Forensics Lesson 4

Impression Evidence

Quiz Date:

Vocabulary



**What is impression evidence?**

Impression evidence can be defined as objects or materials that have retained the characteristics of other objects through direct contact.

Impressions are created when one object is pressed against another material with enough force to leave an impression of the object.

Shoeprints, tool marks, tire tracks, bite marks and marks on a fired bullet are several examples of impression evidence.

Impressions may be found n or on many different types of materials.

The quality of the impression depends on the object making the impression and the surface conditions, such as how hard or soft it is and what type of material it is (soil, mud, dust, concrete, grass, skin, etc.)

**Collection Methods**

Investigators analyze the impression evidence to find unique characteristics to link shoes, tires, tools, and other objects found in a suspect’s possession to evidence at a crime scene.

Collection of impression evidence can be accomplished using several methods:

2-D: this type of impression is documented using photography.

Some impressions may be dusted with fingerprint powder to be photographed or lifted with tape.

They may also be collected using an electrostatic dust lifting process.

3-D: this type of impression can be documented using photography as well as by casting, which involves using dental stone or a similar substance to preserve the dimensional characteristics of the print.

**Tire Track Evidence**

Tire tracks are important in forensic investigations and are usually found in road accident scenes or in the access and escape routes of other crime scenes.

Tracks help investigators identify the type of vehicle that left them.

Investigators may make ink prints of a tire or plaster casts of a track.

They also take photographs that can later be used to prove a match.

*Features to analyze*: tread pattern, width and depth of the tread pattern and unique characteristics due to the wear pattern or defects.

Tire databases are available to help investigators determine the brand and model of the tire that left the impression, which can be used to determine the type of vehicle that made the tracks.

**Tool Mark Evidence**

Certain defects or patterns may be left on a tool when it is made or used, which can be used to find matches between evidence at a crime scene and tools or objects found at a suspect’s home.

Tool marks can be classified two ways:

Impressions-as a tool hits a softer surface, the shape of the tool and imperfections in its surface may be left behind as an impression.

Scratches-as a tool moves across a surface, it may leave ridges or striations behind.

*Features to analyze:*

Dimensions of the impression.

Ridges or striation patterns.

Defects, such as nicks and chips.

Paint chips or metal shards left on a too.

**Shoe Print Evidence**

Investigators can analyze a shoe print to determine its class, or the type and brand of shoe.

They will also look for individual characteristics, such as wear patterns and specific damages or defects.

Databases of shoe prints are available for investigators to help them determine the brand of shoe to provide leads for a case.

Depending on the quality of the impression, investigators may be able to determine a person’s speed (walking vs running) as well as estimate the size of a person based on the impressions depth.

*Features to analyze:*

Tread patterns, size and depth.

Wear patterns caused by the way a person walks.

Material defects or damage (nicks, cuts, etc.)

Other trace materials, such as soil, tar, rocks, and paint that would indicate where a person has been.

**Bite Mark Evidence**

Investigators can analyze bite marks for characteristics to help them identify victims or suspect’s as well as to exclude others.

Marks can be left on a victim’s skin or other objects, such as Styrofoam cups, gum, or foods.

Saliva or blood may be left behind that can be tested for DNA.

Dental records including e-rays can also provide useful information, especially when attempting to identify a victim.

*Features to analyze:*

Type of bit mark (human or animal)

Characteristics of the teeth (position, evidence of dental work, wear patterns, etc.)

Color of area to estimate how long ago the bite occurred.

Swab for body fluids for DNA tests.