Lovejoy High School
Forensics

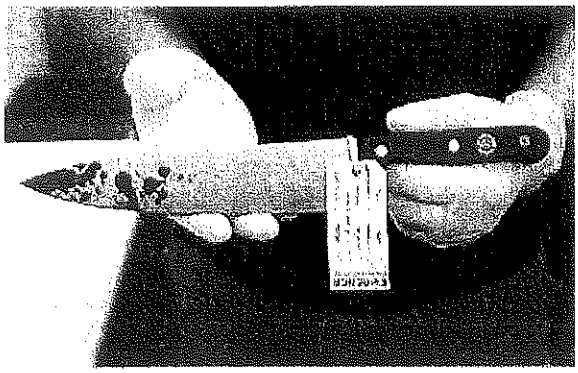
Unit 2 Guide: Evidence and Collection

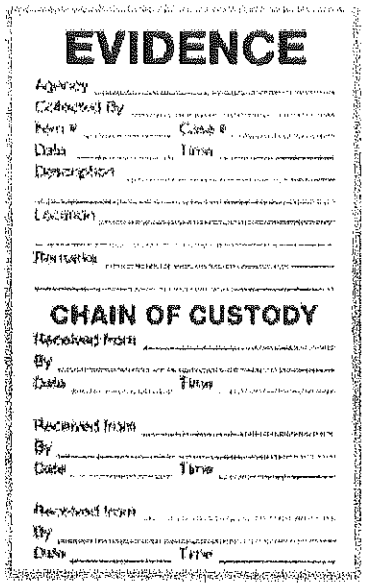
Learning Goals:

- Identify the different types of evidence.
- Explain crime scene protection and security.
- Outline the proper procedure for searching for evidence.
- Describe the importance of "chain of evidence" and "chain of custody".
- Demonstrate proper technique for packaging evidence.
- Communicate the function of a national database available for forensic scientists.
- Analyze the importance of forensic pathologists, entomologists, and anthropologists to an investigation.
- Perform a mock physical evidence collection.
- Compare and contrast physical, testimonial, and direct evidence.

Key terms: evidence, physical evidence, testimonial evidence, direct evidence, indirect evidence, chain of evidence, chain of custody, circumstantial evidence, unknown samples, known samples, control sample, individual evidence, class evidence, national database

Reading for Understanding: Chapters 2 & 3





Chapter 2: Types of Evidence Outline

Types of Evidence:

Reliability of Eyewitness:

Reconstruction of the Crime: Physical Evidence is used to answer questions about

Types of Physical Evidence: 5 types

Evidence Characteristics

Chapter 3: Crime Scene Investigation Outline

Corpus Delicti

- Reasons
- Sources

Crime Scene Team

Crime Scene Investigation

Crime Scene: processing

First Officer on the scene

Crime Scene Survey

Documentation

Search Methods

Chain of Custody

Crime Scene Reconstruction

Medical examiner vs. coroner

Crime Scene Collection Techniques For Blood & Other Body Fluids

Cuttings: Removal of a section of the item containing the stain using a sterile or clean cutting device.

Wet Absorption: A sterile swab, gauze pad, or threads are slightly moistened with sterile distilled water. An effort should be made to concentrate the stain in a localized portion of the swab or pad. For example, when using a swab, the stain should be concentrated on the tip. The collection medium is concentrated into the stain and allowed to air dry. Some laboratories recommend following the first moistened swabbing with a second dry swabbing to ensure thorough sample collection. Both swabs are retained and submitted for analysis.

Scraping Method: Using a clean razor blade or scalpel, the sample is scraped into a clean piece of paper that can be folded and packaged in a paper envelope or other appropriate packaging.

Lifting with Tape:For dried blood stains on a non-absorbent surface, fingerprint lifting tape may be placed over the stain and lifted off. The stain is transferred to the adhesive side of the tape, which may then be secured on a clear piece of acetate for submission to the laboratory.

Crime Scene Collection Techniques For Hair & Fibers

Visual Collection:On some surfaces, hairs and fibers can be seen with the naked eye. Using clean forceps and trace paper, the sample can be removed from the surface and placed into a clean piece of paper that can be folded and packaged in a paper envelope or other appropriate packaging.

Tape Lifting:Water or methanol soluble tapes are available for the collection of trace hair and fiber evidence. The tape is applied to the location of the suspected sample, removed, and packaged.

