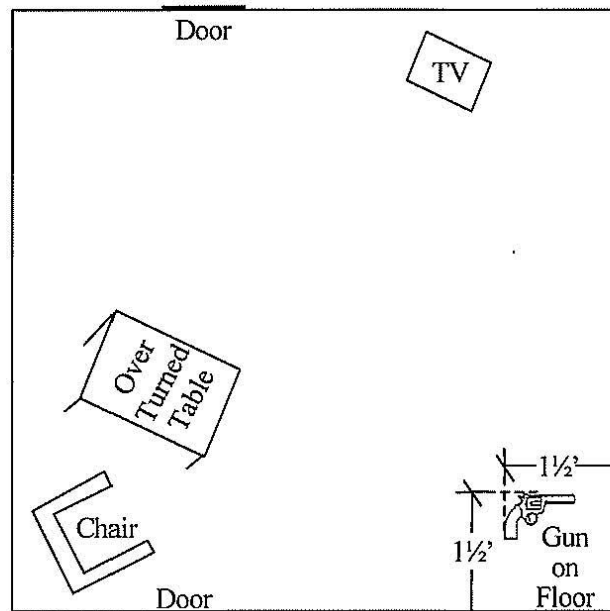
- Layout of the entire scene,
- Measured locations within the crime scene of each piece of evidence,
- Locations of significant features of the scene, and
- Spatial relationship between items

Diagrams may be included with the officer's investigative report.

Overhead

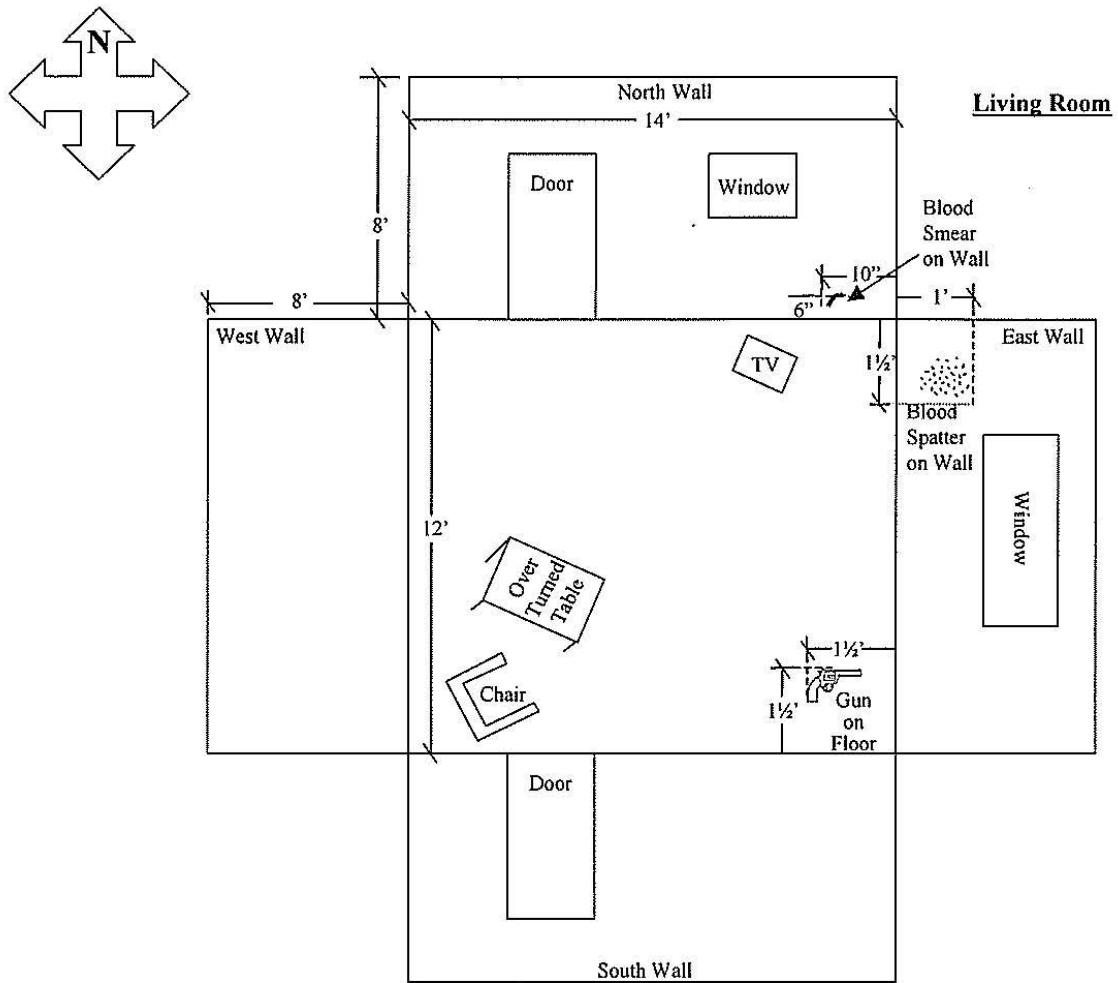


Living Room



(not drawn to scale)

Exploded view/Cross section

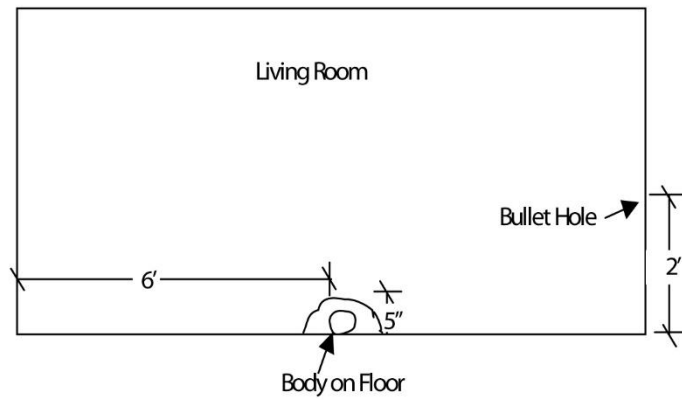


(not drawn to scale)

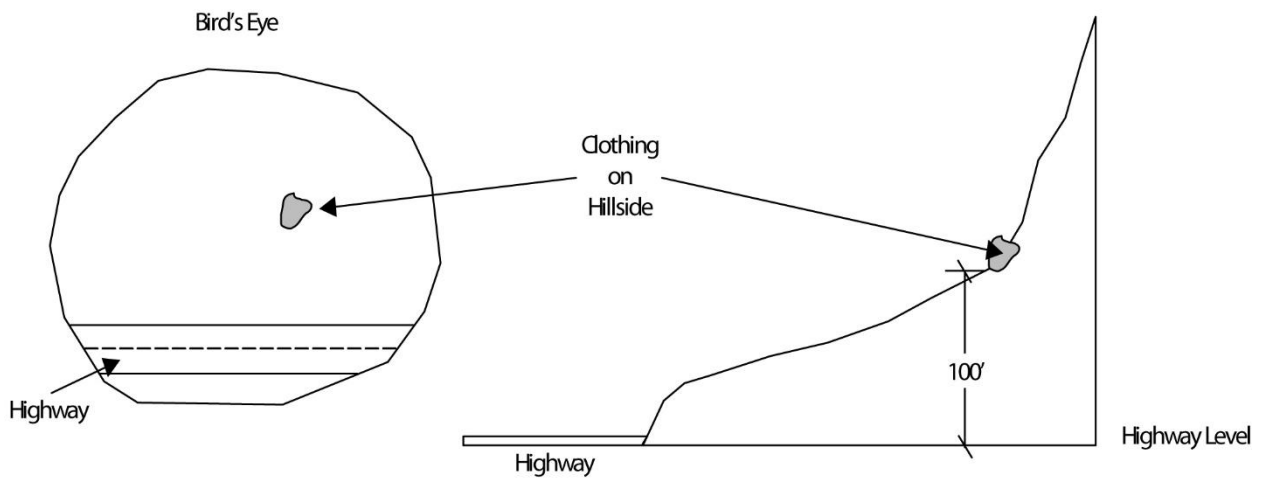
Elevation

Elevation

Example 1

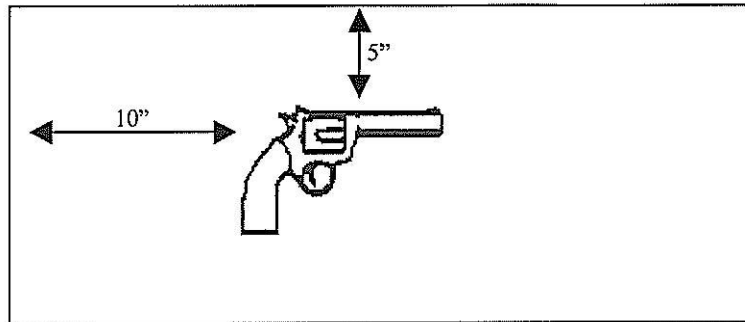


Example 2

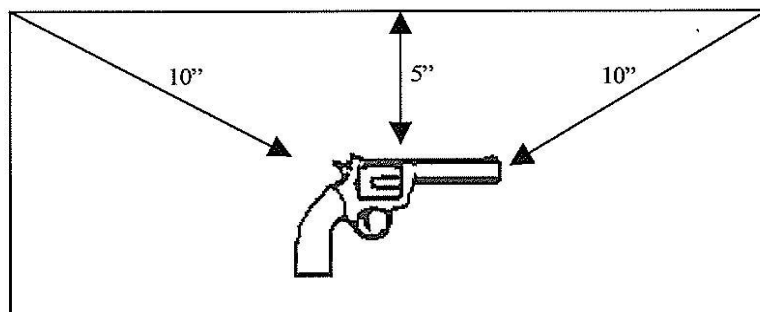


(not drawn to scale)

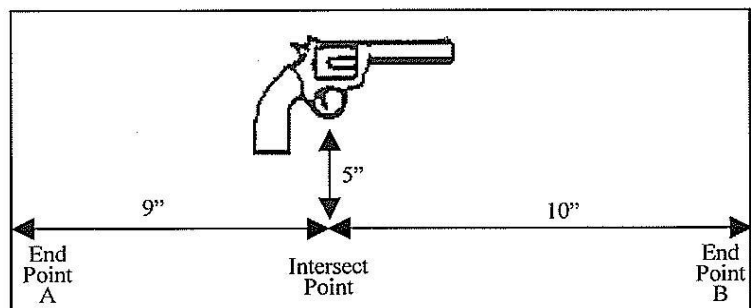
Rectangular
Coordination



Triangulation



Coordinate/Transect



Content Elements

Final crime scene diagrams should include specific types of information. The following table identifies the information that should be noted at the time the initial sketch is drawn and included in the final diagram.

Guidelines	
Diagraming Officer	<ul style="list-style-type: none">• Full name• Rank• Identification number
Other Individuals	<ul style="list-style-type: none">• Full name of anyone assisting in taking measurements• Identity of victim(s)
Time	<ul style="list-style-type: none">• Time and date the initial crime scene sketch was drawn
Crime Identification	<ul style="list-style-type: none">• Crime classification (e.g., burglary, homicide, etc.)• Case number (if known)
Details	<ul style="list-style-type: none">• Major discernible items of physical evidence and critical features• All possible entrances and exits (e.g., doors, windows, attic access, etc.)• Not to scale• Crime scene location/address

Guidelines	
Location and Position	<ul style="list-style-type: none"> • Address of the crime scene • Position where the particular sketch was drawn • Scale of the drawing • Location of major discernible items of physical evidence and critical features • Compass direction (i.e., location of north on the sketch) <p>NOTE: If the scale is not known, a notation should be added stating that the drawing is not to scale.</p>
Other Information	<p>Legend (explaining any symbols used to identify objects) Any additional remarks pertaining to the case</p> <p>NOTE: Notations should be written using a consistent orientation of lettering in the diagram. Individuals should not be required to turn the drawing in order to read a notation.</p>

Learning Need

Peace officers must have a general understanding of the total range of basic criminal investigation procedures in order to make the appropriate decisions regarding the identification and preservation of evidence at the scene of a crime.

Ultimate Goal [30.01.1]

The ultimate goal of a criminal investigation is to determine if a crime occurred, provide investigative leads, and assist in the successful prosecution of the guilty and exoneration of the innocent.

Steps Of a Preliminary Investigation [30.01.2]

Although no two crime scenes are the same, the basic components of a preliminary criminal investigation remain similar. Approach and arrival, assessment, scene preservation, preliminary investigation and the investigative report.

Preserving A Crime Scene [30.01.5]

A crime scene encompasses not only the immediate area where a crime took place, but also other areas related to the crime.

Crime Scene Surveys and Searches [30.01.6, 30.01.7]

Initial survey is an initial visual sweep of a crime scene. Crime scene search is a planned and coordinated systematic search of a crime scene.

Crime Scene Photographs [30.01.9]

Photographs of a crime scene can record how the scene appeared and how the evidence was found at the scene.

