



VERSION 2016

# EVIDENCE HANDLING

## CHAPTER 13

UTAH STATE BOARD OF EDUCATION  
CAREER AND TECHNICAL EDUCATION

## **CHAPTER THIRTEEN: EVIDENCE HANDLING**

### **PHYSICAL EVIDENCE**

Physical evidence is any object, regardless of size, that can connect a suspect to a crime or a crime scene. The perpetration of a criminal act often involves the transfer of matter; there may be fingerprints left at the scene, pry marks on a door where entry was made, or the suspect's blood on the victim's clothing. Evidence may come from the clumsy dropping of a wallet with the suspect's identification left at the crime scene, or the transfer of one hair from the suspect to the victim. Regardless of the specific type of physical evidence involved, the peace officer must be concerned with three different responsibilities. First, the officer must locate and collect the physical evidence left at the scene; second, the evidence must be analyzed by a qualified technician to establish its usefulness in the case; and third, the integrity of the physical evidence must be maintained at all times. The officer must also remember that what is *missing* from the crime scene may also be regarded as evidence.

### **THE CHAIN OF EVIDENCE**

Elaborate procedures must be followed when police deal with physical evidence in order to meet court-imposed standards for the admissibility of evidence. In basic terms, an officer must be able to show the court:

- How, when, and where the evidence was obtained.
- How the evidence helps to establish the guilt of a suspect.
- Who has handled the evidence and for what purposes.
- Where the evidence has been stored.
- That the evidence produced in court is the same evidence that was originally located and analyzed.
- That the evidence has not been altered in any way.

The chain of evidence is really a chain of possession. From the time physical evidence is located until the time it is produced in the trial court, it must be accounted for. If the officer cannot show that he/she has maintained the chain of evidence from the time the evidence is located until it is produced in court, it will not be admissible. Many larger departments now employ civilian technicians whose responsibility it is to gather evidence and maintain the department's evidence room.

In order to maintain the chain of evidence, the officer should:

- Limit the number of individuals who handle the evidence.
- Get written receipts from those who assume possession of the evidence. This should include date and time as well as the purpose for having the evidence.
- Keep evidence in properly sealed and secured containers.
- Store evidence containers in an evidence room or locker that is tamper-proof.

### **LOCATING AND COLLECTING EVIDENCE**

All officers at the scene of a crime have a responsibility to protect and secure the crime scene. This means that the scene must be kept in the same condition as it is found. No one, including other



He/she is responsible for all evidence collection and custody, and will personally mark it. Badge numbers or initials are commonly used for marking evidence. Some items should be marked on their surfaces, such as metal objects, containers, clothing, and documents. Evidence which cannot be marked on the surface should be sealed in an appropriate container and the container marked for identification. All evidence should be identified by date and time secured as well as the agency case number. The evidence should be sealed in such a way that it can be established whether or not the container has been opened at any time.

It should be remembered that the laws governing search and seizure are not suspended during a crime scene search. Many situations require immediate searches to preserve evidence, but in some cases a search warrant may be required. This requirement is usually imposed when searches are not made immediately after police respond to a crime scene.

To assist in evidence collection, crime scene kits should be available to all officers. These crime scene kits can be carried by the officer or by having available specially trained evidence technicians. These kits should include the below listed items. As you review the items below, list what each particular item could be used for in the process of gathering physical evidence.

Paper bags:

Ziploc bags:

Plastic and glass vials:

Small brush:

Masking tape:

Gloves:

Tweezers:

Dusting powder:

Envelopes:

Paper and pencils:

Department-issued camera:

In addition to the evidence gathering, handling, and processing materials that a department has at its disposal, there are other, more sophisticated tools available through both the State and various federal crime labs. These are available upon request.

## **EVIDENCE ANALYSIS**

The following list discusses some scientific devices available to aid in a law enforcement investigation and how they can be utilized.

**Photography:** This can be used to record crime scene appearance and the location of evidence, especially items that may not remain the same over time. It is used in the booking process to aid in prisoner identification, as well as for photographs to show witnesses for identification purposes. It can also be used to record crimes in progress, such as bank robbery attempts, or to take pictures of persons using credit cards reported stolen at bank automatic teller machines.

**Emission spectrograph:** This machine analyzes the composition of evidence by vaporizing a tiny amount of a substance, measuring and graphing the resulting radiation wave lengths, and comparing this chart with charts of known elements and materials. Spectrographs can be used to establish the identity of unknown substances found in an investigation, link evidence with similar materials, analyze the composition of drugs, etc.

**Microscope:** This tool's ability to magnify objects can be used to compare bullets, determine whether a certain tool produced specific marks found at a crime scene, see whether separated pieces of an item fit together, analyze handwriting, compare hair and fiber samples, and do numerous other things.

**Gas chromatograph:** This instrument is used to identify different types of gas and gaseous substances. It can be utilized in an arson case to determine whether the fire was started intentionally, identify the brand of gasoline or lighter fluid used, etc.