Vacuuming Method:The area where the suspected samples are located are vacuumed up and caught in a filtered trap attached to the vacuum. These samples are packaged in clean trace paper for submission to the laboratory. Vacuuming is the least desirable collection method because there is a risk of cross contamination if the equipment is not properly cleaned between each use.

Reference Sample Crime Scene Collection Techniques

Reference samples should be collected from individuals who might be linked to the crime scene where DNA evidence is found. Reference samples can be used for elimination or comparative analysis. For example, buccal swab samples taken from the suspect and/or victim, a known source, should be compared to biological evidence found at the crime scene to eliminate or place them at the scene.

Buccal Swab:Sterile swabs or other buccal collection devices are rubbed against the inside cheek of the individual's mouth to collect epithelial cells for analysis.

Liquid Blood Samples:Generally collected in purple topped vacuum tubes that contain the preservative ethylenediamine tetraacetic acid (EDTA).

Packaging & Storage:Biological evidence should be dried before packaging to minimize sample degradation. Packaging in paper is preferred; however, some laboratories allow packaging in plastic if the sample is thoroughly dried.

Liquid samples, such as water from a toilet bowl or pipes, should be properly documented and packaged in sterile glass or plastic containers and refrigerated as soon as possible.

(Information provided by the Department of Justice)

Name_____ Evidence Ch. 2 Pd. ____

1. What is testimonial evidence? Is it direct or indirect? Give an example.

2. What is physical evidence? Is it direct or indirect? Give 5 examples.

3. What 4 factors affect the reliability of eyewitnesses?

4. What is the difference between an unknown sample and a control?

5. What 4 questions might physical evidence help answer?

6. Give a brief description and example of the 5 types of evidence.

7. Give the difference between class and individual evidence and give 3 examples of each.

Name _____ Crime Scene Investigtion questions Pd____

1. Top 3 Reasons for Committing a Crime

2. 3 Source of Evidence

3. What is a Crime Scene Team? Give 6 possible members

4. forensic techniques (4)

5. What are the 5 steps to processing a crime scene?

6. The first officer on the scene does ADAPT (acronym for what)?

7. What is a chain of custody and what 3 things must be with the evidence?

8. Documentation (4 types)

9. Crime Scene Reconstruction(5 stages)

10. What is a Medical examiner? Give 6 responsibilities.

11. What is a Coroner?

Probability Example

In the school parking lot, a car is discovered to have a broken window and the stereo is missing. A student was seen leaving the scene wearing a white t-shirt, jeans, dark athletic shoes, and had light brown hair. Our class was volunteered to serve as a sample for the student population.

In our class:

- There are 25 total students
- The school has 948 students
- 6 are wearing white t-shirts
- 16 are wearing jeans
- 9 have on dark athletic shoes
- 13 have light brown hair

We are going to look at the probability (percent %) of each trait.

White Shirt

- (number of students wearing white shirts) ÷ (Total students in class)
- (6 white shirts) ÷ (25 students) = 0.24 or 24%
- Now we can look at how many students in the school are wearing white shirts by multiplying the percentage by the total number of students in the school
- (% in decimal form) x (total number of students in school)
- (0.24) x (948) = 228 students

Jeans

- (number of students wearing white shirts) ÷ (Total students in class)
- (16 students in jeans) ÷ (25 students) = 0.64 or 64%
- Now we can look at how many students in the school are wearing jeans by multiplying the percentage by the total number of students in the school
- (% in decimal form) x (total number of students in school)
- (0.64) x (948) = 607 students

Dark Athletic Shoes

- (number of students wearing dark shoes) ÷ (Total students in class)
- (9 students in dark shoes) ÷ (25 students) = 0.36 or 36%
- Now we can look at how many students in the school
- (% in decimal form) x (total number of students in school)
- (0.36) x (948) = 341 students

Light Brown Hair

- (number of students with light brown hair) ÷ (Total students in class)
- (13 students in jeans) ÷ (25 students) = 0.52 or 52%
- Total number in school
- (% in decimal form) x (total number of students in school)
- (0.52) x (948) = 493 students

Now we look at the probability that a student has ALL 4 traits:

- Multiply all % (in decimal form) together so it looks like:
- (% white shirts) x (% jeans) x (% dark shoes) x (% light brown hair)
- (0.24) x (0.64) x (0.36) x (0.52) = 0.029 = 2.9%
- We use this to find total number of students in the school just like we did for each trait:
- (0.029) x (948) = 28 students at school would have all 4 traits