Components Of a Crime Scene Diagram [30.01.10]

A crime scene diagram may include:

- Layout of the entire scene,
- Measurements within the crime scene for each piece of evidence, and the total measurement of the scene
- Reference points for two-point placement; triangulation placement, (reference points should be fixed points that will not change over time: (e.g., walls, curb lines, light standards))
- Locations of significant features of the scene, and
- Spatial relationships between items

WORKBOOK LEARNING ACTIVITIES

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to the appropriate text, you should be able to prepare a response.

Activity Questions

1. Describe two circumstances under which a piece of physical evidence may be moved by the initial responding officers at a crime scene. What actions should officers take to protect the integrity of the scene under those circumstances? How might the officers document these actions in each of the circumstances you have described?
2. What advantages might crime scene photographs have over rough sketches and diagrams at a crime scene involving a kidnapping? Give an example of a situation involving a crime scene, when a sketch/diagram might be more advantageous than photographs.

Activity Questions (Continued)

3. At approximately 7:30 am, a lifeguard reporting for work discovered a body face down in the sand on the beach at the water's edge. You are called to the scene. Although there is blood visible on the victim's shirt, the mode of death is not obvious. There appears to be a trail in the sand that may indicate the body had been dragged to its current position from a public parking lot approximately 40 feet away. A number of people have begun to gather on the beach to see what is happening.

As the initial responding officer, where would you establish inner and outer perimeters of this crime scene? What actions would you take to secure each?

Chapter 2

Evidence Collection

OVERVIEW

Learning Need

Peace officers must be aware of, and comply with, the general guidelines for the collection, packaging, and processing of physical evidence found at a crime scene to ensure that each piece of evidence is admissible in a court of law.

Learning Objectives

The following table identifies the student learning objectives for this chapter.

After completing study of this chapter, the student will be able to:	Objective ID
• Demonstrate appropriate precautions that should be taken prior to collection and removal of physical evidence from a crime scene	30.02.1
• Identify the purpose of collecting control/known samples	30.02.2
• Identify the primary reason for establishing a chain of custody record	30.02.4
• Prepare the information that should be noted on a chain of custody record	30.02.5
• Identify the three forms of fingerprint impressions that may be found at a crime scene	30.02.6
• Apply the basic steps for developing latent fingerprints	30.02.16
• Identify general guidelines for collecting and processing physical evidence that may be located at a crime scene	30.02.15

In This Chapter

This chapter focuses on the handling of specific forms of evidence collected at a crime scene. Refer to the table below for a specific topic.

Topic	See Page
Handling Evidence	2-3
Chain of Custody	2-15
Fingerprints	2-18
Developing Latent Prints	2-22
Collecting and Processing Evidence	2-26
Chapter Synopsis	2-76
Workbook Learning Activities	2-78

Introduction

Evidence can take any size, shape, or form. It may be obvious or imperceptible to the naked eye. Even if an item may not have obvious evidentiary value to an officer, it should be properly secured and identified.

Common Errors

The most common errors made in the handling of evidence at a crime scene include the **failure to**:

- Identify items of possible evidentiary value,
- Use the appropriate techniques for properly collecting and labeling a specific type of evidence,
- Submit sufficient quantities of evidence,
- Protect evidence from contamination,
- Submit control/known standard to be used for comparison purposes, and
- Maintain the chain of custody

Precautions

The collection of evidence should proceed slowly and cautiously, no evidence should be overlooked or compromised. Prior to beginning the actual collection process, officers should consider:

- photographing all potential items of evidence to demonstrate their appearance and location when found.
- diagramming the location and position of items of evidence to aid in later reconstructions of the scene.
- taking notes regarding the physical appearance of evidence to document the condition in which it was found (i.e., “wet”, “dry”, “dirty”, “dusty”).
- wearing appropriate clothing such as disposable gloves and non-restrictive, noninterfering clothing to include booties or shoe covers.

Perishable/Fragile Evidence

The first officers at a crime scene should immediately observe and record any evidence that could be easily lost, damaged, contaminated, or destroyed by environmental elements or the presence of other individuals. Such perishable/ fragile evidence should be noted, photographed, documented, and collected first.

Examples of evidence include, but are not limited to:

- Fingerprints,
- Biological fluids, stains, DNA
- Gunshot residue,
- Hairs and fibers,
- Botanical materials
- Flammable liquids and accelerants,
- Shoe, foot, or tire impressions, etc.

Trace and Transfer Evidence

Trace evidence is evidence that is very small and usually cannot be seen with the naked eye. Oblique lighting may assist with visualization of trace evidence.

Transfer evidence is evidence that is transferred or passed when two objects come into contact with one another.

There can be numerous types of trace and transfer evidence at a crime scene.

Examples include, but are not limited to:

- Hair, fibers
- Latent fingerprints,
- Soil,
- Paint chips,
- Glass fragments,
- Biological fluids, etc.

Areas To Examine

The searching officer should examine the object or area from an angle. Possible areas or objects to examine may include, but are not limited to:

- Suspected points of entry or direct contact (e.g., windowsills, broken glass, door or metal associated with hit-and-run cases, etc.).
- Points of direct contact (e.g., furniture, carpeting, bedding, or clothing).

Locating Trace and Transfer Evidence

Special considerations may arise when searching for trace and transfer evidence at a crime scene. Search techniques may include:

- Examining the area carefully using:
 - The naked eye,
 - A magnifying lens,
 - Oblique lighting (e.g., flashlight held at an angle),
- Using an evidence vacuum, and/or
- Specialized light.

Officer Observations

Rain, snow, heat, humidity, wind, cold, or crowds and spectators can quickly destroy or compromise an officer's ability to locate physical evidence. The first officer on the scene should make note of such environmental conditions.

Depending on the nature of the crime and the conditions, responding officers may need to take action to protect perishable/fragile evidence until it can be properly documented and collected. For example, shoe prints or tire tracks may need to be covered by something that will not compromise or destroy the evidence.

NOTE: Although environmental conditions *may* be harmful to evidence, officers should *not* automatically assume that evidence has been destroyed because such conditions exist.

Control/Known Standard

In order to establish a link between a piece of evidence and a person or a crime scene, the unique identity of the object must be shown to the exclusion of all other similar objects. This can be done by collecting **control standard** and **known standard** samples at the crime scene.

	An item of evidence from a <i>known</i> source used to...	Examples
Control Standard	<ul style="list-style-type: none">• Demonstrate a normal condition of a surface or other object.	<ul style="list-style-type: none">• To determine the significance of a fluid on a particular cloth, it may be necessary to collect a control sample of an adjacent portion of the cloth that has not been contaminated by the fluid.• When investigating a hit and run incident, a control sample may be collected from undamaged portions of the vehicle to demonstrate the normal paint on a vehicle before impact. A known standard of any transferred paint may also be collected from damaged portions to be compared with paint on other portions of the vehicle.

Control/Known Standard (Continued)

	An item of evidence from a <i>known</i> source used to...	Examples
Known Standard	<ul style="list-style-type: none">• Compare with items of evidence from an <i>unknown source</i>.	<ul style="list-style-type: none">• Fibers from a carpet at the crime scene (known standard) can be collected and compared with fibers found in a person's automobile (evidence of unknown source).• A known individual's fingerprints (known standard) can be collected and compared with the fingerprints collected at the crime scene (evidence of unknown source).

NOTE: A known standard may also be referred to as an *exemplar*.

Collecting Known Standards and Controls

Peace officers should use the same care and precautions when collecting, packaging, and marking known standards and controls as they would for any other form of evidence. This includes maintaining the proper chain of custody.

Equipment

The ability to properly collect and preserve evidence may depend on officers having access to the appropriate equipment. A basic crime scene equipment kit may include, at a minimum, the following items.

NOTE: The following lists are not intended to be all inclusive. Requirements vary depending on the nature of the crime scene and available equipment.

Examples	
Camera Equipment	<ul style="list-style-type: none">• Camera (e.g., film, instant processing, video, digital, etc.)• Fingerprint camera• Photographic lighting equipment• Detachable flash to provide oblique lighting• Extra batteries• Tripod
Measuring Equipment	<ul style="list-style-type: none">• Tape measures• Rulers• Markers• Compass• L-shaped measures (that show dimension in two directions)
Documentation Materials	<ul style="list-style-type: none">• Property/evidence collection forms• Evidence labels• Graph paper• Templates for drawing• Writing implements (e.g., pens, pencils, etc.)
Lighting Equipment	<ul style="list-style-type: none">• Flashlights• Flood lamps• Black lights• Batteries/power source

Equipment (Continued)

Examples	
Collection Equipment	<ul style="list-style-type: none">• Latex gloves• Shoe covers• Sterile swabs or swatch material (for collecting liquids)• Scraper/scalpel• Magnifying device• Casting materials and rubber containers• Brushes and other tools (e.g., pliers, screwdriver, putty knife, etc.)
Packaging Equipment	<ul style="list-style-type: none">• Various sizes of manila envelopes• Various sizes of paper bags• Plastic bags for “wet” evidence transport from scene• Various bags including paper, polyethylene, and plastic• Clear airtight containers• Cardboard boxes and pieces of cardboard• Other clean evidence containers of various types and sizes• Puncture proof containers (for sharp objects)• Glassen paper• Permanent marking instruments (e.g., felt-tipped pens, sharp-tipped stylus, etc.)• Evidence tape
Specialty Kits or Equipment	<ul style="list-style-type: none">• Fingerprint kit• Drug testing kit (presumptive)• Blood field kit (to test for the presence of blood)• Paraffin test kit (to test for gunshot residue)
Other	<ul style="list-style-type: none">• Distilled water• Soft paper (i.e., paper towels)• Large roll or sheets of butcher paper• String or cord• Rubber bands, paper clips

Packaging Evidence

Physical evidence can be damaged, lost, contaminated, or changed during handling and transportation. All pieces of evidence must be carefully packaged separately, using new and clean containers and packaging materials. The following table identifies general procedures for packaging whole objects.

IF the item is...	then...
Large, bulky, or heavy	<ul style="list-style-type: none">• Place the item on wood or heavy cardboard• Prevent shifting and contact with other items by fastening the item down firmly with string or wire passed through perforations in the supporting material <p>Note: Organic plant materials should be packaged in paper (e.g., marijuana).</p>
Small, lightweight, or fragile	<ul style="list-style-type: none">• Wrap the item lightly with soft paper, taking care not to damage any evidence• Place the item in a small box or other container, as soon as possible, for transport

NOTE: Additional information regarding packaging specific types of evidence is addressed later in this workbook.

Containers

Being aware of the types of containers that can be used with specific types of evidence will aid officers in making the appropriate selections during the collection process. The following table identifies common containers and the types of evidence with which they can be used.

	Can be used for packaging...	Examples
Paper	<ul style="list-style-type: none">• Most dry items.	<ul style="list-style-type: none">• Sheets, bags, envelopes, etc.• Best type of container to use• Easy to store• Allows items to “breathe”• Easy to write on• Can be transferred to other containers, if necessary• Organic plant material (e.g., marijuana, mushrooms)
Cardboard	<ul style="list-style-type: none">• Firearms or• Items that need protection such as:<ul style="list-style-type: none">- Bloody clothing or- Knives or other weapons with dried blood or tissue on them- Shoe casts	<ul style="list-style-type: none">• Boxes, flat pieces, etc.• Item should be carefully placed in an appropriately sized box.

Containers (Continued)

	Can be used for packaging...	Examples
Metal	<ul style="list-style-type: none">• Chemicals or• Items with flammable fluids on them (e.g., gasoline-soaked rags).	<ul style="list-style-type: none">• Small tins, larger containers, etc.• Should be airtight and sturdy enough to prevent leakage or easy damage• Other packaging materials should not be included within the can (e.g., paper, bubble wrap, etc.).
Plastic	<ul style="list-style-type: none">• Paper or• Small amounts of narcotics or drugs.	<ul style="list-style-type: none">• Bags, containers, etc.• Do not use with items that are wet or damp and could mildew quickly. (Plastic is non-porous and will not allow air to get in.)

NOTE: For more information on packaging of narcotics and drugs refer to LD 12: *Controlled Substances*.

Sealing Evidence

To maintain the chain of custody, each container containing a piece of evidence should be properly sealed.

Evidence tape can be used to seal all containers (i.e., boxes, envelopes, vials, etc.) in such a way that they cannot be opened without breaking the seal. The person packaging the evidence should sign or initial and date the seal using permanent ink so that the marking extends from the seal onto the container.

Marking and Labeling Evidence

To ensure that evidence presented in court is the same evidence collected at the crime scene, the outside of each container or wrapped item should be identified and labeled separately.

If the item is not packaged inside some form of container that can then be marked, an evidence tag should be carefully attached to the item. Care must be taken to tape the tag to the item in such a way as to not alter, scratch, or prevent the processing or examination of the item.

Using permanent ink, the following information should be carefully and legibly noted on the evidence label or tag.

- Collecting officer's name
- Collecting officer's identification number (i.e., serial/badge number)
- Time and date the evidence was collected
- Location where the evidence was collected
- Content description (including quantity and size)
- Type of crime (e.g., burglary, homicide)
- Any other related information such as:
 - Case control number, or
 - Witness(es) to the collection
- Collecting officer's signature

NOTE: Unless agency policy is to the contrary, officers should not place any markings directly on an item of evidence itself. Marking evidence in this manner may affect or even destroy its evidentiary value.