**Intoxilyzer:** This tool is used extensively in DUI cases. The suspect provides a breath sample, and the machine determines blood alcohol content. If a sample is taken at the appropriate time, it can also be used by police to determine whether a suspect was intoxicated during the commission of a crime.

**Videotape:** This can be used to record DUI field sobriety tests and interviews, to record the sale and/or purchase of drugs and stolen property, or for jail surveillance. It has also been used to record thefts, robberies, and bribery attempts, as well as the crime scenes of homicides and other major felonies.

**Identikit or computer programs:** An identikit is used to develop a picture of a suspect from victim or witness descriptions. It is gradually being replaced by computer programs that allow for greater variety and are much faster.

**Polygraph:** Sometimes called a lie detector, this machine can assist in determining whether a suspect is telling the truth. Polygraph results are not usually admissible in court, because they are not 100 percent accurate. Proponents of its use believe that, with proper use, it is from 90 to 95 percent accurate. The polygraph is attached to the person taking the test, and measures changes in blood pressure, breathing, and skin electrical resistance. The polygraph operates on the theory that, when

telling a lie, a subject's body will produce measurable reactions to the fear of the lie being detected. A polygraph examination requires questions with known answers be asked to determine the subject's normal body reactions. Yes/no questions related to the crime under investigation are then asked. Polygraph results are most often used to eliminate suspects.

**Laser:** These may be used to detect fingerprints on certain kinds of surfaces, as well as to locate hairs, fibers, bodily fluids, and drugs.

**DNA profiling:** Cells from blood, semen, tissue, hair, saliva or urine are analyzed to determine the order and sequence of nucleotides in deoxyribonucleic acid (DNA), the organic substance found in those body cells.

The following list suggests some of the findings that can be made from certain kinds of evidence through scientific evidence analysis:

- Blood—analysis can determine whether it is human or animal, specific blood type (there are thirteen types beyond A, B, and O); DNA profiling can also be completed.
- Saliva, sweat, urine, semen—blood type determination and DNA profiling can be done from these.
- Explosive and arson debris—analysis can determine the method of detonation, composition, and other elements. Timers, blasting caps, batteries and fuses can also be identified by manufacturer and type.
- Fabric—color, pattern, thickness, weave, type of material, and manufacturer can be determined.
- Gunshot residue (GSR)—a test can determine whether the victim or suspect has discharged a firearm recently.
- Serial numbers—numbers can be recovered through acid-etch, x-ray, or magnaflux techniques.
- Bullets, cartridge casings—it can be determined whether a bullet was fired from a specific firearm other than a shotgun.
- Glass—it can be determined whether fragments came from a particular broken object, the type of object involved, the type of glass, and the direction of the force applied.
- Hair—determination can be made regarding race; the part of the body involved; whether the hair was dyed, cut off, or forcibly removed; a person's eating and drinking habits and long-term drug use; and possible DNA matching.
- Tool marks—whether suspected tool(s) left the marks in question.
- Ink—brand name, type, date of production, establishment of document age.
- Paint chips—number of layers and type, whether they match other samples; if from a vehicle, type, color, and year of manufacture.
- Paper—year of manufacture, erasures, alterations, or secret writing.
- Teeth marks—can be matched against a suspect's bite pattern.
- Footprints—can be matched to feet or shoes of suspect with better than one in 5,000 odds.

## **AUTOPSY**

An autopsy is a medical procedure performed by a doctor in which a body is examined to determine the contributing manner, mode and cause of death. As required by law in the Utah Code Annotated (26-4-7), if a peace officer handles a case where death occurs under any of the following circumstances, the state medical examiner must perform an autopsy:

- Death by violence, gunshot, suicide, or accident (except highway accidents)
- Sudden death while in apparent good health
- Unattended death

- Death under suspicious or unusual circumstances
- Death resulting from poisoning or overdose of drugs
- Death resulting from diseases that may constitute a threat to the public health
- Death resulting from disease, injury, toxic effects, or unusual exertion incurred within the scope of the deceased's employment
- Death due to a sudden infant death syndrome (SIDS)
- Death resulting while the deceased was in prison, jail, in police custody, in the state hospital, or in a detention or medical facility operated for the treatment of the mentally ill or emotionally disturbed or delinquent persons
- Death associated with diagnostic and therapeutic procedures

The autopsy may indicate to investigating officers the physical cause of the death and the mode of death, whether it be natural, accidental, suicide, or homicide. It may also be used to establish the identity of the victim if this is unknown. Among other things, the autopsy can determine whether a body was moved before or after death has occurred, whether the victim was sexually assaulted, whether hair or blood found on the victim belongs to a possible suspect, how far from the body a weapon was when fired, etc.

## **FINGERPRINTING**

Each individual has a unique set of skin ridges that appear on his/her fingers, hands, feet, and toes. (Several examples appear on the following pages.) These ridges aid humans in gripping by increasing friction. Fingerprints develop on a fetus during the third or fourth month of pregnancy and remain until the body begins to decompose after death.