**** We use this to narrow down the number of suspects in a case! ***

Crime Scene Basics

Name _____

1. Crime Scene Vocabulary

_____: Any physical location in which a crime has occurred or is suspected of having occurred.

_____ Crime Scene: The original location of a crime or accident.

_____ Crime Scene: An alternate location where additional evidence may be found.

_____: Person thought to be capable of committing a crime.

_____: Second person associated with committing a crime.

_____: Statement of where a suspect was at the time of a crime.

2. Types of Evidence

_____ evidence would be any witnessed accounts of an incident or crime.

_____ evidence would refer to any material items that are present at the crime scene or on the victims.

_____ evidence refers evidence that is found at a crime scene in small but measurable amounts.

3. What will evidence collected at a scene do for the investigation?

- May _____that a crime has been committed
- Establish any _____of a crime
- Link a _____with a crime scene or a victim
- Establish the _____of a victim or suspect
- Corroborate verbal _____testimony
- Exonerate the _____.
- Give _____leads to work with in the case

4. Crime Scene Personnel

_____ are typically the first to arrive at a crime scene. They are responsible for securing the scene so no evidence is destroyed and detaining persons of interest in the crime.

The _____ documents the crime scene in detail and collects any physical evidence.

The _____ is often present to help determine if any search warrants are required to proceed and obtains those warrants from a judge.

The _____ (if a homicide) may or may not be present to determine a preliminary cause of death.

_____ (entomologists, forensic scientists, forensic psychologists) may be called in if the evidence requires expert analysis.

_____ interview witnesses and consult with the CSI unit. They investigate the crime by following leads provided by witnesses and physical evidence.

5. Crime Scene Protocol

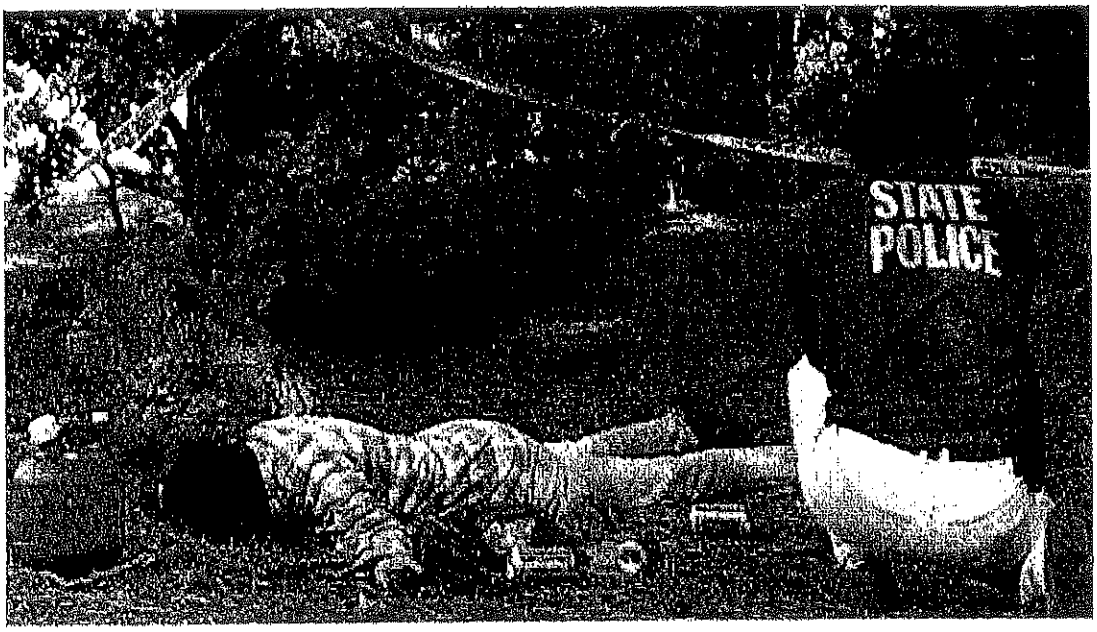
What steps will an investigator follow to analyze and document a crime scene?

_____ → _____ → _____ → _____

CRIME SCENE DO NOT CROSS

Challenge: What evidence would you collect from this crime scene?

Circle the items you would collect and then explain how you would use them to gather clues about the crime.



Mock Crime Scene: http://www.masss.gov