Submitting Evidence

After each collected sample has been properly photographed, collected, marked, packaged, and labeled, it is ready to be transported to the local property room or office and “submitted into evidence.” At that time, the evidence becomes the responsibility of the property and evidence manager.

Specific agency policy will dictate which items may be recorded on a single property form. The property form becomes the chain of custody record for that item, documenting when, why, how, and by whom the item has been handled.

Evidence Collection Teams

Evidence technicians are specially trained individuals who respond to the crime scene at the request of the officer. Once at the scene, they may be involved in collecting, preserving, and transporting physical evidence.

Larger urban law enforcement agencies may be equipped with evidence collection technicians and large investigative units including mobile crime units.

Officers in smaller or rural jurisdictions may not have evidence teams available to them. It becomes the officer’s responsibility to determine how an item of evidence is best collected, packaged, and transported.

Specific Agency Policies

Policies and procedures can vary for different law enforcement agencies.

Peace officers are responsible for being aware of and complying with their own agency’s policies and procedures regarding the handling and collection of physical evidence related to a crime scene.

CHAIN OF CUSTODY

Introduction

For any piece of evidence to be considered valid and reliable by the court, it must be accounted for from the time it is collected at the scene until it is presented in court.

Court Testimony

Individuals within the judicial process who have handled a piece of evidence (e.g., investigating officers, evidence technicians, etc.) may be asked in court to positively identify that evidence and testify regarding:

- Who had contact with the evidence,
- When or during what time periods the evidence was handled,
- Under what circumstances the evidence was handled, and
- What changes, if any, were made to the evidence

Definition

The **chain of custody** is the written, witnessed, unbroken record of all individuals who maintained control or had access to any physical evidence. A complete and accurate chain of custody record is absolutely essential in establishing the validity and integrity of evidence in court.

Property

Different categories of property may require a recorded chain of custody. The following table describes a number of such categories.

Category	Description	Examples
Evidence	<ul style="list-style-type: none">• Property which may:<ul style="list-style-type: none">- Be related to a crime or investigation, or- Implicate or clear a person of a criminal charge	<ul style="list-style-type: none">• Tools• Fingerprints• Hair or fibers• Physical evidence
Non-evidence	<ul style="list-style-type: none">• Property that comes into law enforcement custody, but cannot be connected to a crime• Property that may be submitted by an officer or any other individual	<ul style="list-style-type: none">• Found property (e.g., bicycles)• Weapons held in safe keeping
Personal Property	<ul style="list-style-type: none">• Property which a person had in possession at the time of arrest that has no evidentiary value	<ul style="list-style-type: none">• Billfold• Money• Clothing

Chain of Custody Record

The chain of custody begins when an item is first collected as evidence. From this time, supplying complete, clear, concise information and using appropriate documentation techniques will aid in keeping the chain of custody intact.

Chain of Custody Record (Continued)

Although the format of property forms may vary, each will require specific information including:

- The report number,
- Who initially found the item,
- Where and when the item was found,
- A description of the item,
- Who recovered, packaged, and labeled the item,
- Who transported the item,
- Where it was submitted, and
- Where, how, and when the item was secured

Handling Evidence

Anyone who handles evidence officially accepts custody of that evidence by signing the chain of custody record.

Individuals who may become involved in maintaining the chain of custody include, but are not limited to:

- Responding officers,
- Investigating officers,
- Evidence technicians,
- Property personnel,
- Laboratory personnel, or
- Individuals from the district attorney's office.
- Defense experts
- Medical professionals

NOTE: It is important to limit the number of individuals in the chain of custody in order to maintain accountability and integrity of evidence.

Introduction

In 1946, the California Supreme Court stated that “fingerprints are the strongest evidence to prove the identity of a person and under the circumstances of a case may alone be sufficient to identify the defendant as the criminal.” Today, fingerprints are still the most common form of physical evidence found at a crime scene.

Description

A **fingerprint** is a copy or impression of the ridges and valleys present on the outermost layer of human skin. These ridges and valleys can be found not only on the tips of the fingers, but also below the first digit and sides of fingers, and on palms, feet, and toes. Each pattern that makes up a fingerprint is unique to that specific individual. These patterns first appear on human appendages between 100 and 120 days after conception and, except for size or some form of external permanent damage, will remain the same throughout the person’s lifetime.

Locations

Most crime scenes are likely to contain some form of fingerprint evidence. When searching for possible fingerprints, officers should first concentrate on all possible places a person may have touched. The following table identifies a number of such locations.

Category	Additional Information	Examples
Entry points/ exit points	<ul style="list-style-type: none">• Best source of fingerprints• Person may have touched something to gain entry or exit to the building, room, or vehicle.	<ul style="list-style-type: none">• Window frames and sills• Door handles, surfaces, or frames
Objects that required movement	<ul style="list-style-type: none">• Person may have had to touch, move, or open something in order to gain access or reach a particular item or to carry out a specific crime.	<ul style="list-style-type: none">• Counter tops• Steering wheel• Drawers
Objects used during the crime	<ul style="list-style-type: none">• Person may have had to use tools or other items in order to commit the actual crime.	<ul style="list-style-type: none">• Screwdriver, crowbar, or other forms of tools

Precautions

Fingerprints are a form of perishable/fragile evidence that can be easily smeared or destroyed. Because of this, officers at a crime scene should always:

- Handle items as little as possible,
- Pick up items by holding areas least likely to contain a print (i.e., on rough surfaces),
- Keep in mind that wearing gloves or using handkerchiefs, while keeping their own prints off an item, may also wipe away any prints already on the item, and
- Bring any portable object with fingerprints on it to the lab whenever possible, rather than attempting to process the object for fingerprints at the crime scene

NOTE: If an item is large or bulky, the portion bearing the fingerprints may be detached and brought to the lab (e.g., drawer, windowpanes, etc.).

Forms of Fingerprints

There are three forms of fingerprint evidence that can be found at a crime scene: **visible fingerprints**, **plastic fingerprints**, and **latent fingerprints**. Each form requires different techniques for identification and collection. The following table identifies each form.

Form	Description	Collection Technique
Visible	<ul style="list-style-type: none">• Impression was left behind in blood, paint, grease, oil, or similar materials.	<ul style="list-style-type: none">• When possible, allow print to dry.• Photograph print with a special fingerprint camera. (A fingerprint camera will produce a 1:1 ratio original-size photograph.)• Describe and document the location for each print in field notes.• Collect the object or portion of the object on which the visible print appears. (This should be done only if movement will not damage the print.)
Plastic	<ul style="list-style-type: none">• Impression was left on soft substances such as heavy grease, melted candle wax, soap, putty around a window, or similar materials.	
Latent	<ul style="list-style-type: none">• Impression was left by secretions from perspiration or oils on the skin.• Most commonly found at a crime scene• Invisible to the naked eye until developed	<ul style="list-style-type: none">• Techniques vary depending on the nature of the surface where the fingerprint was left.

NOTE: If a fingerprint camera is not available, a standard camera can be used by including a scale for size next to the fingerprint image

DEVELOPING LATENT PRINTS

Introduction

Fingerprints left on a non-porous surface may be developed (made visible to the naked eye) by the use of special powders which adhere to the fingerprint itself or by chemicals.

Fingerprints left on a porous surface will require chemical development procedures which should be done by trained personnel.

Latent Fingerprints on *Non-porous* Surfaces

A **non-porous surface** is any surface that does not absorb liquids or oils (e.g., plastic, glass, etc.). The following table describes one process used for developing a latent fingerprint on a non-porous surface.

Basic Steps	General Guidelines
Identify possible locations where prints may have been left.	<ul style="list-style-type: none">• Identify surfaces likely to have latent prints.• Identify which of these surfaces might be threatened by contamination (such surfaces should be developed first.)• If possible, retrieve the entire item for further examination at a laboratory.• If item, or the relevant portion of the item cannot be transported, take close-up photographs of each identified surface.
Prepare equipment (brush, powder, etc.).	<ul style="list-style-type: none">• Select the appropriate color of powder. (Black is the most common color used.)
Lightly dust surface.	<ul style="list-style-type: none">• Carefully touch brush to powder and lightly dust each surface with a small amount of powder.• If necessary, add more powder gradually in small amounts.• After powder has been absorbed and all print details have been developed, gently brush away excess powder to “clean” the rest of the surface.

Basic Steps	General Guidelines
Photograph revealed fingerprint in place.	<ul style="list-style-type: none"> • Photograph print with a special fingerprint camera. • If a fingerprint camera is not available, a standard camera can be used by including a scale for size next to the fingerprint image.

Latent Fingerprints on *Porous* Surfaces

A **porous surface** is any surface that will absorb liquids or oils (e.g., paper, fabric, leather, wood, etc.).

Officers who believe latent prints exist on an item with a porous surface should:

- Handle porous surfaces with gloves to avoid cross-contamination of the evidence collector to the evidence item.
- Avoid “overwriting” of a porous object (e.g., “demand note” in paper bag and collector writes on paper bag, transferring writing to evidence item).
- Carefully place each item in a separate container to avoid contamination.
- Mark, seal, and label the container, noting “to be processed for latent prints” clearly on the label.
- Document the collection in their notes and in the investigative report.

NOTE: Refer to the guidelines for collecting documents later in this chapter.

Developing Latent Prints on Porous Materials

Specialized technicians have a number of techniques which can be selected for developing a latent print on a porous surface. Each technique relies on an interaction between the perspiration or oil in the latent fingerprint and the chemical that has been applied.

Lifting Latent Fingerprints

Lifting a latent fingerprint refers to the process of removing a developed latent fingerprint from the surface where it was found. The following table identifies techniques for lifting latent prints from a non-porous surface.

Techniques	General Guidelines
Develop a plan of operation	<ul style="list-style-type: none">• Make sure tape begins with a ¼ inch section folder over• Affix the loose end of a roll of appropriate size transparent cellulose tape (e.g., two-inch-wide) next to the developed fingerprint with one hand while holding onto the roll with the other hand
	<ul style="list-style-type: none">• Beginning at the affixed end, slide thumb along tape to gently force it down over the developed fingerprint
	<ul style="list-style-type: none">• Beginning at the affixed roll end, carefully peel the tape from the surface
	<ul style="list-style-type: none">• Place the tape containing the lifted fingerprint onto a latent fingerprint lift card• When developed fingerprint is properly secured to the card, sever the remaining tape from the roll
Preassembled lifter	<ul style="list-style-type: none">• Apply and peel off lifter “patch” to the surface containing the developed latent print using the same initial technique as with cellulose tape
	<ul style="list-style-type: none">• Place cellophane tape over the adhesive (“sticky”) side of the lifter to protect the print
	<ul style="list-style-type: none">• If the lifter is opaque, examine and photograph the lifted fingerprint on the reverse side only. (Photographs should be printed with the negatives reversed.)

NOTE: Latent prints should be photographed in place prior to any attempt to lift the fingerprint from the surface.

Latent Fingerprint Cards

Lifted prints are placed on special latent print cards. The color of the card selected should be in contrast with the color of the powder used (black, white, or transparent).

Each card should be labeled with the following information.

- Date/time
- Case title or number
- Collector's name and signature
- Sketch of exact location where latent fingerprint was found
- Description of the item that latent fingerprint was found on
- Any other required identification numbers (e.g., case number, evidence item number, etc.)
- Diagram of the location of the latent fingerprint on the surface area and direction of the latent on the surface area.

Packaging

Latent fingerprint cards should be placed in envelopes, sealed, and labeled appropriately as evidence.

All latent fingerprint cards should also be noted in the officer's field notes as well as in the investigative report.

Rolling Fingerprint/Known Standards

To be useful, fingerprints from an unknown source found at the crime scene must be matched with fingerprints from a known source (fingerprint known/standard).

The collecting and recording of the fingerprints of a known individual is often referred to as **rolling** the fingerprints. Rolled fingerprints may be obtained from individuals who are considered suspects or from individuals to be eliminated as suspects (e.g., victims, witnesses, initial responding officers, etc.).

COLLECTING AND PROCESSING EVIDENCE

Introduction

Numerous other forms of evidence can be identified at any crime scene. Although specific techniques may differ, basic principles regarding the documentation, collection, and processing of evidence remain the same.

General Guidelines

The following general guidelines should be followed consistently when collecting all forms of evidence.

- Be aware of and comply with specific agency policies and procedures for evidence collection and packaging
- Document the existence, condition, and location of each piece of evidence within the crime scene using photographs, sketches/diagrams, and written entries in the field notes. Include information regarding exact location, color, pattern, size, shape, etc.
- Collect and package all evidence in an appropriate manner, using techniques that will not harm or compromise the evidentiary value of the item
- After each piece of evidence is packaged, seal with evidence tape, label, and process according to specific agency policies and procedures
- Document the collection of each piece of evidence collected, along with the techniques used for collection and packaging in field notes and investigative report
- When applicable, collect, package and process control/known standard samples in the same manner as the corresponding evidence samples from the crime scene

NOTE: The remainder of this lesson contains information regarding the application of the guidelines noted above to specific forms of evidence that may be located at a crime scene.

