



Physical Evidence Bulletin

Collecting Evidence from Human Bodies

SUBMIT A COPY OF THE POLICE REPORT (AND IF AVAILABLE, THE AUTOPSY REPORT) TO THE CRIME LABORATORY WITH ANY EVIDENCE SUBMITTED.

Purpose The physical evidence bulletin is a guideline intended for law enforcement agencies to follow in order to submit evidence to Bureau of Forensic Services Laboratories. Physical Evidence bulletins are not intended to be used in lieu of training in the collection of evidence.

The collection of evidence from the body of a deceased person requires the cooperation of the Coroner's Office and all law enforcement agencies. Typically, the Coroner's office has jurisdiction over the body and property of the deceased. It is important that any evidence collected from the deceased be collected with the knowledge and permission of the Coroner's Office. Advise the Coroner's office of what was taken and ensure that any evidence collected be made available to the pathologist.

This bulletin will describe the types of evidence that might be recovered from human bodies. It is important to note that some evidence will be much better preserved if it is collected at the crime scene rather than at the morgue. Evidence that can be lost or altered during transport includes: bloodstain patterns, saliva residues from bite marks, gunshot powder residues, and loosely adhering trace evidence. When necessary, remove clothing at the scene. In addition, biological evidence (e.g. semen evidence taken by swabs from body cavities) may be better preserved if collected as soon as possible, then dried and stored frozen. Although it may be desirable to collect such evidence at the crime scene, it may not always be possible due to conditions at the scene or the policies of a particular Coroner's Office. In these cases, photographs must be used to capture important pattern, position, and location information before the body is moved. Ensure that intermediate (from different angles) and close-up photographs are obtained to adequately document evidence.

Analysis and results that may be obtained

The Bureau of Forensic Services (BFS) provides analytical support to law enforcement agencies by assisting in the processing of human bodies. By properly recognizing, collecting, and analyzing physical evidence, we can help to determine the events surrounding the death and, if needed, the identity of the decedent.

Collection, marking, and packaging

- ◆ Photography - Close-up photography
 - Maintain the film plane parallel to object being photographed.
 - Fill the frame with the subject matter and include an appropriate scale in the photograph. It may be important to also take a photograph without a scale.
 - Take photographs as examination/autopsy proceeds. Insure that overall photographs of all body surfaces are taken before and after the body is unclothed and cleaned up. Insure that both the outside and inside surface of both hands and the tops and bottoms of both feet are photographed.
- ◆ Package and handle evidence to minimize potential contamination or cross-transfer.
 - Change gloves and thoroughly clean implements (e.g. forceps, razor blades, scissors) when collecting samples from different sources.
 - Use separate containers for individual items.
 - Use sheets of paper to minimize contact between different surfaces of the same evidence item such as when packaging clothing not yet completely dried.
- ◆ Biological evidence will deteriorate rapidly if not handled appropriately.
 - Dry samples as soon as possible.
 - Package biological evidence in paper (not plastic) bags. Samples of bone or tissue can be packaged in plastic but should be immediately stored in the freezer.
 - Freeze biological evidence (except for vials of liquid blood which should be refrigerated).
- ◆ Label all evidence containers appropriately with an indelible marker.
 - Include adequate description of what the object is and the location it was found.
 - Include case number.
 - Include name of person collecting evidence and the date it was collected.
 - Keep track of all evidence items through the use of item numbers and an evidence list.
 - Seal each container with tape. Mark seal with date and initials of collector.

Clothing

- ◆ If there is any evidence that will be altered or lost if the clothing is not collected at the crime scene, the clothing from the decedent should be removed at the crime scene (with the permission of the Coroner's office) and properly packaged. Otherwise, it can be collected at the autopsy.
- ◆ Collect any loosely adhering trace evidence (e.g. hairs, fibers, gunpowder, and botanical material) before removing clothing from body. Note the location of this evidence and package in paper bindles before placing into evidence envelope. Fine tipped forceps and transparent tape can be used to collect trace evidence such as hairs and fibers before clothing is removed.
- ◆ Carefully collect all clothing to avoid disturbing this evidence. When removing clothing, try to remove it without cutting. If cutting the clothing cannot be avoided, do not cut through bullet holes, stab holes, or important bloodstain patterns.
- ◆ Allow all items to air dry, wrap separately in clean paper (using sheets of paper to separate different surfaces of clothing), and package in paper bags. Evidence with potential biological evidence should be stored frozen.

