Chapter 3
Physical Evidence

Physical Evidence -

Any and all objects that can establish that a crime has been committed or can provide a link between a crime and its victim or a crime and its perpetrator.

Common Types of Physical Evidence

Blood, Semen, and Saliva

- Liquid or dried
- On objects
- Serological and biological analysis

Documents

- Handwritten or typed
- Determine paper, ink, indented writing, obliterations, burned/charred documents

Drugs

Any substance seized in violation of laws regulating the sale, manufacture, distribution, and use of drugs

Explosives

- Device
- Objects at scene that may contain residue of the explosive

Fibers

- Natural
- Synthetic
- Establishes relationship between objects and/or person

Fingerprints

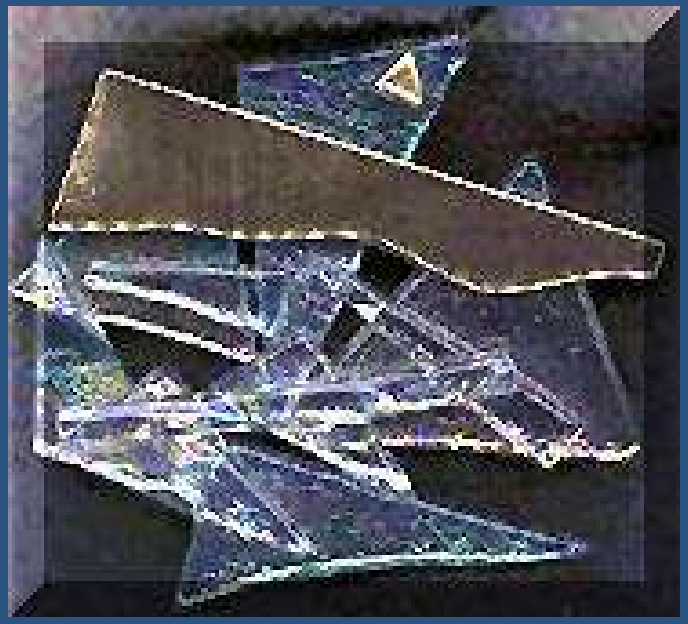
- Latent
- Visible
- Plastic

Firearms and Ammunition

- Firearm
- Discharged or intact ammunition