Basic Equipment

The following table identifies the basic equipment that will be required in order to roll a person's fingerprints for comparison purposes.

Equipment	Description
Fingerprint ink	<ul style="list-style-type: none">• Printer's ink• Contains a mixture of oils that permits the print to dry rapidly
Slab	<ul style="list-style-type: none">• A piece of plate glass or other non-porous surface that holds ink• Should be 4" x 10" in size
Rubber roller	<ul style="list-style-type: none">• Made of hard rubber• One inch in diameter and four inches in length• Used to spread ink evenly on the slab
Fingerprint card	<ul style="list-style-type: none">• Standard FBI or other law enforcement form with designated spaces for:<ul style="list-style-type: none">- Single and grouped fingerprints- Description data on the person- Signatures
Card holder	<ul style="list-style-type: none">• A piece of wood with metal strips that hold the fingerprint card in place

NOTE: Officers may also use portable ink or "inkless" pads for rolling fingerprints.

Recording Process

The following table identifies the steps involved in obtaining a legible set of rolled fingerprints.

Basic Steps	General Guidelines
Prepare person's hands.	<ul style="list-style-type: none">• Clean the person's hands of dirt, grease, or perspiration by wiping them with a small cotton ball dipped in carbon tetrachloride or another acceptable cleaner. <p>NOTE: If there is gunshot residue or blood on the person's hands, this evidence should be collected before recording the person's fingerprints.</p>
Prepare fingerprint card.	<ul style="list-style-type: none">• Fill in fingerprint card with requested data relating to the person<ul style="list-style-type: none">- Full name- Description- Date- Signature of member of the submitting agency who can testify in court as to the origin of the fingerprints• Have the person sign a full name on the card within the signature block.• Place a fingerprint card in a holder.
Prepare equipment (slab, ink, etc.).	<ul style="list-style-type: none">• Place a few drops of clean, fresh fingerprint ink on a clean glass/stainless steel slab.• Use a back-and-forth motion with the roller to spread ink evenly over the slab.

Recording Process (Continued)

Basic Steps	General Guidelines
Record rolled fingerprints from right hand one at a time.	<ul style="list-style-type: none"> • Instruct the person to look away from cards, relax fingers, and let the officer do all the work. • Roll person's thumb on the inked slab in a 180-degree arc (from nail edge to nail edge), so that the thumb is inked from below the first joint to the tip. • Grip the person's inked thumb between the first and second joint with right hand. • Control the pressure with the officer's left hand and guide the movement of the person's thumb on the appropriate block on the card; roll the inked thumb inward toward the center of the person's body (in 180-degree arc). • Place each finger, one at a time on inked slab just as the thumb was placed. • On the corresponding block on the fingerprint card, roll each finger away from the center of the person's body.
Record pressed fingerprints from right hand one at a time.	<ul style="list-style-type: none"> • Press thumb on the inked slab. • Without rolling, press inked thumb on the bottom of the card in the appropriate space. • Press all four fingers simultaneously on the inked slab. • Without rolling, press all four fingers on the bottom of the card in the appropriate space.
Record rolled and pressed fingerprints from left hand.	<ul style="list-style-type: none"> • Repeat the same steps as for the right hand.
Document process.	<ul style="list-style-type: none"> • Document in the officer's notes and investigative report that fingerprints have been obtained.

Palm Prints

If palm prints were found at the crime scene, palm prints can be recorded from a known individual by using the following process.

- Roll a layer of ink directly on the person's palm with ink roller.
- Press palm down on a palm print card.
- Record all required information just as with fingerprints.

Fingerprint Patterns

Fingerprints from unknown sources are matched with known standard fingerprints by a means of comparing fingerprint pattern characteristics. To determine if a fingerprint is identifiable with a known standard, individual points of identification must match.

There are a number of common overall pattern characteristics that are the basis for all classification coding systems.

Pattern Characteristics	Description
Arch	<ul style="list-style-type: none">• Composed of ridges that enter from one side of the print, then flow, or tend to flow, to the opposite side• May contain plain small arches without much angle all the way to sharp angled tented arches
Loop	<ul style="list-style-type: none">• Composed of ridges that enter from one side of the print, recurve, then flow out on the same side as they entered
Whorl	<ul style="list-style-type: none">• Any pattern that does not fit into a loop or arch
Scarred or mutilated	<ul style="list-style-type: none">• Used only if ridge pattern cannot be identified due to scars or some other form of physical damage to the fingerprint

State Classification System

Agency fingerprint examination personnel are trained to compare fingerprints from a known individual with those collected at the scene of a crime or from items related to a crime.

If no match is initially obtained, the crime scene prints may be submitted to the state's **Automated Fingerprint Identification System (AFIS)**. Full or partial fingerprints can be compared with state rolled fingerprint files.

Human Biological Fluids and Stains

Human **biological fluids** and stains (i.e., blood, semen, vaginal secretions, saliva, fingerprint residue, touch DNA, perspiration) may be found at any crime scene, not just those crime scenes associated with violent crimes.

DNA Genetic Identification

Deoxyribonucleic Acid (DNA) is a substance that is found in the chromosomes in the nucleus of all human cells. It provides the genetic coding information that determines characteristics that are unique to each individual.

Techniques have been developed that enable forensic scientists to isolate strands of DNA from cells contained in blood, semen, ear wax, perspiration, latent fingerprint residue, hair roots, cut hair, skin, and other human tissue. It may also be possible to obtain DNA from samples of saliva collected from chewing gum, stamps or envelopes, or other items.

Once processed, portions of DNA from a control/known standard (e.g., a person) can be compared with corresponding portions of DNA information collected from blood, semen, or another unknown source that relates to a crime.

NOTE: Identical twins will have the same DNA profile.

DNA Databases

All 50 states have passed legislation granting the authority to collect samples for DNA analysis from all felons convicted of violent crimes to be entered into local, state and federal CODIS DNA databases. The CODIS database can link perpetrators to forensic evidence recovered at the crime scene and can provide case-to-case hits, linking forensic evidence from different crime scenes and jurisdictions. CODIS is a national database. This information, along with information from DNA analysis of crime-related evidence from unknown sources (e.g., sperm collected from a rape victim), is organized in computer databases at the state and federal levels.

Access to this information is limited to *law enforcement investigative purposes only*.

NOTE: Some states have granted the authority to collect samples for DNA testing from individuals who have been arrested, but not yet convicted of certain specified violent crimes.

Evidentiary Value

Blood and other biological fluids collected at a crime scene can provide valuable information for officers. The following table provides some examples of the types of information that may be obtained.

The identification and analysis of...	May...
Blood	<ul style="list-style-type: none">• Identify an individual's DNA• Indicate the direction of movement by an individual• Indicate where a victim actually died• Identify a weapon and a possible method in which it was used (if it is a blunt instrument)• Aid in determining direction, velocity, distance of travel, or angle of impact• Show whether or not an individual had consumed alcohol or used certain drugs• Establish the individual blood type
Semen	<ul style="list-style-type: none">• Identify an individual's DNA• Indicate whether or not the individual has had a vasectomy• Establish the individual blood type
Vaginal secretions	<ul style="list-style-type: none">• Identify an individual's DNA• Indicate the presence of sperm (and possibly information leading to identification of male sexual partner(s))• Establish the individual blood type
Saliva, perspiration, urine, or other biological fluids	<ul style="list-style-type: none">• Identify an individual's DNA• Establish blood type

Collection Of Fluids/Stains

The collection and preservation of blood and other biological fluids require special precautions and considerations on the part of officers. The specific technique to use for collection and preservation of the evidence is dependent on the location and condition of the substance. Officers working around biological evidence can contaminate the evidence by talking, sneezing, coughing, or perspiring.

The following table presents general guidelines for the collection and preservation of biological fluids collected from a crime scene.

Basic Steps	General Guidelines
Take appropriate safety precautions	<ul style="list-style-type: none">• All biological fluids should be considered infectious and handled with care• There is always a risk that blood and other biological fluids can transmit infectious diseases (e.g., HIV, hepatitis, etc.)• Wear latex gloves, masks, and eye protection when handling biological fluids
Document location and appearance of evidence	<ul style="list-style-type: none">• Photograph the item in place prior to collection• Describe location and condition of fluid or stain in notes• Use sketches and diagrams if necessary
Collect stained item or portion of the item	<ul style="list-style-type: none">• Collect the entire object on which the substance appears (e.g., bloody clothing, stained cushions, etc.)• If the entire object cannot be collected, remove and collect the portion of the item containing the stain

Collection Of Fluids/Stains (Continued)

Basic Steps	General Guidelines	
If the stained item/portion cannot be collected, collect samples	<ul style="list-style-type: none"> Swabbing 	<ul style="list-style-type: none"> Moisten small amount of clean gauze/cotton swab in distilled water Dab the wet area with the moistened gauze to absorb the fluid <i>Air dry</i> gauze Wrap collected item in clean paper
	<ul style="list-style-type: none"> Scraping 	<ul style="list-style-type: none"> Scrape fragments/flakes onto a clean paper. Fold the paper carefully several times (i.e., <u>bindle</u>)
Package dried sample using appropriate container.	<ul style="list-style-type: none"> When possible, wet or damp collectable items should be dried at room temperature before packaging. Artificial heat (e.g., hair dryer) should not be used to dry item Each item should be placed in a separate container to avoid contamination Evidence should be placed (e.g., whole or portion of item, gauze/cotton swab, bindle containing dry scrapings, etc.) in a porous container such as a paper envelope, paper bag, or cardboard box <p>NOTE: Items should <i>never</i> be placed in airtight containers where moisture can build and promote bacterial growth.</p>	

NOTE: If the substance is on a person it may be collected by swabbing or scraping.

Collection Of Fluids/Stains (Continued)

Basic Steps	General Guidelines
Process according to specific agency policies or procedures.	<ul style="list-style-type: none">• Seal each container and label properly as evidence• Freeze/refrigerate "dry" samples as soon as possible
Document process in field notes and investigative reports.	<ul style="list-style-type: none">• Identify all items or samples collected• Describe technique used for collection, packaging, and processing each item or sample

Control/Known Standard

For comparison purposes, control samples of unstained items (e.g., unstained carpet sample) and known samples of biological fluids from individuals whose identity is known (e.g., suspect(s), victim(s), etc.) should also be obtained.

Samples collected from individuals must be collected in a medically approved manner and processed according to specific agency policies or procedures.

NOTE: Each specimen that is maintained in a liquid state (e.g., vials of blood, semen sample) should be refrigerated, if it cannot be immediately transported. Known standards for comparison against biological evidence recovered from the crime scene or crime scene evidence can be obtained by collecting a "Buccal" or "cheek swab" from a known subject. This is collected using sterile cotton swabs and, once dried, must be stored appropriately pending analysis by a crime laboratory.

NOTE: If the collection procedure is considered invasive (e.g., drawing blood) officers may be required to show probable cause and obtain a search warrant prior to collecting the sample. For additional information regarding such requirements, refer to LD 16: Search and Seizure.

Blood Stain Patterns

Blood stain patterns (e.g., spatter) left at a crime scene may provide valuable information regarding the sequence of events, the nature of the event that caused the bleeding (e.g., force, velocity, direction, etc.), and movement of persons or objects.

Responding officers who encounter blood spatters and patterns should:

- Recognize their potential for providing critical information
- Request a blood spatter analyst, if needed, to assist with the crime scene investigation
- Take necessary steps to protect the area without disturbing the spatter or pattern itself,
- Document the location and describe the spatter or pattern within their field notes, and
- Take photographs of the spatter or pattern

Semen or Vaginal Secretions

Seminal fluid and vaginal secretion stains collected at a crime scene or from a victim may provide evidence leading to the identification or elimination of possible suspects.

Possible locations for such stains at a crime scene include, but are not limited to:

- Bedding, floors, furniture,
- Articles of discarded clothing,
- Towels, napkins, tissues, and washcloths,
- Condoms, or
- Vehicles

NOTE: Any item collected should be allowed to air dry, if necessary, and packaged and preserved accordingly.

Saliva

During an investigation, it may be necessary to collect an Oral Reference Sample from an individual.

To obtain an Oral Reference Sample, officers can:

- Use a sterile cotton swab, swab inside of the cheek, swabbing both sides of the inner cheek walls, capturing epithelial cells,
- Allow the swab to air-dry completely,
- Place the swab into a porous container (e.g., paper envelope, cardboard box, etc.), and
- Package, seal, and label each container for processing

Firearms and Ammunition

A great deal of evidence may be obtained from firearms or ammunition associated with a crime. Because of this, the use of appropriate techniques when collecting and handling firearms related evidence is critical.

Related Terms

To better understand the techniques required for proper collection of firearm related evidence, peace officers need to become familiar with the following terms.

A **semiautomatic pistol** is a handgun that features a **magazine** which holds cartridges that self-load automatically into the firing chamber of the weapon.

A **revolver** is a handgun equipped with a revolving **cylinder** that can contain several cartridges and can be fired repeatedly without being reloaded until the cylinder is empty.