Trace Evidence

- ◆ Collect samples of any adhering material (e.g. hair, fibers, glass, and paint) from the front and back of the body before it is washed. See 'Firearms Related Evidence' (below) for gunshot residue (GSR) collection. This evidence may be collected with

fine tipped forceps or by tape lifting using only low tack tape. Separate pieces of tape can be used to collect trace evidence from each different part of the body (e.g. right leg, left leg, etc.). Do not allow tape to adhere to itself or other packaging materials such as brown paper or cardboard. Place the tape in clean, transparent substrate such as clear plastic sheet protectors, plastic bags, or Kapak bags.

- ◆ Place samples into appropriately sized containers (do not put small items into large envelopes). Containers may be glass vials, metal or cardboard pillboxes, or paper bindles placed into envelopes. Do not use plastic since plastic collects static charges which could disperse a small quantity of sample. Tape seal all edges and corners of envelopes used to contain trace evidence to prevent sample loss.
- ◆ The decedent's fingernails can be examined for damage or foreign material such as tissue, fibers, or hairs. Collect any foreign material from fingernails with a toothpick and place in paper bindles labeled with information about the location of this evidence. If the nails are sufficiently long, they should be clipped and the clippings placed into paper bindles.
- ◆ If the victim has broken fingernails (including artificial nails), consider removing the remaining portion so that it could be compared with any nail fragments recovered from another location.
- ◆ In the case of a suspected sexual assault, combings can be taken of the decedent's pubic area.
- ◆ Examine the body for the presence of bloody fingerprints. If bloody fingerprints are detected, consider enhancing these prints (after first photographing them) using appropriate reagent spray.

Document Wounds/Injuries

- ◆ Insure that intermediate and close-up photos are taken of all wounds (including defense wounds) before and after cleanup. Consider numbering multiple wounds.
- ◆ Bite marks should be carefully photographed with a scale. Take photographs using both available light and flash. Hold the flash unit at oblique angles to capture all impression information. Consider using specialized lighting (e.g. UV/IR) to enhance any impression information. Collect saliva from bite mark using a swab slightly moistened with water. A control should be collected from an adjacent, apparently unbiten area. Consideration should be given to casting the bite mark by using an appropriate casting material (e.g. microsilsil or forensicsil) to preserve any three dimensional information.
- ◆ Examine the body for imprints that might have originated from the crime (e.g. ligature or shackle marks, shoe sole impressions, or vehicle tire/component marks). Carefully photograph any imprint with and without a scale. To reveal more detail, consider using a specialized light source to illuminate any such area. These areas should then be tape-lifted to collect any trace evidence.
- ◆ Gunshot wounds: photograph and describe all wounds. Collect any loosely adhering gunshot powder residue. For distance determinations on bare skin (to preserve the powder pattern), press a piece of white filter paper (soaked with white vinegar or 10% acetic acid) against the skin containing the gunshot powder residue. Allow this to dry and carefully package in cardboard box. Ensure that the pathologist collects any foreign inclusions within the wound track.
- ◆ After the pathologist has made a preliminary assessment of the wound track (using external wound penetration location/determination of associated entrance/exit wounds), the wound track can be photographed before and after insertion of dowel by pathologist. Photographs taken with dowels inserted should be taken in two

planes. When possible, specify entrance and exit wounds. In the event that the wound is covered by the decedent's hair, it will be necessary to shave the hair, wash the site, and photograph the wound.

- ◆ If bloodstain pattern interpretation is likely to be important in the investigation, ensure that the pathologist documents any damage to major blood vessels and the pooling of blood in thoracic or abdominal cavities.

Firearms Related Evidence

- ◆ X-rays are of considerable value in locating bullets or metal fragments. The pathologist should not use metal forceps or probes to remove projectiles. Allow any biological material adhering to the projectile or fragments to dry and package into an appropriate container.
- ◆ Gunshot residue: examine hands for visible particulate matter and, if possible, collect them with appropriate device (such as SEM discs) at the scene. If collection cannot be performed at the scene, protect the decedent's hands with clean paper bags secured at the wrists with tape or rubber bands. Gunshot residue can be collected using the recommended procedure in your jurisdiction (a two disc kit is preferred for submission to BFS). Refer to Physical Evidence Bulletin 15 (Gunshot Residue Collection) for additional information.
- ◆ Powder patterns associated with gunshot wounds are important in distance determinations. They should be carefully photographed (film plane parallel to wound surface) with and without a scale. Collect and retain any loosely adhering gunshot powder/residues in a paper bundle.