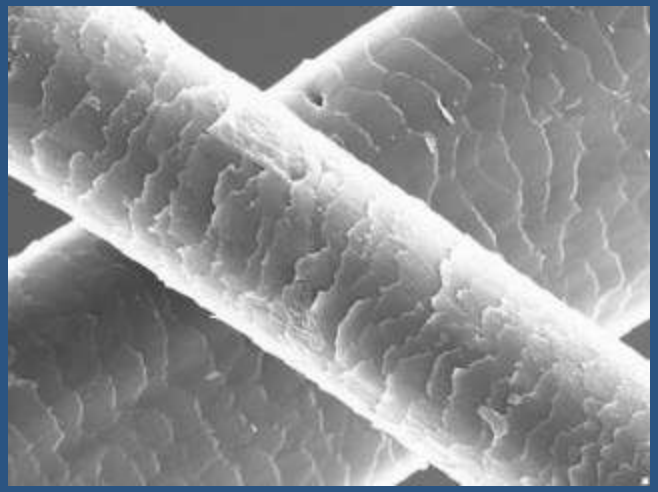
Glass

- Particles or fragments
- Glass with holes from bullets or projectiles



Hair

- Human



- Animal

Dog hair

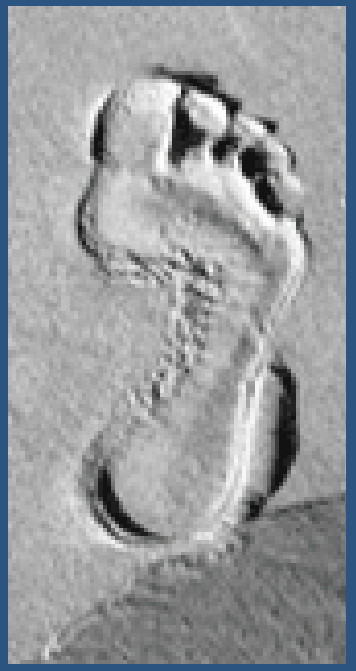
- Used to link person with a crime

Impressions

- Tire marks

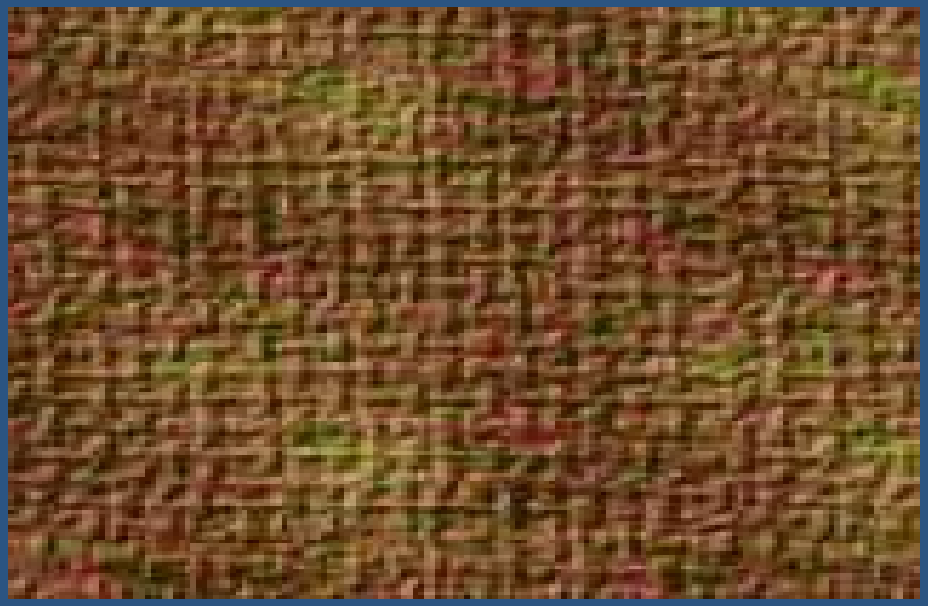
- Shoe prints

- Footprint (bare or w/socks)



- Depressions in soft soil (ladder marks, drag marks, animal prints etc.

- Impressions from fabric



- Bite marks

- Fingernail marks

Organs and Physiological Fluids

- Submitted for toxicological study

- Test for: Blood type, chemical content of blood (drugs, alcohol, poison, etc.

Paint

- Liquid or dried
- Transferred from one surface to another (car to car, car to body, car to surface, etc.

Petroleum Products

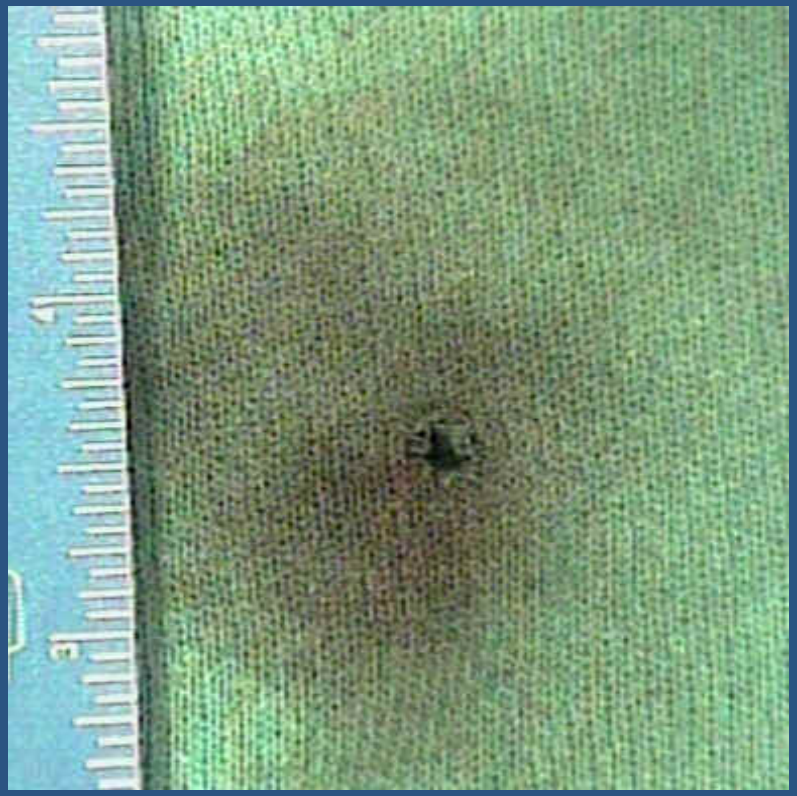
- From automobiles – gasoline residue, transmission fluid, oil stain
- Accelerant from arson
- Grease