A **cartridge** is a self-contained unit which includes a projectile and propellant capable of firing the projectile through the barrel of a handgun. A **bullet** is the projectile that is expelled from the cartridge. A single cartridge is also called a **round**.

A **cartridge case** is an empty container left after the round has been fired.

A **shotgun** is a smooth-bored firearm designed to be fired from the shoulder. Shotguns are primarily intended for firing multiple projectiles at one time.

A **rifle** is a gun with spiral grooves cut into the inner surface of the barrel. Some rifles may have a smooth-bored barrel.

A single cartridge used in a shotgun is referred to as a **shotgun shell**. Rather than a single projectile, a shotgun shell contains a number of small round projectiles referred to as **shot**. The projectiles that are contained in the shell are often referred to as the load.

NOTE: Some states have granted the authority to collect samples for DNA testing from individuals who have been arrested, but not yet convicted of certain specified violent crimes.

Evidentiary Value

Several types of physical evidence can be related to the discharge of ammunition from a firearm. The following table provides some examples of the types of information that may be obtained.

The recovery of...	May lead to...
A spent bullet or cartridge case	<ul style="list-style-type: none">• Identification of the type, manufacturer and condition of the firearm from which it was fired• Determination of the position of the shooter at the time the weapon was fired• Identification from the fingerprints of the individual who has loaded the firearm• Identification of the exact firearm from which it was fired from microscopic markings left by that firearm's barrel, striker pin, ejector, or other internal components• Linking of crime scenes using data from expended cartridge cases through the National Integrated Ballistic Information Network (NIBIN)
A firearm	<ul style="list-style-type: none">• Evidence regarding whether or not it had been recently fired• Fingerprints or DNA leading to the identification of an individual who has loaded the firearm• Serial numbers leading to identification of ownership of the firearm• Markings within the barrel, on the striker pin, or other internal components that could be matched with markings on a particular bullet or cartridge case• Matching unspent ammunition with spent bullets or expelled cartridge cases
Gun shot residue on a person's hand(s) or clothing	<ul style="list-style-type: none">• Evidence that the individual may have discharged a firearm or handled a discharged firearm• An estimate of the distance from a fired weapon to an individual, surface area or article of clothing

Collection of Firearms

When a firearm is discovered at a crime scene, specific steps should be taken to ensure that potential evidence is not damaged or destroyed. The following table identifies guidelines for this process.

Basic Steps	General Guidelines
Take all appropriate safety precautions.	<ul style="list-style-type: none">• Treat all firearms as if they are loaded• Ask for assistance from someone more knowledgeable when dealing with an unfamiliar type of firearm• Comply with all local agency safety rules and guidelines• Be aware of evidence contamination by the officer, fingerprint, or DNA
Document location and general appearance of the firearm.	<ul style="list-style-type: none">• When appropriate, <i>before</i> touching any firearm, take photographs, and draw sketches.• Make notations in field notes regarding the:<ul style="list-style-type: none">- Exact location of the firearm relative to fixed reference point(s) at the scene- Physical appearance of the firearm

Firearm Evidence Collection

Basic Steps	General Guidelines
Pick up the firearm carefully	<ul style="list-style-type: none"> • Handle the firearm as little as possible • Handle in such a way as not to destroy latent fingerprints or touch DNA that may be present • Lift the firearm by grasping a textured surface (i.e., handle grip) where fingerprints are not likely to be recoverable • Never attempt to lift a firearm by placing something (i.e., pencil, pen) inside the firearm's barrel, or through the trigger guard • Always keep the firearm pointed in the safest possible direction • Always keep fingers or any other objects away from the trigger <p>NOTE: Due to the sensitivity of firearms DNA analysis, DNA profiles may be developed from firearms, they should be handled while wearing fresh latex gloves.</p>
Conduct an initial examination of the firearm to determine if the firearm is loaded.	<ul style="list-style-type: none"> • Note whether or not the safety is on, and the hammer is cocked • Make a record in field notes regarding: <ul style="list-style-type: none"> - The position of safety, hammer, slide or bolt, etc. - Location and number of unspent rounds in cylinder/magazine. (For revolvers, note whether rounds have been fired and their location within the cylinder.)

Facing Rear of Cylinder

Appearance of cylinder as recovered

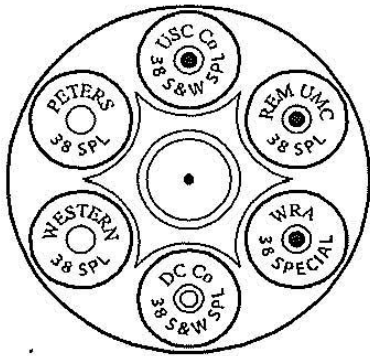
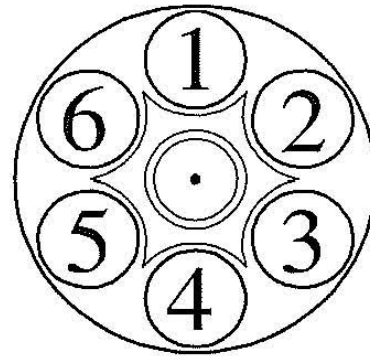


Diagram to be made by officer recovering weapon



EXAMPLE NOTES

<u>Chamber Position</u>	<u>Condition</u>	<u>Cartridge Headstamp</u>
1	Fired	U.S.C. Co.
2	Fired	REM-UMC
3	Fired	WRA
4	Misfired	D.C. Co.
5	Loaded	WESTERN
6	Loaded	PETERS

Basic Steps	General Guidelines
Render the firearm safe.	<ul style="list-style-type: none"> • If the firearm is loaded, have an officer who is qualified to handle that type of weapon render the firearm safe • Use care to collect any unspent cartridges • If a firearm cannot be rendered safe because of rust, damage, or for any other reason, officers should refer to their specific agency policies and procedures before taking further action <p>NOTE: Additional information regarding the appropriate actions for rendering firearms safe can be located in LD 35: Firearms/Chemical Agents.</p>
Conduct a more thorough examination of the firearm.	<ul style="list-style-type: none"> • Use care not to harm possible fingerprints or touch DNA left on the firearm • Note the make, model, serial number, manufacturer, caliber, barrel length, and finish of the firearm. Older rifles and shotguns may not have serial numbers. If this is the case, officers should note the lack of a serial number in their notes and report • Check for the presence or absence of stains, dust, or any trace evidence • Make a detailed sketch in field notes indicating the location of any trace evidence that is found on the firearm • Record all observations in field notes

Basic Steps	General Guidelines
Collect and process the firearm per specific agency policies and procedures.	<ul style="list-style-type: none"> • Carefully package, seal, and label firearm appropriately • Comply with all agency policies and guidelines regarding the further disposition of the collected firearm • If necessary, use appropriate techniques to process for latent fingerprints that may be present on the firearm
Document collection process in field notes and investigative report.	<ul style="list-style-type: none"> • Document all items collected • Document who rendered the firearm safe • Identify manner in which firearm was packaged and processed

Collection of Unspent Ammunition from a Firearm

Live cartridges found in revolvers or semiautomatic pistols can contain latent fingerprints or touch DNA of the person who loaded the weapon. Their position within the firearm, chamber, or magazine can also provide important information for investigating officers. For this reason, firearms and unspent rounds should be handled in such a way as not to destroy latent fingerprints or DNA that may be present.

The following table presents guidelines for preserving evidence associated with unfired ammunition found within a handgun.

Basic Steps	Revolvers	Semiautomatic Pistols
Examine and document condition and location of ammunition within the firearm.	<ul style="list-style-type: none">• Follow all fundamental rules of firearms safety• Open cylinder• Identify and document the position and condition (loaded, empty, fired) of every chamber	<ul style="list-style-type: none">• Follow all fundamental rules of firearms safety• Note the position of a control feature (e.g., safety, cocking indicator, selector, etc.)• Carefully release and remove magazine• Identify and document the position and condition of rounds within the magazine
Remove unspent cartridges/magazine from firearm.	<ul style="list-style-type: none">• Carefully remove cartridges one at a time from cylinder	<ul style="list-style-type: none">• Eject any cartridge that may still be in the pistol's chamber• Lock slide to the rear (open)• Visually and physically verify that there is no round in the chamber

Basic Steps	Revolvers	Semiautomatic Pistols
Package and preserve each cartridge/magazine separately.	<ul style="list-style-type: none"> • Do not apply any marks directly to bullet or cartridge • Package each extracted cartridge in appropriate <i>separate packaging</i> • Label each container with the same number as the chamber from which the cartridge was removed • Package firearm separately • Seal, label, and dispose of evidence according to agency policy or procedures • Document all items collected and packaged in field notes and investigative report 	<ul style="list-style-type: none"> • Document the ejection of any cartridge in field notes • Process magazine for latent fingerprints • Do not remove unspent cartridges from magazine • Package magazine, and any extracted rounds in appropriate separate containers • Seal, label, and secure evidence according to agency policy or procedures • Document all items collected and packaged in field notes and investigative report
Document collection process in field notes and investigative report.	<ul style="list-style-type: none"> • Document all items collected • Identify manner in which cartridges were packaged and processed 	<ul style="list-style-type: none"> • Document collection process in field notes and investigative report • Identify manner in which magazines were packaged and processed

NOTE: If a firearm appears to be jammed, officers should not attempt to clear the jam. Instead, they should comply with agency policy or guidelines regarding such situations.

Spent Bullets and Casings

Unique microscopic striation markings are created when the bullet is fired or the case is expelled from the firearm. When compared with the markings on a known firearm, such markings may provide conclusive evidence that the spent ammunition was fired from a single weapon to the exclusion of all other weapons.

Examples of markings on bullets and/or cases include, but are not limited to:

- Striation marks on the cartridge case created by the firing pin,
- Extractor and ejector marks,
- Marks left by the lips of the magazine, or
- Striation marks or scratches on the bullet created as it was fired through the barrel

Spent Shotgun Ammunition

A shotgun shell can contain a number of projectiles (i.e., shot). Expelled shotgun projectiles *cannot* be traced to a specific weapon. A spent bullet or cartridge case can be traced to a certain weapon. The ejected shotgun shells can lead to evidence regarding characteristics or bore size (**gauge**) of the type of shotgun used.

Shotgun shells also contain material used to separate the shot pellets from the powder charge (gun powder) within the shell. This material, usually made of cardboard, felt, or plastic, is the **shot wad**. The wad is expelled through the barrel behind the shot pellets.

Collecting expelled wad at a crime scene can aid in determining the gauge of the firearm and possibly the manufacturer of the ammunition. It can also help identify the location of the shooter when the weapon was fired.

Collecting Spent Ammunition

Special care is required when recovering and handling spent ammunition from a crime scene. The following table identifies general guidelines to follow in order not to damage or contaminate any evidence.

Basic Steps	General Guidelines
Identify and document	<ul style="list-style-type: none">• Locate and record as notes and sketches in field notes, and photograph the exact location and position of each bullet, cartridge case, or shot wad found
Collect	<ul style="list-style-type: none">• Pick up items carefully while wearing disposable gloves• If an item is embedded in hard material, (i.e., wood, plaster, etc.), it should not be removed from that material. Instead, if possible:<ul style="list-style-type: none">- The entire object containing the embedded item should be collected as evidence, or- Some of the material surrounding the item should be removed with the item (Also collect a control sample of the material for comparison purposes.)
Package and preserve	<ul style="list-style-type: none">• Do not place any markings on expended bullets or cartridge cases• Individually wrap each item separately in tissue, soft cotton, or paper padding and place it in separate containers or envelopes• Appropriately seal and label each container and note the location where the item was found

Gunshot Residue

Whenever a firearm is discharged, particles of unburned powder and gases are blown through openings in the firearm's cylinder, ejection port, or through the barrel itself. Such residue is made up of the elements barium, lead, and antimony and is not visible by the naked eye.

Trace residue of this material may be left on the palm area and back of the shooter's hand(s) and between the web of the fingers. The actual amount of residue deposited can vary depending on the type of firearm and ammunition used, and the conditions when the firearm was discharged.

Precautions

Gunshot residue (GSR) on the skin is an especially transient form of microscopic trace evidence. For successful lab analysis and identification, samples should be collected from the person's hands *as soon as possible*. To help preserve gunshot residue evidence, the individual's hands can be protected with paper bags.

To avoid the possibility of loss or transfer of residue material, officers **should not**:

- Allow anyone or anything to have physical contact with the person's hands,
- Place hands inside pants pockets or jacket pockets
- Let the person wash his or her hands, or
- Fingerprint the person prior to taking samples

NOTE: Unless officer safety issues demand otherwise, a person should not be handcuffed until after gunshot residue samples have been collected.

NOTE: Long sleeve clothing such as jackets and shirts may also contain gunshot residue and should be considered during the investigation.

NOTE: If the gun residue test is not going to be administered in the field the individuals' hands should be covered with paper bags as soon as possible to preserve evidence.

Hairs And Fibers

The location of hairs or fibers at a crime scene may indicate some form of contact between a person and the point of entry, an object, or the victim.

