

Collection and Preservation of Evidence

by **George Schiro**

[E-Mail: 75054.1502@compuserve.com](mailto:75054.1502@compuserve.com)

Forensic Scientist

Louisiana State Police Crime Laboratory

Once the crime scene has been thoroughly documented and the locations of the evidence noted, then the collection process can begin. The collection process will usually start with the collection of the most fragile or most easily lost evidence. Special consideration can also be given to any evidence or objects which need to be moved. Collection can then continue along the crime scene trail or in some other logical manner. Photographs should also continue to be taken if the investigator is revealing layers of evidence which were not previously documented because they were hidden from sight.

Most items of evidence will be collected in paper containers such as packets, envelopes, and bags. Liquid items can be transported in non-breakable, leakproof containers. Arson evidence is usually collected in air-tight, clean metal cans. Only large quantities of dry powder should be collected and stored in plastic bags. Moist or wet evidence (blood, plants, etc.) from a crime scene can be collected in plastic containers at the scene and transported back to an evidence receiving area if the storage time in plastic is two hours or less and this is done to prevent contamination of other evidence. Once in a secure location, wet evidence, whether packaged in plastic or paper, must be removed and allowed to completely air dry. That evidence can then be repackaged in a new, dry paper container. **UNDER NO CIRCUMSTANCES SHOULD EVIDENCE CONTAINING MOISTURE BE PACKAGED IN PLASTIC OR PAPER CONTAINERS FOR MORE THAN TWO HOURS.** Moisture allows the growth of microorganisms which can destroy or alter evidence.

Any items which may cross contaminate each other must be packaged separately. The containers should be closed and secured to prevent the mixture of evidence during transportation. Each container should have: the collecting person's initials; the date and time it was collected; a complete description of the evidence and where it was found; and the investigating agency's name and their file number.

Each type of evidence has a specific value in an investigation. The value of evidence should be kept in mind by the investigator when doing a crime scene investigation. For example, when investigating a crime he or she should spend more time on collecting good fingerprints than trying to find fibers left by a suspect's clothing. The reason is that fingerprints can positively identify a person as having been at the scene of a crime, whereas fibers could have come from anyone wearing clothes made out of the same material. Of course if obvious or numerous fibers are found at the point of entry, on a victim's body, etc., then they should be collected in case no fingerprints of value are found. It is also wise to collect more evidence at a crime scene than not to collect enough evidence. An investigator usually only has one shot at a crime scene, so the most should be made of it.

The following is a breakdown of the types of evidence encountered and how the evidence should be handled:

Fingerprints

Fingerprints (also includes palm prints and bare footprints) are the best evidence to place an individual at the scene of a crime. Collecting fingerprints at a crime scene requires very few materials, making it ideal from a cost standpoint. All non-movable items at a crime scene should be processed at the scene using gray powder, black powder, or black magnetic powder. Polaroid 665 black and white film loaded in a Polaroid CU-5 camera with detachable flash should be used to make one-to-one photographs of prints which do not readily lift. All small transportable items should be packaged in paper bags or envelopes and sent to the crime lab for processing. Because of the "package it up and send it to the lab" mentality, some investigators skim over collecting prints at a crime scene. Collecting prints at the crime scene should be every investigator's top priority. Fingerprints from the suspect as well as elimination fingerprints from the victim will also be needed for comparison (the same holds true for palm and bare footprints).

Bite Marks

Bite marks are found many times in sexual assaults and can be matched back to the individual who did the biting. They should be photographed using an ABFO No. 2 Scale with normal lighting conditions, side lighting, UV light, and alternate light sources. Color slide and print film as well as black and white film should be used. The more photographs under a variety of conditions, the better. Older bitemarks which are no longer visible on the skin may sometimes be visualized and photographed using UV light and alternate light sources. If the bitemark has left an impression then maybe a cast can be made of it. Casts and photographs of the suspect's teeth and maybe the victim's teeth will be needed for comparison. For more information consult a forensic odontologist.

Broken Fingernails

Much like a bullet that has individualizing striations on it, natural fingernails have individualizing striations on them. A broken fingernail found at a crime scene can be matched to the individual it came from many months after the crime has been committed. Broken fingernails should be placed in a paper packet which is then placed in a paper envelope. It can then be transported to the crime lab for analysis. Known samples from the suspect and maybe from the victim will be needed for comparison.

Questioned Documents

Handwriting samples can also be matched back to the individual that produced them. Known exemplars of the suspected person's handwriting must be submitted for comparison to the unknown samples. Questioned documents can also be processed for fingerprints. All items should be collected in paper containers. For more information consult a questioned documents examiner.

Blood and Body Fluids

If using the RFLP method of DNA analysis, then blood and seminal fluid can be matched back to an individual with a high degree of probability. Currently, if using the PCR method of DNA analysis or conventional serological techniques then blood and some body fluids can be said to come from a certain population group to which the individual belongs. As PCR technology advances, these population groups will become smaller, eventually giving it the same discriminating power as RFLP analysis has today. Dried blood and body fluid stains should be collected in the following manner: If the stained object can be transported back to the crime lab, then package it in a paper bag or envelope and send it to the lab; if the object cannot be transported, then either use fingerprint tape and lift it like a fingerprint and place the tape on a lift back; scrape the stain into a paper packet and package it in a paper envelope; or absorb the stain