Plastic Bags

- Polyethylene disposable bag, garbage bag
- Use to transport evidence
- May have latent prints or trace evidence

Powder Residue

- Firearm discharge residue



- Drug residue

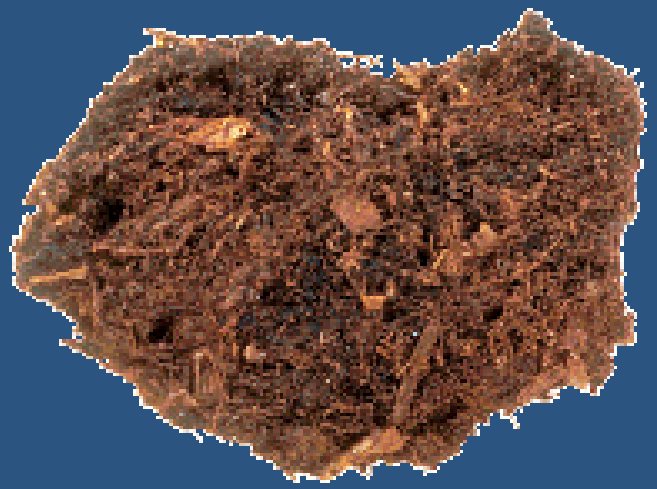
Serial Numbers

- Present

- Restoration of obliterated/erased marks

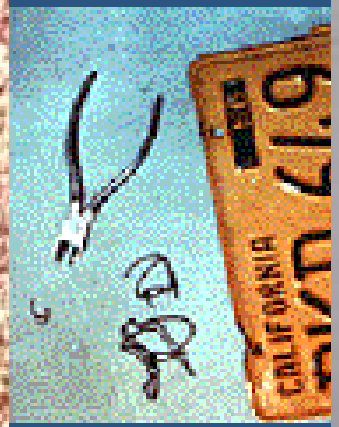
Soil and Minerals

- Imbedded in shoes, clothing, under nails, etc.
- Insulation material (asbestos, fiberglass, etc.)
- Links person to particular location