It appears that humans have been aware of the uniqueness of fingerprints for thousands of years. Ancient Chinese business contracts were sealed with thumbprints. A Persian physician in the fourteenth century appears to have been the first person to record his observation that no two individuals have the same fingerprints. Although others made the same observation through the years, it was not until 1858 that fingerprints were used on a large scale to identify individuals.

Sir William Herschel was a British administrator in India. In order to impress the natives, he required them to impress their fingerprints, along with their signatures, on contracts. As time passed, he began to realize that the fingerprints were unique to each individual. He suggested that fingerprints be used to identify prisoners, but the idea was turned down by the government.

At his hospital in Tokyo, Dr. Henry Faulds (1843-1930) began working on the same idea, and in 1880 he showed, from a greasy fingerprint, who had been improperly drinking from a container in his science lab. In 1892, Argentine police used fingerprints left in blood at the scene of a crime to convict a woman of killing her own children, the first recorded use of fingerprints to solve a crime.

Fingerprints were officially used for identification purposes for the first time in America because of the widespread cheating on civil service tests in New York in 1902. College students were being hired to take job tests for less qualified applicants. Fingerprints were used to verify the actual identity of the test takers. Within five years, prison systems and the military adopted fingerprinting for identification. To provide a central storage facility, Congress established the Identification Division of the FBI in 1924. By 1974, the FBI had 160,000 sets of fingerprints on file.

Police will find various types of fingerprints to be both visible (such as would be seen in blood or grease) and *latent*, or invisible. Latent fingerprints are formed when body oils and sweat, or other fluids touched, contact a surface and leave a print of the person's ridge pattern. Prints are most likely

to be found on smooth, non-porous surfaces such as glass or metal. Improvement in technique has made it possible to lift prints from other surfaces, such as dead bodies and paper. Fingerprints will remain for some time, but are affected by temperature, humidity, type of surface, and other factors.

Fingerprints are classified by pattern. The three basic patterns are the arch, the loop, and the whorl.

**Loops:** Sixty percent of the population has loop patterns. A loop has a delta, a core, and re-occurring lines. If the loop opens towards the little finger, the loop is *ulnar*. If it opens away from the little finger, it is a *radial loop*. There is also the double loop and the central pocket loop. A delta occurs when the ridge pattern splits into two directions. It has the appearance of a triangle.

**Whorls:** Thirty-five percent of the population has whorl patterns. A whorl usually consists of two deltas and an enclosed core. The accidental looks like a whorl at first, but when examined closely it reveals a loop.

**Arches:** Only five percent of the population has arches. In this type, the ridges do not double back or form a loop. A plain arch is like a hill, while a tented arch is more peak shaped. (A tented arch is shown at middle right).

Fingerprints are usually obtained at a crime scene by photography or by coating surfaces with a dusting powder that makes latent prints visible. Adhesive tape is then used to lift the dust, retaining the print pattern and transferring it to a card (see card example below). Fingerprints are compared with the prints of known suspects with similar print classification patterns. If sufficient points of identification match, then the identity of the suspect can be determined.

It is important to remember that attempting to match prints is a tedious and time-consuming process. It is often necessary to use other types of police investigation to indicate possible suspects before fingerprint analysis will be fruitful. One of the great advances in police science during the 1980s was the increasing use of computers to search fingerprint files at high speed. Automated Fingerprint Identification System (AFIS) networks have been set up in some areas to use computers to efficiency and quickly search fingerprint files.

Utah is part of the Western Identification Network (WIN), which consists of nine western states plus the U.S. Citizenship and Immigration Services (USCIS). It is the second largest network in the country, second only to the FBI. This system is able to run a fingerprint and receive an answer in less than two hours. AFIS is utilized often in the identification of prisoners using an alias or a false name when being booked into jail.

Using an inkpad and the fingerprint card included, determine which fingerprint pattern best describes your own fingerprints.



# PERSONAL IDENTIFICATION

SEE REVERSE SIDE FOR FURTHER INSTRUCTIONS

SIGNATURE OF PERSON FINGERPRINTED \_\_\_\_\_

RESIDENCE OF PERSON FINGERPRINTED \_\_\_\_\_

PERSON TO BE NOTIFIED IN CASE OF EMERGENCY \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

FINGERPRINTED BY \_\_\_\_\_

LAST NAME NAME FIRST NAME MIDDLE NAME

FINGERPRINTS SUBMITTED BY \_\_\_\_\_

DATE FINGERPRINTED \_\_\_\_\_

SOCIAL SECURITY NO \_\_\_\_\_

MISCELLANEOUS NO \_\_\_\_\_

SCARS AND MARKS \_\_\_\_\_

FBI LEAVE BLANK

DATE OF BIRTH DOB  
Month Day Year

SEX RACE HGT WGT EYES HAIR PLACE OF BIRTH POB

LEAVE BLANK

CLASS \_\_\_\_\_

REF \_\_\_\_\_

1. R. THUMB

2. R. INDEX

3. R. MIDDLE

4. R. RING

5. R. LITTLE

6. L. THUMB

7. L. INDEX

8. L. MIDDLE

9. L. RING

10. L. LITTLE