



CALIFORNIA DEPARTMENT OF JUSTICE
BUREAU OF FORENSIC SERVICES
PHYSICAL EVIDENCE BULLETIN



**COLLECTION OF EVIDENCE BLOOD AND OTHER BODY
FLUID STAINS AND REFERENCE SAMPLES FOR CONVENTIONAL TYPING AND
DNA ANALYSIS**

Blood and other body fluid stains may be encountered as physical evidence in a variety of crimes such as homicide, vehicular hit-and-run, and burglary. The identification and typing of blood and other body fluid stains can assist in establishing elements of the crime, identifying or eliminating a suspect, and can be used to corroborate or dispute the statements of principals.

- I. **General Crime Scene** - Collect all items at the scene having possible **evidentiary value**; i.e., anything which might have originated from the suspect/victim (depending upon nature of scene) or provide information about what occurred. Process the crime scene systematically for evidence:
 - **Photos**: To record the scene and identify items of evidence.
 - **Sketches**: To establish spatial relationships.
 - **Latent Prints**: Best evidence for identification of the suspect(s); should always be considered.
 - **Footprints, Tire Tracks, Toolmarks**: Impression evidence that may serve to identify suspect(s).
 - **Biological Evidence** - Biological evidence includes blood, saliva, semen and other body fluid stains. Any of this evidence may be important and should be collected. These stains should be accompanied by control samples from unstained areas near the collected stains. A forensic light source (e.g. *Polilight*) may be of assistance in locating these stains.

- II. **Blood and Other Body Fluid Stains Found at Crime Scene** - All biological evidence is subject to deterioration. The careful collection and storage of this evidence will help ensure that this evidence is preserved so that useful information can be obtained from its analysis. The pattern of bloodstain evidence may sometimes contain important information. If the bloodstain pattern is determined to be important, it should be documented with appropriate sketches and photographs. Finally, biological evidence can contain infectious organisms (e.g. hepatitis virus) that can be transmitted to any person who contacts it. For these reasons, it is important to take proper safeguards to ensure the safety of all personnel.
 - A. Safeguards while handling biological evidence include:
 - 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
 - B. Goals of Biological Evidence Collection
 - Collect as much sample as possible from a single source.
Keep biological evidence stain concentrated.
 - Ensure that the sample is not inadvertently mixed with other biological samples.
Wear gloves. Change gloves if they become stained with any biological sample.
 - Handle the sample in a manner that minimizes deterioration of the sample.
Air-dry the sample as fast as possible.
 - C. Recommendations for collecting blood and other body fluid stains:
 - Handle the evidence stains as little as possible. **When possible, submit the item with the stain.** This is the easiest and best method to collect biological evidence. If the stain is on a smooth, non-porous surface and can be easily dislodged, protect it from contact with other objects (e.g. immobilize in box).
 - If the stain is on a large object with a porous surface (wood or carpet), the area with the stain can be cut out and packaged in paper. Be sure to include a portion of the unstained material as a control.

C. Recommendations for collecting blood and other body fluid stains (continued):

- If it is not possible to collect the object or cut out the stain, the stain may be collected by using a **slightly moistened** (with distilled water) cotton swab. While collecting the stain, an effort should be made to **concentrate it onto a small area on the swab**. A control sample of an unstained area close to the bloodstain should also be collected using the same distilled water and type of swab that was used to collect the evidence. Allow the swabs to air dry, then package individually in appropriately marked paper envelopes or folded paper bindles.
 - The size of the stain should influence the size of a substrate used to collect the stain. Thus, use a small part of a swab or a small piece of gauze to collect a small stain. Do not smear a small stain over a large surface.
- **Small biological evidence stains (e.g. 2 mm size bloodstain) may need special handling:**
 - ◊ Put on a fresh pair of gloves before collecting these small stains.
 - ◊ A swab is probably the best sample collection device.
 - ◊ If these stains have to be manipulated by a tool, consideration should be given to using new, disposable implements (e.g. new razor blade/ disposable pair of tweezers).
- **Try to minimize the amount of time a stain is kept wet.** Air-dry all wet stains as soon as possible. Do **not** expose to heat or sunlight in an attempt to dry the stain.

Care should be taken to ensure that biological evidence is not contaminated during its collection:

- To avoid contamination, do not allow one evidence stain to come into contact with other biological samples.
- Do not talk or cough over biological evidence stains. Do not handle samples without using clean gloves.
- Each individual stain should be collected separately. Do not collect or package two separate stains together.
- Do not allow evidence samples to come into contact with any surface that contains residue from another biological sample (e.g. dirty tweezers, bloodstained glove, contaminated work surface).
- Use tweezers that have smooth, easy-to-clean working surfaces.
- Tools (e.g. tweezers, scissors) can be cleaned by thoroughly rinsing with a stream of distilled water and thoroughly drying with paper tissue. Repeat this process *twice* before using tool to manipulate another sample.