Tool Marks

- Any object suspected of containing the impression from another object that served as a tool in a crime
- Screwdriver, hammer, crowbar, fire poker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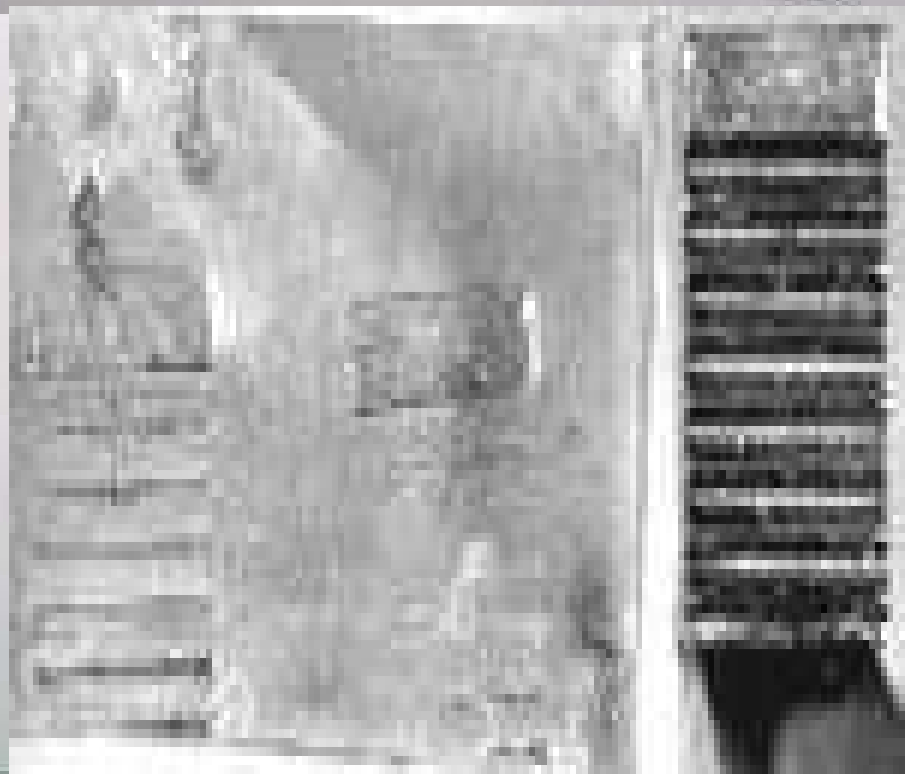

Vehicle Lights

- Headlights, Taillights
- Can be matched to debris left at an accident
- Determines if light was on or off at time of impact

Wood and Other Vegetative Matter

- Sawdust, shavings
- Plant materials – leaves, seeds, flowers, pollen, etc.
- Links person or object to crime location.





Significance of Physical Evidence

- Identification
- Comparison

Identification

- **Purpose:** determination of the physical or chemical identity of a substance as absolutely as analysis will permit. (Chemical composition of drugs, nature of explosive residue, analysis of organic material, etc.)

- **First requirement:** testing procedures w/characteristic results for standards
- Set up permanent record for specimen comparison

- **Second requirement:** sufficient number of tests to rule out all other substances.

- Specific analytical scheme – like a flow chart or dichotomous key
- Schemes must be flexible depending on type of evidence
- Each type of evidence requires different combinations of tests
- Analyst must be able to substantiate conclusion based on tests

Comparison

- Suspect specimen and **control specimen** subjected to the same tests and examinations to determine if they have common origins.
- Used to place suspect at a location

- Based on Locard's principle of transfer of evidence
- Two step procedure
- Combination of properties selected for comparison
- Type of evidence will determine the type and number of properties to be investigated

- Evidentiary value must be ultimate purpose - can conclusions of investigator be supported?
- Probability must be taken into account - What are the odds of these properties occurring in combination at a specific event or location?

Class Characteristics

Properties of evidence that can only be associated with a group and never with a single source.

Can be used as corroboration evidence

Individual Characteristics

- Evidence that can be associated with a common source with an extremely high degree of probability possesses individual characters.
- Fingerprints with matching ridges.
- Identical striations on bullets

- Wear patterns on shoes or sneakers
- Handwriting characteristics
- Evidence fitting together like a jigsaw piece
- Patterns in materials made from a single source of fabric, glass, plastic, etc.

- Exact probability cannot be determined, but a probability factor can be calculated
- Conclusions supported by expertise or examiner also influenced by past experience
- i.e. Probability of 2 people with same fingerprint is 1 out of $1X10^{60}$ - too small to be considered a possibility

Crime-Scene Reconstruction

- Can support or contradict accounts given by witnesses and/or suspects.
- Can generate leads and can confirm the reconstruction of a crime to a jury

Reconstruction supports a likely sequence of events by the observation and evaluation of physical evidence, as well as statements made by witnesses and those involved with the incident

Crime-scene reconstruction relies on the combined efforts of medical examiners, criminalists, and law enforcement personnel to recover physical evidence and to sort out the events surrounding the occurrence of a crime


Medical Examiner
Law Enforcement Personnel
Crime-Scene Reconstruction
Criminalists