Hairs

Hairs collected at a crime scene cannot be used to identify a particular individual (with the exception of DNA analysis), but they may be used to eliminate or identify general characteristics of individuals (e.g., color, whether the hair is natural, bleached, or tinted, length, fine or coarse texture, synthetic, etc.).

DNA identification of an individual can occur when hair analysis is conducted.

Example: Hairs embedded in the windshield on the driver's side may assist officers in determining who was driving the vehicle at the time of impact.

Fibers

Criminal activity often involves some type of direct contact between a person and some object (e.g., point of entry). During this contact, evidence may be transferred from the person to the object. Air currents may also transfer fibers to other areas.

Most fiber can be classified in the laboratory as:

- Animal (e.g., wool, etc.),
- Plant fiber (e.g., cotton, linen, etc.), or
- Synthetic (e.g., nylon, polyester, rayon, etc.)

Matching the fibers with control/known standards taken from a crime scene or from a person can aid in linking a fiber with an object, location, or person.

DNA can identify people and can be used to assist in placing suspect(s), witness(es), and victim(s) at a crime scene.

Protecting Trace and Transfer Evidence

Because of its size and delicate nature, trace and transfer evidence such as hairs and fibers can be easily lost, damaged, or destroyed at the crime scene and while being transported. The following table identifies precautions officers should be aware of when handling either form of evidence.

Officers should...	Officers should not...
<ul style="list-style-type: none">• Control access to a crime scene• Close windows or shield areas which may contain hairs and fibers, to protect from wind, movement, moisture, etc.• Avoid cross-contamination between fiber samples and control/known standards• Select packaging containers that will protect the evidence and allow laboratory technicians to easily locate the evidence within the package• Document in field notes any actions taken to protect hairs and fibers	<ul style="list-style-type: none">• Fold or bend hairs or fibers when handling or packaging them• Seal packages containing wet hair or fibers until they have air dried• Place hairs or scrape fibers directly into an envelope. (Samples can easily fall out of unsealed corners.)• Place hairs or scrape fibers directly into a plastic bag. (Static electricity may cause fibers to stick to the interior of the bag.)

Collecting Hairs and Fibers

Officers must be extra cautious when collecting strands of hair or fibers from a crime scene. The following table identifies guidelines for this process.

Basic Steps	General Guidelines
Document location and appearance of hairs/fibers.	<ul style="list-style-type: none">• Photograph the hairs or fibers in the location found• Describe and draw sketches within field notes of the exact location on the object or area within the crime scene
Collect individual hairs/fibers using appropriate techniques.	<ul style="list-style-type: none">• If visible and firmly attached to an object (e.g., clothing, pillow, etc.):<ul style="list-style-type: none">- Leave hairs or fibers intact and collect the entire object- Handle the object carefully and as little as possible to avoid disturbing any other trace or transferred evidence that may be on the item- If necessary, air dry the article being sure to protect it from air currents that may disturb hairs/fibers
Tape lifts of hair and fiber evidence	<ul style="list-style-type: none">• If loosely attached, or attached to an object or surface, carefully remove each hair or fiber with gloved hands or tape lifts.
Package and process each item separately.	<ul style="list-style-type: none">• Select packaging that will properly protect the trace evidence.<ul style="list-style-type: none">- Package collected objects so that hairs or fibers will not become dislodged during transportation.- Package individual hairs by carefully placing them into a bindle. (Be sure not to bend or fold the hair when forming the bindle.)• Seal and label each container.• Process the evidence according to specific agency policy and procedures.
Document the collection process in field notes and investigative report.	<ul style="list-style-type: none">• Document all items collected.• Identify manner in which each hair/fiber sample was packaged and processed.

Collecting Control/Known Standard

For comparison purposes control/known standard hair samples should be collected from sources associated with the crime (e.g., people, victims, carpet, items of clothing, etc.). Control/known standards should be collected as soon as possible. Individuals can easily change their hair color, length, etc. over time. Known standards must be collected lawfully

Do not cut samples of hair from the individual. Hair should be **pulled out** in order to obtain the hair's root.

The following table identifies general guidelines for collecting control/known standards from individuals.

General Guidelines	
Head/scalp hair	<ul style="list-style-type: none">• Use a new, unused plastic comb to <i>briskly</i> back comb all parts of the individual's scalp including:<ul style="list-style-type: none">- Left and right temples,- Crown, and- Base of the neck.• A minimum of 15-20 hairs should be collected from each area of the scalp.• If hairs vary in color, obtain samples of all colors.• Seal and label noting any additional information such as the individual's:<ul style="list-style-type: none">- General overall hair color,- Age, and/or- Signs of hair treatment (dying, highlighting, bleaching, etc.).

General Guidelines	
Body hair	<ul style="list-style-type: none"> • Collect 15-20 hairs from other parts of the body such as: <ul style="list-style-type: none"> - Face (if applicable), - Pubic area, - Chest, or - Underarm • If hairs vary in color, obtain samples of all colors

NOTE: Depending on specific agency policy and guidelines, control/known standard involving head/scalp or body hair may be collected by medical personnel rather than peace officers.

NOTE: Under certain circumstances, it may be necessary to collect a known sample of a known standard from animals (e.g., family pets) that may have been at the crime scene.

Fingernail Swabbing, Scraping, And Evidence Collection

If a crime has involved a physical encounter, material may have been transferred beneath the victim's or individual's fingernails. This material may be useful as evidence connecting an individual to a crime.

Until fingernail swabbing and scrapings can be taken, the individual's hands should be enclosed by a paper bag and taped closed at the individual's wrist to preserve any at-risk evidence. The following table identifies guidelines for collecting evidence from the fingernail of an individual.

General Guidelines	
Fingernail swabbing and scrapings	<ul style="list-style-type: none">• Collect scraping from each finger on a separate piece of paper. If swabs are taken, use a clean, sterile swab to collect the material; document the area and package separately• Carefully fold the paper into a bundle• Label each bundle as to the finger the scraping was taken from and place in a separate envelope• Seal and label each envelope• Process according to specific agency policy or crime laboratory procedures• Document in field notes and investigative report

Tool Marks And Tools

When a hard object, such as a metal tool, comes into contact with a softer object, and force is applied, an impression is left on the softer object. Comparing the tool marks left at the scene of a crime with the unique characteristics and imperfections of a particular tool, may provide conclusive evidence linking that tool to the crime.

Tool Marks

A **tool mark** is an impression, scratch, gouge, cut, or striation/abrasion on an object that is the result of a tool forcibly coming into contact with the object.

There are three basic types of tool marks:

- Impressions (stamped indentations in the object),
- Striation/abrasion marks (marks caused by the friction of the tool being forced across the object), and
- Combination marks (including both impressions and striations/abrasions)

Identification And Documentation

The most likely location for tool marks is at the point of any forced entry to a building, room, container, vehicle, etc.

Once located, all tool marks should be carefully documented. The following table identifies recommendations for documenting tool marks at a crime scene.

Documentation	Description
Over-all photographs	<ul style="list-style-type: none">• Depict the entire object that bears the tool mark• Show the physical location and arrangement within the crime scene of the object bearing the mark
Close-up photographs	<ul style="list-style-type: none">• Show the detail of the actual tool mark revealing the direction, depth and other characteristics• Include an L-shaped scale/ruler in the photograph to show relative size <p>NOTE: Close-up photographs are for identification and orientation purposes only. They are not used for actual comparisons.</p>
Written notes and sketches	<ul style="list-style-type: none">• Document within field notes the location and brief description of the marks• Include sketches that accurately reflect the position of all marks in relation to fixed reference points (e.g., height from the floor, distance from window frame, etc.)

NOTE: Officers should not open, close, or otherwise handle doors or windows at a crime scene before first examining such areas for the existence of trace or transfer evidence or fingerprints.

Trace and Transfer Evidence

Tool marks themselves should be examined carefully for evidence, such as hair, fibers, small amounts of blood, paint chips, metal shavings, etc. All particles of evidence that loosely adhere to the tool mark should be removed and processed using techniques that are appropriate for each form of evidence.

Collecting Tool Marks

The technique used for collecting tool marks is dependent on the area and/or the item where the marks are located. If an object or section has been broken or detached by force, the entire item should be collected and processed as evidence. Often, tool marks will appear on items that are still attached to the original structure.

NOTE: **Do not** attempt to place a tool back into a tool mark to identify whether or not they match.

The following table presents guidelines for collecting tool marks based on their location.

Item/Area	General Guidelines
Twisted doorknob	<ul style="list-style-type: none">• Channel lock pliers, vise grips, or wrenches can be used to forcefully twist open doorknobs. Such tools often leave friction/striation marks• Mark the original position of the knob relative to the door (e.g., top)• Carefully remove the doorknob from the door• Gently cover the knob with soft paper to protect surfaces, then place in a strong wrapper
Pried knob bolt	<ul style="list-style-type: none">• Screwdrivers can be used to pry open the bolt on a doorknob, leaving friction/striation marks (Screwdrivers can be used in similar ways to pry open windows.)• Remove the striker plate and screws as well as the doorknob bolt, if possible• Mark each item indicating the top and front of its position prior to removal• Gently cover each item with soft paper to protect surfaces, then place each in a separate container

Item/Area	General Guidelines
Metal window or door frames	<ul style="list-style-type: none"> • When merited by the severity of a crime, the entire window or door frame may need to be removed and processed as evidence • Once removed, areas containing impression and/or friction/striation marks should be gently covered with soft paper • Mark the frame indicating top and front as it was positioned prior to removal • If marking is not possible, include a separate sketch • Wrap the entire frame in strong paper <p>NOTE: If an object is too large or heavy for complete removal, samples of metal may be removed from the object to be used as known reference standards.</p>
Wooden window or door frames	<ul style="list-style-type: none"> • Using a small saw, cut away the piece of frame containing the tool mark(s) and surrounding surface • Mark the collected item as to position of the sample with the original frame • If marking is not possible, include a separate sketch • Gently cover the item with soft paper to protect surfaces, then place in a container • Collect known reference standards of other pieces of wood and paint scrapings. Such standards may be used for comparisons with any wood or paint particles found on a suspected tool

NOTE: There may be conditions where the collection of an item containing a tool mark is not practical. Under such conditions, casting material may be used to make a reverse impression of the area.

Tools

If the tool suspected of making the tool mark is located at the crime scene, special steps to preserve the tool for evidence processing should be followed to preserve evidence such as latent prints or DNA.

Markings left on suspected tools themselves may be fragile and easily damaged during transportation. Care should be given to preserve trace evidence through packaging or collect by tape lifting prior to packaging.

The following table identifies general guidelines for the collection and preservation of tools located at a crime scene.

Basic Steps	General Guidelines
Document the location and condition of the tool.	<ul style="list-style-type: none">• Photograph the tool in the location it was found• Describe location and condition of the tool in notes• Use sketches and diagrams if necessary
Collect tool in a manner that preserves evidence.	<ul style="list-style-type: none">• After examining the item for trace and transfer evidence, secure any moving parts against movement (i.e., jaws of pliers, wrenches, etc.)• Wrap the jaws of pliers, wrenches, etc. separately with soft paper to protect surfaces• Tape a paper bag over the tip of the tool to prevent loss or contamination of trace evidence. (If blood is found on the tool, follow procedures noted for the collection of biological fluids.)
Package and process each item separately.	<ul style="list-style-type: none">• Carefully wrap each tool in packaging bag or box• Place each in an appropriately sized container (bag or box) to prevent movement.• Process the evidence according to specific agency policy or procedures
Document the collection process in field notes and investigative reports.	<ul style="list-style-type: none">• Identify each tool that was collected, how it was collected, and how it was packaged and processed

Alcohol

When alcohol is discovered at the scene of a crime, the courts may require that a sample of the alcohol be made available.

The following table identifies general guidelines for the collection of alcoholic beverages found at the scene of a crime.

	General Guidelines
Collection	<ul style="list-style-type: none">• If <i>open containers</i> of alcohol are found in a vehicle on the roadway:<ul style="list-style-type: none">- Mark level of liquid in each container- Fill a separate plastic container <i>to capacity</i> with samples of the contents from each open container
	<ul style="list-style-type: none">• If it must be shown that alcoholic beverages have been <i>consumed by an individual</i>, have a qualified medical person draw a blood sample from the individual (This process should be witnessed, preferably by the officer.)
Packaging	<ul style="list-style-type: none">• Package alcohol containers separately from other samples• Vials of collected blood samples should be labeled and identify the person who drew the sample, the witness, and the date and time the sample was taken• Place each vial of collected alcohol or blood in a separate container

NOTE: For additional information regarding actions pertaining to alcohol, refer to LD 13: ABC Laws.

Bite Marks

The following table identifies general guidelines for the collection and processing of bite marks found at the scene of a crime on victims, food, or other items at a crime scene.