Biological Evidence

- ◆ In the case of suspected sexual assault, collect multiple (e.g. 4 swabs each) vaginal, oral, and anal swabs. Air-dry the swabs as soon as possible and store frozen. Sexual Assault Evidence Kits can be used to collect this evidence.
- ◆ Examine the body for the presence of semen, saliva, or any other body fluid stains which may have been transferred from the assailant(s). A forensic light source (e.g. Polilight/Woods lamp) may aid in visualizing these samples. Collect any suspected foreign body fluid residues with a swab slightly dampened with water. Label swabs and air-dry. Consider the possibility that blood from the assailant might be present on the victim's body (e.g. an isolated single stain from a victim who did not bleed extensively). Consider taking breast, neck, thigh, or penile swabs for possible DNA testing.

Reference Samples

- ◆ Hair samples should be pulled from representative areas (e.g. temples, crown, and nape) of the head (include beard hair) and at least four areas of the pubic region. At least 10-12 hairs from each area should be taken.
- ◆ Collect a minimum of two buccal swabs as a reference sample from the subject. Additional reference samples may include the subject's bloodstained clothing and fingernails (several clippings or entire nail, if possible). Air-dry and freeze these reference samples.
- ◆ Reference Blood Sample - Blood sample should be obtained from non-body cavity areas such as heart or major internal blood vessels. Collect a blood sample (approximately 5cc) in a lavender stoppered tube (containing EDTA). If a lavender stoppered tube is not available, a gray stoppered tube (containing Sodium Fluoride)

may be substituted.—Store liquid blood in the refrigerator. The crime laboratory should be notified if the subject has received a blood transfusion.

- ◆ If the body has decomposed, in addition to the blood sample, collect as many of the following specimens as possible: a portion of deep muscle tissue, 2-4 intact un-restored (without fillings) molar teeth (if identification is an issue, ensure that mouth x-rays have been taken), fingernails, and a sample of compact bone (e.g. femur). The specimens collected should be away from site of injury. Immediately freeze specimens, do not place in any preservative (e.g. formalin).

Identification of Deceased

- ◆ Fingerprint the deceased. Ensure that any rolled fingerprints or palm prints are legible before releasing the body. Depending upon the condition of the body, it may be necessary for the pathologist to remove either the fingers or the friction ridge skin from the fingers.
- ◆ If the fingers are decomposed, palms can be used for identification purposes.
- ◆ Take identification photos of the deceased's face (from several different views) and any identifying marks such as scars or tattoos.
- ◆ It may sometimes be necessary to rely upon a forensic dental examination and may be necessary to take appropriate x-rays or remove and retain jaw structure.
- ◆ Biological samples and possible reference materials may be identified by DNA analysis. Refer to the 'Reference Samples' section for guidance on collecting these. Additional reference samples for identification purposes may include personal effects such as a toothbrush, hairbrush, etc. Please contact the Bureau of Forensic Services Missing Persons DNA program at (916) 227-5997 or dnamissingpersons@doj.ca.gov.

CAUTIONS

- ◆ Safeguards while handling biological samples include:
 - Treat all biological samples as infective material. Follow your agency's Bloodborne Pathogen Plan.
 - Wear gloves.
 - Keep any contaminated surface (e.g. gloved hand) away from face to prevent contact with mucosal membranes (e.g. eyes, nose).
 - After dealing with evidence, properly dispose of gloves and wash hands with germicidal soap.

The lab does not routinely accept or process

The Bureau of Forensic Services does not normally analyze post mortem samples for toxicology. Please refer to local coroner's office protocol for toxicology samples that need to be collected.

For further information and additional resources

Please contact your regional BFS laboratory for additional information.

For a list of regional laboratories please go to:

http://ag.ca.gov/bfs/pdf/bfs_brochure.pdf or <http://ag.ca.gov/bfs/>

To locate the most current Physical Evidence Bulletins please go to:

<http://ag.ca.gov/ci/reference/reference.php#peb>