onto 1/2" long threads moistened with distilled water. The threads must be air dried before permanently packaging. For transportation purposes and to prevent cross contamination, the threads may be placed into a plastic container for no more than two hours. Once in a secure location, the threads must be removed from the plastic and allowed to air dry. They may then be repackaged into a paper packet and placed in a paper envelope. Wet blood and body fluid stains should be collected in the following manner: all items should be packaged separately to prevent cross contamination, if the item can be transported to the crime lab, then package it in a paper bag (or plastic bag if the transportation time is under two hours), bring it to a secure place and allow it to thoroughly air dry, then repackage it in a paper bag. If the item cannot be transported back to the lab, then absorb the stain onto a small (1"x1") square of pre-cleaned 100% cotton sheeting. Package it in paper (or plastic if the transportation time is less than two hours), bring it to a secure place and allow it to thoroughly air dry; then repackage it in a paper envelope. **UNDER NO CIRCUMSTANCES SHOULD WET OR MOIST ITEMS REMAIN IN PLASTIC OR PAPER CONTAINERS FOR MORE THAN TWO HOURS.** Victim and suspect's known whole blood samples will have to be collected in yellow, red, or purple top "Vacutainers." Contact the lab to which the samples will be submitted for specific information.

Firearms and Toolmarks

Bullets and casings found at the crime scene can be positively matched back to a gun in the possession of a suspect. Bullets and casings can also be examined at the crime lab and sometimes tell an investigator what make and model of weapons may have expended the casing or bullet. A bullet found at the crime scene can sometimes be matched back to the same lot of ammunition found in a suspect's possession. Toolmarks can be positively matched to a tool in the suspect's possession. Firearm safety is a must at any crime scene. If a firearm must be moved at a crime scene, never move it by placing a pencil in the barrel or inside the trigger guard. Not only is this unsafe, but it could damage potential evidence. The gun can be picked up by the textured surface on the grips without fear of placing unnecessary fingerprints on the weapon. Before picking up the gun, make sure that the gun barrel is not pointed at anyone. Keep notes on the condition of the weapon as found and steps taken to render it as safe as possible without damaging potential evidence. The firearm can then be processed for prints and finally rendered completely safe. **FIREARMS MUST BE RENDERED SAFE BEFORE SUBMISSION TO THE CRIME LAB.** The firearm should be packaged in an envelope or paper bag separately from the ammunition and/or magazine. The ammunition and/or magazine should be placed in a paper envelope or bag. It is important that the ammunition found in the gun be submitted to the crime lab. Any boxes of similar ammunition found in a suspect's possession should also be placed in a paper container and sent to the crime lab. Casings and/or bullets found at the crime scene should be packaged separately and placed in paper envelopes or small cardboard pillboxes. If knives (or other sharp objects) are being submitted to the lab (for toolmarks, fingerprints, serology, etc.), then the blade and point should be wrapped in stiff unmovable cardboard and placed in a paper bag or envelope. The container should be labeled to warn that the contents are sharp and precautions should be taken. This is to prevent anyone from being injured.

Shoepprints and Tire Tracks

Shoepprints and tire tracks can be matched positively to a pair of shoes or to tires in a suspect's possession. Shoepprints and tire tracks can sometimes tell investigators what type of shoes or tires to look for when searching a suspect's residence or vehicles. Before any attempt is made at collecting shoepprints or tire tracks, one-to-one photographs should be made using a tripod, ruler, and level. The flash should be held at about 45 degree angles from the surface containing an impression. Casts can be made of impressions using dental stone. Once hardened, the cast can be packaged in paper and submitted to the lab. When photographing prints on hard flat surfaces the flash should be used as side lighting. Shoepprints on hard flat surfaces can also sometimes be

lifted like a fingerprint. Dust prints on certain surfaces can be lifted with an electrostatic dustprint lifter.

Fracture Matches

Fracture matches can positively link broken pieces at the scene with pieces found in the possession of a suspect. For example, headlight fragments found at the scene of a hit and run could be positively matched to a broken headlight (just like putting together a jigsaw puzzle) on a suspect's vehicle. Larger fragments should be placed in paper bags or envelopes. Smaller fragments should be placed in a paper packet and then placed in an envelope.

Hair

If a root sheath is attached, then DNA analysis using PCR technology can say that this hair came from a certain percentage of the population to which the suspect belongs. If there is no root sheath, then a microscopic analysis can say that the hair has the same characteristics as the suspect's hair and is similar to his or her hair. At this point, no one can say that a hair came from a particular individual. Hair found at the scene should be placed in a paper packet and then placed in an envelope. If a microscopic examination is required, then 15-20 representative hairs from the suspect must be submitted to the lab for comparison. If DNA analysis is going to be used, then a whole blood sample from the suspect must be submitted to the lab in a "Vacutainer." Contact a DNA lab for more information.

Fibers

Fibers can be said that they are the same type and color as those found in a suspect's clothes, residence, vehicle, etc. Fibers should be collected in a paper packet and placed in an envelope. Representative fibers should be collected from a suspect and submitted to the lab for comparison.

Paint

Paint can be said that it is the same type and color as paint found in the possession of a suspect. Paint fragments should be collected in a paper packet and placed in an envelope. Representative paint chips or samples should be collected from the suspect and submitted to the lab for comparison.

Glass

Glass can be said that it has the same characteristics as glass found in the possession of a suspect. Smaller glass fragments should be placed in a paper packet and then in an envelope. Larger pieces should be wrapped securely in paper or cardboard and then placed in a padded cardboard box to prevent further breakage. Representative samples from the suspect should be submitted to the lab for comparison.

Other Trace Evidence

Sometimes during the commission of a crime, there are other items which may be transferred to a perpetrator from the scene or from the perpetrator to the scene (sheetrock, safe insulation, etc.). The guidelines for collecting the evidence and obtaining known samples is about the same as for paint and fibers. For specific information, contact your crime lab.

RECOMMENDED READING:

- *"Evidence Handling Guide" LA. Dept. of Public Safety and Corrections, Office of State Police, Crime Laboratory*

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