General Guidelines	
Documentation	<ul style="list-style-type: none">• Photograph the area:<ul style="list-style-type: none">- With and without showing a scale within the photograph.• Photographs should be at a 90 degree or perpendicular angle to the bite mark.
Collection	<ul style="list-style-type: none">• Collect any saliva near the bite mark by swabbing the area with a clean cotton swab moistened with distilled water• Collect a control sample of the area adjacent to the bite mark by using another clean cotton gauze moistened with distilled water• Allow all swabs to thoroughly air dry
Packaging	<ul style="list-style-type: none">• Once “dried”, place swabs in separate paper envelopes labeled with victim name, collector, date, time• If evidence cannot be immediately processed, it should be stored frozen <p>NOTE: Bite marks found on food should be processed immediately.</p> <p>NOTE: Other instrumentalities of a crime scene could contain bite marks.</p>

Clothing

Items of clothing associated with a crime scene may contain both obvious (e.g., large blood stains) and hidden (e.g., fine paint particles) forms of evidence. General guidelines regarding the collection of clothing as evidence are noted in the following table.

	General Guidelines
Collection	<ul style="list-style-type: none">• Wear gloves when packaging clothing• Avoid shaking, excessive folding, or unnecessary handling• Do not disturb the contents of pockets, cuffs, hems, or pleats• Place each clothing item in a clean paper bag
	<ul style="list-style-type: none">• If clothing is being collected directly from a person:<ul style="list-style-type: none">- Have the person stand on a large sheet of white paper- Ask the individual to remove clothing and shoes- Place each item in a separate paper bag- Provide the individual with a jail jump suit or other clothing to wear- Carefully fold up the paper- Place folded sheet of paper and items of clothing in separate clean paper bags
Packaging	<ul style="list-style-type: none">• If clothing is dry:<ul style="list-style-type: none">- Fold dry clothing as little as possible, keeping stained areas on top- Place each item in a separate clean paper bag- If item cannot be immediately processed, freeze as soon as possible

General Guidelines	
Collection	<ul style="list-style-type: none"> • If clothing is wet, let the item air dry thoroughly, then follow the same procedures as for dry clothing
	<ul style="list-style-type: none"> • If clothing has been obtained from a hospital: <ul style="list-style-type: none"> - Remove each item from hospital container, dry if still wet and, once dry, repackage in separate clean paper bags
Packaging	<ul style="list-style-type: none"> • Keep each person's clothing in separate containers • Do not place clothing in plastic or airtight containers which may promote bacterial growth

Cloth Fragments

General guidelines regarding the collection of cloth fragments as evidence are noted in the following table.

General Guidelines	
Collection	<ul style="list-style-type: none"> • Collect small fragments using gloved hands or tape lifts. Avoid folding the item. • Collect large fragments by handling them as little as possible. • If fragment is wet, allow to air dry prior to packaging.
	<ul style="list-style-type: none"> • Package each fragment separately. • Place in clean paper bags.

Controlled Substances and Drug Paraphernalia

Officers may encounter numerous types of controlled substances and drug paraphernalia at a crime scene. Responding officers should be aware that drugs can come in many different colors, sizes, and forms such as powders, liquids, pills, or capsules.

Depending on specific agency policy, officers may be equipped with **presumptive narcotic field-testing kits**. Use of such kits can help officers determine if a drug is present and make a preliminary identification of the type of drug found. The immediate results obtained from presumptive field tests can provide sufficient probable cause for an arrest. Although, all results must be confirmed by a forensic laboratory before evidence can be admissible in court.

NOTE: Officer safety must be a priority when handling evidence involving controlled substances, drug paraphernalia, or when investigating Clandestine Laboratories.

NOTE: For additional information regarding narcotics, other drugs, and drug paraphernalia, refer to LD 12: *Controlled Substances*.

The following table identifies general guidelines for the collection of controlled substances and drug paraphernalia at a crime scene.

General Guidelines	
Collection	<ul style="list-style-type: none"> • Wear latex gloves and masks • Special care should be taken when handling drug paraphernalia to avoid possible transfer of infectious diseases • Handle any original packaging with care so possible trace evidence and latent fingerprints will not be destroyed or damaged
	<ul style="list-style-type: none"> • For PCP: <ul style="list-style-type: none"> - Handle with extreme caution. PCP can be extremely volatile - Place the amount found on each person, or in each area, in a separate clean glass vial with a lid - Seal each vial in a heat-sealed plastic bag - Place sealed envelope into a second heat sealed plastic bag and seal
	<ul style="list-style-type: none"> • For most other drugs: <ul style="list-style-type: none"> - Place the amount found on each person, or in each area, in a separate container - <i>Do not</i> place marijuana in any airtight container
	<ul style="list-style-type: none"> • For syringes and other drug paraphernalia: <ul style="list-style-type: none"> - Place each in puncture resistant containers - Place a warning label on the face of the evidence envelope

NOTE: Some drugs, such as PCP, can be absorbed through skin; Fentanyl particles, if disturbed, can be accidentally inhaled; if Fentanyl is suspected, exit the scene and contact Fire Department and Hazardous Materials Unit.

General Guidelines	
Packaging	<ul style="list-style-type: none"> • Place each item collected from each person in separate containers • Cushion glass vials with packing material to prevent breakage • Properly seal and label all containers <p>NOTE: Do not use slang expressions or conclusive statements as to the contents when labeling containers and envelopes. The exact nature of each substance must be determined or confirmed by the laboratory.</p>

Documents

During a search of a crime scene, officers may discover documents that have bearing on the investigation of the crime. Laboratory examination of the technique used to create the document (handwritten, typed, etc.) as well as the paper and ink may provide information relating to identification, authenticity, and dating of the material.

The following table identifies general guidelines for the collection of documents from a crime scene.

General Guidelines	
Collection	<ul style="list-style-type: none">• Avoid any excessive handling or folding to guard against damage or alteration to possible latent fingerprints or impression marks (i.e., indentations left from writing on another document that has been placed on top of the document being collected)• If the original document was written using a typewriter or printed on a word processor or printer attached to a computer system, collect the entire instrument, storage devices, and paper that remains in the instrument
Packaging	<ul style="list-style-type: none">• Label the envelope/plastic cover <i>before</i> placing the document inside (to protect document from officer labeling impression marks)• Place the document in the envelope/plastic cover• Place the envelope/plastic cover between two sheets of stiff cardboard• Wrap cardboard with paper or place in an appropriate container

General Guidelines	
Control/ Known Standards	<ul style="list-style-type: none"> • Obtain a control/known standard when possible • Control/known standard samples may be in the form of: <ul style="list-style-type: none"> - Other similar documents prepared by the person at a previous time or - Documents prepared by the person at the request of an investigating officer • When requesting a control/known standard involving <i>handwriting</i>: <ul style="list-style-type: none"> - Simulate the original document as much as possible (e.g., same type of paper, writing instrument, etc.) - <i>Do not</i> show the original document to the person - Dictate the text to be written - Offer no suggestions regarding spelling, punctuation, style, or format - Remove the first sample from the person's sight and request a second be prepared <p>NOTE: If it is not known whether the individual is left or right-handed, the officer may wish to request that a sample be written using each hand.</p>

Glass

By examining and analyzing glass fragments from a crime scene, it may be possible to determine a point of impact, direction and angle of impact, number and order of bullets fired through the glass, or source and origin of the glass. Trace and transfer evidence (e.g., latent fingerprints) may also be present. Examples of the different types of glass that may be found at a crime scene include, but are not limited to:

- Window glass,
- Plate glass (usually used for store fronts),
- Tempered glass (e.g., shower doors, storm doors, vehicle side windows, etc.),
- Safety glass, (vehicle windshield)
- Glass bottles, or
- Colored or clear lenses (e.g., glasses, camera lenses, headlight lenses, watch crystals, etc.)

All broken glass should be handled carefully to protect any transfer biological evidence, touch DNA, or suspect blood from the break and avoid cuts or injury to collector, further breakage, contamination, or damage to any existing latent fingerprints. The following table identifies general guidelines for the collection of glass and glass fragments at a crime scene.

General Guidelines	
Documentation	<ul style="list-style-type: none"> • If a window has been shattered (e.g., bullet holes, tools, bricks, spark plug piece), photograph the fracture patterns
Collection	<ul style="list-style-type: none"> • Carefully examine glass fragments for blood evidence and preserve for fingerprint or trace evidence processing.
	<ul style="list-style-type: none"> • If the direction of force is in question, collect all glass fragments • If direction of force is not a concern, collect only one sample of glass from each broken object
Packaging	<ul style="list-style-type: none"> • Package glass found inside separately from glass found outside
	<ul style="list-style-type: none"> • Place fragments into an appropriate container

Impressions (Shoe, feet, tire, etc.)

Shoes, feet, or tire treads may leave impressions on soft surfaces such as soil, mud, snow, etc. Impressions may also be found on hard surfaces such as floors, glass, paper, or doors. By comparing crime scene impressions with features of a particular person's shoes, feet, or tires, it may be possible to implicate or eliminate an individual's involvement with a crime. Preserve shoe and tire impressions at the scene for photographs and casting of the impression.

Soft and hard surface impressions require different collection techniques. The selection of a specific technique and the actual collection should be done only by law enforcement personnel who have been trained to do so.

Money

Money that is found at the scene of a crime may be a valuable source of evidence. Depending on how it had been handled, money may be contaminated by trace evidence such as drug residue. Although rare, currency may also contain latent fingerprints.

The following table identifies general guidelines for handling money from a crime scene.

General Guidelines	
Documentation	<ul style="list-style-type: none">• Officers should note the denominations and total amount of money collected in their field notes and investigative reports
Collection	<ul style="list-style-type: none">• <i>Do not</i> place any marks on bills or coins (Bills can be identified by serial number.)• If wet, allow bills to air dry prior to packaging• Carefully place money in a special money envelope• If trace or transfer evidence is on currency, handle each bill in the same manner as with other documents
Packaging	<ul style="list-style-type: none">• Seal envelope and note the denominations and amount of money on the outside of the envelope• All money (domestic and/or foreign) should be processed separately from all other forms of evidence and property

NOTE: A witness signature should be required to verify the amount of money being submitted. Officers should comply with their agency's policy and procedures when processing money.

Paint

Paint is another form of physical evidence that can be found when investigating burglaries, vehicular hit-and-run crimes, or numerous other investigations. Paint can be found at a crime scene in the form of chips (from dry paint), smears (from wet paint), or a combination of both.

Although paint can be individualized, matches can be used to imply identifications based on the number of layers, color consistency, and composition. It may be possible to identify the manufacture and year of a vehicle from a collected paint sample. The following table identifies general guidelines for collecting paint samples at a crime scene

General Guidelines	
Collection	<ul style="list-style-type: none">• Paint should be collected only after tool marks, trace evidence, latent fingerprints, etc. have been documented and collected• If paint sample is small or difficult to remove, collect the entire object on which the paint appears, if possible
	<ul style="list-style-type: none">• Flake paint chips off surface by bending the item slightly, if possible. Collect the flakes into one end of a clean paper bindle (Flaking is most applicable with metal surfaces.)• Collect any appropriate paint chips that may be on the ground outside a point of entry or surrounding the scene of a vehicle collision
	<ul style="list-style-type: none">• If flaking is not possible, use a clean bladed instrument to scrape paint from surface into one end of a clean paper bindle• Include all layers of paint present, down to the original surface• Use a separate clean blade for each sample collected
Packaging	<ul style="list-style-type: none">• Seal and label each envelope (If the paint is from a vehicle, include a description and the license plate number of the vehicle.)• Package and submit blade used with each evidence sample (Mark evidence envelope as <i>hazardous</i> when sharp blade is included.)

Tape

Different types of tape (e.g., duct, electrical, adhesive, etc.) found at a crime scene may contain latent fingerprints, DNA, fibers, hairs, or other evidence associated with a crime and link a suspect to the tape.

The following table identifies general guidelines for the collection of tape at a crime scene.

General Guidelines	
Collection	<ul style="list-style-type: none">• Handle tape as little as possible• Preserve the ends of the tape where the suspect might have touched to preserve for DNA and fingerprint processing• Examine tape for the presence of trace or transfer evidence that may be adhering to the tape. If trace or transfer evidence is found, remove from the tape and package separately according to the guidelines appropriate for that particular form of evidence• <i>Do not</i> crumple tape into a ball• If tape is on a weapon or some other object (e.g., narcotics container), <i>do not</i> attempt to remove it. Collect the entire object as evidence• Do not attempt to match torn or cut edges. Collect the entire roll as evidence
Packaging	<ul style="list-style-type: none">• Do not place tape directly onto or into paper.• Place sample into a non-porous container (e.g., plastic, glass, wax paper)• Each sample should be placed in a separate container• Label each container, then place the container into a paper bag, envelope, or cardboard box• Seal and label outer packaging

Learning Need

Peace officers must be aware of and comply with the general guidelines for the collection, packaging, and processing physical evidence found at a crime scene to ensure that each piece of evidence is admissible in a court of law.

Precautions [30.02.1]

Prior to beginning the actual collection process, officers should consider:

- Photographing evidence
- Sketching the location and position of items of evidence
- Taking notes regarding the physical appearance of evidence to document the condition in which it was found
- Wearing appropriate clothing, such as disposable gloves, masks and non-restrictive, noninterfering clothing
- Avoid officer contamination of evidence

Control/Known Standard [30.02.2]

To establish a link between a piece of evidence and a person or a crime scene, the unique identity of the object must be shown to the exclusion of all other similar objects.

