Forensic Sciences

First Stage

First semester

3rd Lecture

Forensic Evidence

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Forensic evidence is the basis of any successful criminal investigation. It is the tangible or intangible information and evidence that can prove or disprove the commission of a crime, help identify the perpetrator, and clarify the circumstances of the incident. Proper handling of forensic evidence is extremely important, as any error in its collection, preservation, or analysis may lead to a miscarriage of justice.

Types of Forensic Evidence:

1. **Forensic evidence can be classified into several main types based on its nature and source:.**

1. Physical Evidence

Definition: These are pieces of evidence that can be touched or seen, and they are considered among the strongest types of evidence because they rely on tangible facts.

Examples:

Firearms: Includes pistols, rifles, spent cartridges, and bullets.

Sharp Tools: Such as knives, axes, and blades.

Footprints: Can indicate the type and size of the shoe and help identify the perpetrator.

Fingerprints: Considered conclusive evidence for identifying a person.

DNA (Deoxyribonucleic Acid): Found in hair, blood, saliva, skin, and semen, and is considered one of the most accurate pieces of evidence.

Fibers and Textiles: May be from the clothing of the perpetrator or the victim.

Hair: Can indicate hair color and type, and DNA can be extracted from it.

Broken Glass: Glass fragments can be analyzed to determine its type and source.

Importance: Physical evidence is considered strong and tangible, and it can be scientifically analyzed to provide accurate and reliable results.

2. Biological Evidence:

Definition: These are pieces of evidence originating from living organisms, including bodily fluids, tissues, and cells

Examples:

Blood: Blood type can be determined and DNA extracted.

Saliva: Contains cells that can be analyzed to obtain DNA.

Semen: Used in sexual assault cases to identify the perpetrator.

Hair: DNA can be extracted from it.

Skin: Can be found under the victim's fingernails in cases of struggle.

Importance: Biological evidence is considered very valuable, especially DNA, which can definitively link the perpetrator to the crime.

3. Circumstantial Evidence:

Definition: This is evidence that does not directly prove the crime, but indirectly points to it.

Examples:

Presence of a person at the crime scene: This may be evidence of their involvement.

Hearing witness statements: May indicate suspicious behavior of someone.

Existence of motives for the accused: Such as hatred or greed.

Importance: Circumstantial evidence may be weak on its own, but when combined with each other, it can form a strong link that convicts the accused.

4. Digital Evidence:

Definition: This is evidence found in electronic devices and digital systems.

Examples:

Call logs and text messages: May reveal a relationship between the perpetrator and the victim or threats.

Internet browsing history: May indicate the accused's search for information related to the crime.

Photos and videos: May document the crime or the presence of the perpetrator at the crime scene.

GPS data: May reveal the movements of the accused.

Data in electronic accounts: Such as email and social media.

Importance: The importance of digital evidence is increasing in the modern era with the widespread use of electronic devices.

5. Audio Evidence:

Definition: This is evidence that relies on audio recordings.

Examples:

Phone call recordings: May include a confession or a threat.

Video recordings that contain sound: May document the crime.

Importance: Audio evidence can be used to identify the speaker and analyze voice tone to detect deception.

6. Testimony:

Definition: These are the statements of people who witnessed the crime or have information about it.

Importance: Witness testimony is important, but its credibility and accuracy must be verified, because human memory may be inaccurate.

2. Classification of Criminal Evidence at the Crime Scene According to Priority:

1. High-Priority Evidence (Handled First):

This evidence may be fragile, perishable, or subject to rapid change, so it must be handled immediately and with the utmost care:

Biological Evidence:

Importance: Contains DNA, which is considered one of the most accurate pieces of evidence for identifying the perpetrator or victim.

Examples: Blood, semen, saliva, hair, tissues (skin, bones), teeth.

Reason for Priority: This evidence is susceptible to damage or decomposition quickly, especially in hot or humid weather conditions. It must be collected and packaged quickly to protect the DNA.

Perishable Evidence:

Importance: May change or be damaged due to weather conditions or contamination.

Examples: Footprints in wet soil or snow, tire tracks, fingerprints on surfaces exposed to the elements, scattered liquids (such as blood or gasoline).

Reason for Priority: This evidence must be documented (with photos and videos) and lifted or protected as quickly as possible before it disappears.

Firearms and Ammunition:

Importance: Can be used to identify the weapon used in the crime and identify its user through fingerprints or DNA.

Examples: Pistols, rifles, spent cartridges, bullets.

Reason for Priority: Must be handled with caution to avoid damaging fingerprints or DNA on them. They must also be secured to prevent their reuse in another crime.

Sharp Instruments:

Importance: May be the tool of the crime and carry traces of fingerprints or DNA.

Examples: Knives, axes, blades, broken glass.

Reason for Priority: Must be handled with caution to avoid damaging fingerprints or DNA on them and secured to prevent injury.

2. Medium-Priority Evidence (Handled After High-Priority Evidence):

This evidence is important, but it is not as sensitive as the previous evidence and can tolerate a slight delay:

Fingerprints:

Importance: Considered conclusive evidence for identifying a person.

Examples: Fingerprints on smooth surfaces, such as glass, metal, and polished wood.

Reason for Priority: Must be documented and captured before they fade, but they do not deteriorate as quickly as biological or perishable evidence.

Fibers and Textiles:

Importance: May be from the clothing of the perpetrator or the victim and can be analyzed to determine their type and source.

Examples: Fibers from clothing, hair, threads from carpets or furniture.

Reason for Priority: Must be collected carefully to avoid damage or contamination, but they do not deteriorate as quickly as biological evidence.

Digital Evidence:

Importance: May contain important information related to the crime.

Examples: Mobile phones, computers, cameras, storage devices.

Reason for Priority: Must be secured and not tampered with until examined by specialists, but their collection can be postponed slightly after the high-priority evidence.

3. Lower-Priority Evidence (Handled Later):

This evidence does not carry the same level of importance as the previous evidence, or its collection and analysis may take longer:

Footprints and Tire Tracks:

Importance: Can indicate the movement of people or vehicles at the crime scene.

Examples: Footprints in the soil, tire tracks on the ground.

Reason for Priority: Must be documented and measured, but can be collected after collecting the more sensitive evidence.

Personal Items:

Importance: May provide information about the perpetrator or the victim.

Examples: Wallets, phones, keys, jewelry.

Reason for Priority: Must be documented and collected, but they are not of the same crucial importance as biological or basic physical evidence.

Circumstantial Evidence:

Importance: May help link the perpetrator to the crime.

Examples: Witness testimonies, existence of motives, purchase of crime tools, attempted escape.

Reason for Priority: Is collected and documented during the investigation, but it relies heavily on context and other evidence.