Package all biological evidence in paper bags or envelopes. Do not use plastic.

- Allow stains to air dry as much as possible before placing in paper bag or envelope.
- Package the “unstained control” separately from the evidence stain.
- Package different evidence items in separate paper containers.
- Ensure that the paper container is large enough to allow air circulation around evidence item.
- Clean paper can be placed on (or in) a bloodstained garment and the garment folded so that the paper prevents contact between different stains. Ensure that while items are drying that the stain pattern(s) are not altered or the stain(s) cross-contaminated with other wet stain(s).
- Metal or glass evidence item (e.g. knife or broken, glass bottle), should be secured with wire to the bottom of a cardboard box so that it does not pierce the sides of a paper container. If not secured, blood on a knife blade can become easily dislodged and lost. Do **not** freeze metal or glass evidence items with blood or other body fluid stains. Submit these items to the laboratory as soon as possible.
- Tape seal, initial and date all paper bags or envelopes.

III. COLLECTION OF REFERENCE SAMPLES FROM LIVING SUBJECTS

- A. Reference Samples from Victim & Suspect (for DNA and Conventional Typing) - Collect a separate blood sample, approximately 5-7cc, in a lavender-stoppered tube [**containing EDTA**]. The crime laboratory should be informed if the subject had recently received a blood transfusion of any kind. If it is not possible to obtain a blood sample, oral (mouth) swabs (e.g. swabs of the inside of cheek) can often be used as a reference sample **for DNA typing only**. Check with your local laboratory to determine the suitability of oral (cheek) swabs as reference sample. If oral samples are obtained, take 2 swabs (one from the inside of each cheek). Take a sterile swab and vigorously rotate the swab on the inside surface of the subject's cheek. Take another sterile swab and repeat this process on the other cheek. (Do not use gauze). **It is imperative that these samples be dried as soon as possible in a stream of cool air**. When the samples are dry, they may be placed into a labeled paper envelope or bag. The evidence envelope/bag should be labeled and taped sealed.
- B. Sample for Blood Alcohol or Drug Analysis - Collect 10cc of blood in a gray-stoppered tube [containing potassium oxalate/sodium fluoride].

IV. COLLECTION OF REFERENCE SAMPLES FROM POSTMORTEM SUBJECTS

- A. Reference Blood Sample - A blood sample should be obtained from non-body cavity areas such as heart or major internal blood vessels. Collect a blood samples (approximately 7cc) in a lavender-stoppered tube [**containing EDTA.**]
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, certain organ tissue (e.g. heart or brain/**not** liver or kidney), 2-4 intact molar teeth (if identification is an issue, ensure that mouth x-rays have been taken), and a sample of compact bone (e.g. femur). The specimens collected should be **away from site of injury** (i.e. if head injury, do **not** take sample of brain tissue). **Immediately freeze specimens**, do **not** place in any preservative (e.g. formalin). The crime laboratory should be notified if the subject has received a blood transfusion. The subject's bloodstained clothing may be useful as a reference in this case. Air-dry and freeze these items.
- B. Sample for Blood Alcohol or Drug Analysis – Collect 10cc of blood in a gray stoppered tube [containing potassium oxalate/sodium fluoride].

V. EVIDENCE STORAGE

- A. Submit all items to the BFS laboratory in your area as soon as possible.
- B. If the evidence cannot be immediately submitted to the laboratory:
 - Refrigerate **liquid** blood samples. Do **not** freeze.
 - Air-dry all wet blood and other body fluid stains on evidence items. Do not subject to heat.
 - Until submission to the crime laboratory, **freeze all stained items except for any metal or glass items** (e.g. knives, bottles). Metal or glass items should be stored at room temperature and submitted to the laboratory as soon as possible.
 - Evidence from the suspect and victim must be handled and packaged separately.

Related Physical Evidence Bulletins (PEB):

- ⇒ PEB 6 - "Collection of Fiber and Hair Evidence"
- ⇒ PEB 7 - "Collection of Physical Evidence in Sexual Assault Investigations"
- ⇒ PEB 27 - "Evidence from Human Bodies"

SUBMIT A COPY OF THE POLICE REPORT TO THE CRIME LABORATORY WITH ANY EVIDENCE SUBMITTED.

CONTACT YOUR LOCAL BFS CRIMINALISTICS LABORATORY IF YOU HAVE ANY QUESTIONS.