Chain of Custody [30.02.4]

Prepare the information that should be noted on a chain of custody record.

Chain of Custody Record [30.02.5]

The chain of custody begins when an item is first collected as evidence.

Forms of Fingerprints [30.02.6]

Three types of fingerprints can be found at a crime scene. They include visible, plastic and latent.

General Collection Guidelines [30.02.15]

Numerous other forms of evidence can be identified at any crime scene. Although specific techniques may differ, basic principles regarding the documentation, collection, and processing of evidence remain the same.

Developing Latent Fingerprints [30.02.16]

Specialized technicians have a number of techniques which can be selected for developing a latent print. Each technique relies on an interaction between the perspiration or oil in the latent fingerprint and the chemical that has been applied.

WORKBOOK LEARNING ACTIVITIES

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring the appropriate text, you should be able to prepare a response.

Activity Questions

1. Officers meet homeowners at the scene of a burglary. The homeowners tell officers that when they arrived home and turned on the lights, they heard a scuffle in the kitchen. When they entered, they found the back door open and their stereo, computer equipment, two small televisions, and a VCR on the kitchen table. They also report that someone has gone through all the drawers of the two dressers in their master bedroom. List all the locations where officers might search for latent fingerprints.
2. Describe step-by-step how an officer should safely collect and document a handgun discovered in a nightstand drawer at a crime scene.

Activity Questions (Continued)

3. Complete the chart below by filling in appropriate packaging containers and evidence.

Type of Evidence	Appropriate Packaging
blood or other biological fluids	
	paper bags
	glass vials
individual hair or fibers	
PCP	
money	
	plastic containers
marijuana	
cartridge cases	

4. List three common errors officers make in collecting and handling evidence. For each error, explain the possible consequences that could occur.

Activity Questions (Continued)

5. At the scene of an assault, officers locate dried blood on a living room carpet and fresh blood droplets on glazed ceramic tile surrounding the fireplace. Describe how officers should collect and package this evidence. Do officers need to collect control samples in these instances? Why or why not?

6. A woman is arrested on a street corner for selling drugs. The arresting officers discover a plastic bag containing 10 small paper bindles of white powder and \$1100 in cash in the woman's pockets. Describe step-by-step the actions that must take place to protect the integrity of the physical evidence from the time it was discovered to when that evidence is presented at trial.

Activity Questions (Continued)

7. Officers respond to an automobile accident in which a pedestrian was struck and killed. Officers find the driver slumped over the wheel and an open can of beer on the seat. The driver smells strongly of beer. List the types of evidence officers should attempt to collect and the purpose of each. For each piece of physical evidence listed, describe appropriate handling, packaging, and processing procedures.

Supplementary Material

In This Section

Refer to the following table for specific reference documents included in this section.

Topic	See Page
Sources of Investigative Information	S-2

SOURCES OF INVESTIGATIVE INFORMATION

Introduction

In the course of an investigation, officers must recognize and use all possible sources of information available to them. Worthwhile information may be obtained from:

- Informants, and/or
- Written documents and reference materials

Motivation

Officers who use information supplied by an informant need to be aware of why that person is willing to offer information. Possible motives include, but are not limited to:

- Civic responsibility or feeling of duty,
- Desire for monetary compensation for furnishing information,
- Desire to gain present or future law enforcement favor,
- Fear of impending arrest,
- Fear of possible personal harm by a criminal element,
- Jealousy of one who will be affected by the information,
- Elimination of criminal competition, or
- Revenge against someone who may have taken advantage of them

Written Documents

Written documents can include private and public records and numerous other written sources.

There are a number of private organizations and businesses records capable of providing information. Most private organizations will cooperate with a request for information from law enforcement, if tactfully approached. Officers should assure the responsible party that the source will be kept confidential.

In the event the information is needed as evidence in a court of law, officers should seek a subpoena for the records rather than compromise any informant from within an organization.

Written Documents and References

The following table presents a number of possible sources of private records that may provide valuable information. Officers should not limit themselves to only those noted in the table.

Source	Types of Information
Apartment housing and other housing projects	<ul style="list-style-type: none">• Record of present and former tenants• Possible forwarding addresses
Auto rental or leasing companies	<ul style="list-style-type: none">• Identity of persons leasing cars• Driver's license information• Make, model or car used• Mileage traveled
Banks and loan agencies	<ul style="list-style-type: none">• Records on bank accounts and deposits• Loan information• Credit record <p>NOTE: In order to obtain this information, it may be necessary to get a search warrant (privacy interests seem to be increasing).</p>
City directories and telephone directories	<ul style="list-style-type: none">• Names, addresses, telephone numbers• City directories generally list occupation• May alphabetically list all streets in the city with street numbers and with the identity of each building occupant• Usually list telephone numbers in sequence and the individual's identity

Source	Types of Information
Commercial credit agencies	<ul style="list-style-type: none"> • Files on those who have applied for credit • Residence history of applicant • Employment history of applicant • Other charge accounts • Debts • Personal history
Dun and Bradstreet Ratings (99 Church St. New York, N.Y. 10007)	<ul style="list-style-type: none"> • Records on businesses including financial data, credit and organizational data • Stockbrokers, wholesale and retail dealers
Hotel association	<ul style="list-style-type: none"> • Files on bad checks, gamblers, and employees at hotels and motels • Security personnel may be able to furnish this information
Laundry and dry-cleaning businesses	<ul style="list-style-type: none"> • Many have their own markings • Records on when services were rendered <ul style="list-style-type: none"> - Names - Addresses
Lawyers' directory	<ul style="list-style-type: none"> • Arranged by city and state • Lawyers in United States by name and background data
Macrame's Blue Book	<ul style="list-style-type: none"> • Source for all manufacturers of industrial equipment, products, and materials • List of manufacturers in alphabetical order by company name, product classification and trade name

Source	Types of Information
Military registers (Army, Air Force, Navy and Marine)	<ul style="list-style-type: none"> • Name, serial number, date of birth, date of rank • Commissioned and warrant officers only
Moving companies	<ul style="list-style-type: none"> • Person moving or storing furniture • Destinations, dates, and addresses
National Association of Life Underwriter (11 West 42nd ST., New York, N.Y.)	<ul style="list-style-type: none"> • Insurance company clearinghouse • General biographical data on all persons who have had life insurance policies
National Board of Fire Underwriters	<ul style="list-style-type: none"> • General information on persons who have or have had a fire insurance policy
Newspapers	<ul style="list-style-type: none"> • Back issues
Poor's Register of Corporations, Directors and Executives	<ul style="list-style-type: none"> • Available in public libraries • Gives listing of executives, corporations, firms, products • Approximately 30,000 listings
Public utilities	<ul style="list-style-type: none"> • Maintain application for service • Often, records are kept by name • Usually have record of person who had service previously at the same address • Companies may have a special agent's office which can offer assistance

Source	Types of Information
Real estate companies	<ul style="list-style-type: none"> • Records of residents and former tenants of rental property • Records of buyers and sellers of property
School and college records	<ul style="list-style-type: none"> • Biographical data • Sample handwriting and student signature • Educational achievements • School yearbooks <ul style="list-style-type: none"> - Names - Activities - Pictures
Taxicab companies	<ul style="list-style-type: none"> • Records of trips kept by drivers on each customer • List time, date, location from and destination
Travel agency and other transportation companies	<ul style="list-style-type: none"> • Names, addresses of passengers • Dates of ticket purchase • Dates of travel • Points of disembarkment • Hotel accommodations • Itineraries

Glossary

Introduction

The key vocabulary terms for Learning Domain 30: Crime Scenes, Evidence, and Forensics are listed below with the definitions as they apply to this workbook.

Automated Fingerprint Identification System (AFIS)

Statewide file of full or partial rolled fingerprints collected from known individuals; can be referred to compare with fingerprints from unknown source collected at a crime scene

Bindle

A sheet of paper folded several times to create a holder resembling an envelope.

Biological Fluids

Human bodily fluids such as blood, semen, vaginal secretions, saliva, perspiration, etc.

Bullet

A projectile that is expelled from a cartridge

Cartridge

A self-contained unit which includes a projectile and propellant capable of firing the projectile through the barrel of a firearm

Cartridge Case

An empty container left after cartridge has been fired

Chain Of Custody

The written, witnessed, unbroken record of all individuals who maintained control or had access to any physical evidence

Control Standard

A piece of evidence that can be used to demonstrate a normal condition of a surface or object

Corpus Delicti

The established body or elements of a crime

Coroner

A public official who investigates by inquest any death not due to natural causes

Crime Scene Diagram

A measured drawing showing the location of all important items, particularly items of physical evidence; shows layout of the entire scene, measured locations within the crime scene of each piece of evidence, locations of significant features of the scene, and spatial relationship between items

Crime Scene Search

A planned, systematic, coordinated effort conducted for the purpose of locating physical evidence that a crime has taken place and to identify the individuals who committed the crime

Crime Scene Sketch

A rough drawing created by an investigating officer at the crime scene; contains details and measurements that will be used when the final accurate diagram is later drawn

Criminal Investigation

A systematic approach to the establishment of a criminal violation, identification and arrest of a suspect, and gathering of evidence for presentation in a court of law

Custodial Arrest

An arrest in which the suspect will be transported to a law enforcement facility such as a station, jail, or detox center

Cylinder

Round device found on a revolver which contains a series of chambers; rotates to place each chamber, holding a single cartridge, into a firing position

Deoxyribonucleic Acid (DNA)

A substance found in the chromosomes in the nucleus of human cells that provides genetic coding information unique to every person

Fingerprint

A copy or impression of the ridges and valleys present on the outermost layer of human skin; these ridges and valleys can be found on the tips of fingers, length and sides of fingers, palms, feet, and toes

Forensic Pathologist

Doctor of pathology as it relates to the courts

Gauge

Measurement that refers to the bore size of a shotgun

Initial Survey

The first sweep of a crime scene; allows responding officer(s) the opportunity to establish the kinds and amount of evidence that exists and the amount of time, equipment and personnel that will be required to process the scene

Inner Perimeter

Designated area which contains specific evidence of a crime and is under the control of law enforcement officers

Investigation

The systematic gathering of information from a variety of sources and the documentation of evidence, observations, and findings.

Known Standard

An item of evidence which has a known source that can be used to compare with an item from an unknown source (also referred to as an exemplar)

Latent Fingerprint

Impression left by secretions from perspiration or oils on the skin; not visible to the naked eye without special treatment or development

Lifting

The process of removing a developed latent fingerprint from the surface where it was found

Magazine

A container that holds cartridges and fits inside the magazine well of a semiautomatic pistol or rifle

Manner Of Death

A board classification of the cause of death

Medical Examiner Coroner

An appointed medical physician specializing in forensic pathology with the responsibility of investigating all sudden, unexplained, unnatural, or suspicious deaths; duties include conducting autopsies and assisting in law enforcement investigations

Non-Porous Surface

Any surface that does not absorb liquids or oils (e.g., plastic, glass, etc.)

Outer Perimeter

Designated area which surrounds an inner perimeter and is used as a means of securing and controlling access to an inner perimeter

Plastic Fingerprint

Impression left when a finger is pressed into a soft substance such as heavy grease, melted candle wax, soap, or window putty; does not require any treatment in order to be visible to the naked eye

Porous Surface

Any surface that absorbs liquids or oils (e.g., cloth, unfinished wood)

Preliminary Investigation

The initial phase of a criminal investigation which establishes whether a crime has been committed; begins when responding officer(s) arrive at the scene and culminates with the filing of an investigative report

Presumptive Narcotic Field-Testing Kit

Prepackaged kit containing the materials necessary for an officer at a crime scene to determine if a drug is present and make a preliminary identification of the type of drug found

Probable Cause

When the totality of the circumstances causes a person of ordinary care and prudence to entertain an honest and strong suspicion that the person to be arrested is guilty of a crime

Revolver

Any handgun equipped with a revolving cylinder that can contain several cartridges and be fired repeatedly without being reloaded until the cylinder is empty

Rifle

A gun fired from the shoulder with spiral grooves cut into the inner surface of the barrel

Rolling

Collecting and recording of the fingerprints of a known individual

Round

A single cartridge

Semiautomatic Pistol

Any handgun that features a magazine which holds cartridges that self-load automatically into the firing chamber of the weapon

Shot

Small round projectiles contained within a shotgun shell (also referred to as the load)

Shotgun

A smooth-bored firearm designed to be fired from the shoulder with two hands; primarily intended to fire multiple projectiles

Shotgun Shell

A single cartridge used in a shotgun

Shot Wad

Material contained within a shotgun shell that separates the shot from the powder charge

Tool Mark

An impression, scratch, gouge, cut, or abrasion on an object that is the result of a tool forcibly coming into contact with the object

Trace Evidence

Any evidence that is very small; it usually cannot be seen with the naked eye without close scrutiny

Transfer Evidence

Any evidence that is easily transferred or passed when two objects touch

Visible Fingerprint

An impression left behind in blood, paint, or other similarly colored liquid that does not require any treatment in order to be visible to the naked eye