SANTA BARBARA COUNTY
SHERIFF'S OFFICE
FORENSICS UNIT

COLLECTION OF BIOLOGICAL EVIDENCE AT CRIME SCENES

1.0 BACKGROUND

Biological evidence includes blood, other body fluids such as semen, and contact DNA that can be found at crime scenes involving such things as burglaries, assaults, rapes and homicides. The use of DNA typing with its increased sensitivity and durability has heightened the need to properly collect and package biological evidence to prevent any source of cross-contamination. Proper steps must be used to ensure that there is no direct contact between the sample and the person collecting the sample and between samples of different origins.

2.0 MATERIALS and EQUIPMENT

A. Materials

1. Sterile swabs
2. Manila envelopes / Coin envelopes
3. Gloves
4. Forceps or disposable forceps
5. Paper bags
6. Scissors and/or razor blades
7. Sterile or distilled water
8. Swab stand for drying swabs (if available)
9. Masks

3.0 PROCEDURE

A. Preliminary Considerations

1. The crime scene should be photographed prior to any evidence collection and an individual photograph of the area sampled should be taken where appropriate. The area containing the sample to be collected should be marked so that the area can be related back to the item collected.

2. Always wear gloves and a mask when collecting any form of biological evidence. Put on a clean pair of gloves when handling particularly small biological samples before collection.

3. Change gloves if they become contaminated with blood or contaminated with other biological samples. Do not touch gloved hands to your face or touch others while handling evidence items.

4. Keep the amount of material collected as concentrated as possible by using only a small amount of sterile and/or distilled water for collection. Collect as much sample as possible from a single source. While collecting a sample, do not mix adjacent drops of blood or other biological material, due to the fact that it may not be from the same source. If the stains to be collected are extremely small and may not generate a DNA profile, combining adjacent drops may be needed. Consultation with a blood pattern analyst may be useful to determine if the stains are from the same pattern. Gloves should also be changed between sample collections if the samples could be from different sources.

5. After its collection and prior to long-term storage, always air-dry a sample as soon as possible

B. Collection of Movable Objects

1. If the item containing the biological sample such as blood can be collected in its entirety, then it should be collected and the biological stain should not be removed at the scene. The item containing the biological sample should be dry before packaging. Before doing the above, inform the unit supervisor of what is being done.

2. If the biological stain can easily be dislodged from the object, it should be photographed first and then protected by placing a protective barrier between it and its packaging. A small piece of paper can be taped over the stain to prevent it from loss. Be careful not to damage other forms of evidence such as fingerprints that may be present on the item. The object itself can be immobilized in a container by using such things as pieces of wire to prevent it from coming in direct contact with the packaging. If the stain is likely to become dislodged, it can be collected after it is documented with photography.

3. Place the item in an appropriately sized porous package such as a brown paper bag or envelope. Use a separate bag for each item. Label the exterior of the package with the case number, date, time, and initials. Do not seal the item in an airtight container. Do not use plastic bags.

4. If the item of interest is a gun, it must be rendered safe (removal of ammunition) before packaging. The person who

renders the firearm safe must be trained in the safe handling of firearms. In order to render it safe, the gun must be handled to remove the ammunition. Therefore, the person handling the gun must do so with a new pair of gloves and should handle it as little as possible. If the above is done, then this must be documented in the report.

5. When feasible, heavily bloodstained clothing should be allowed to dry at the scene prior to its collection. A piece of clean butcher paper can be placed around the clothing item to minimize contact between different bloodstains when the clothing is placed inside a brown paper bag. To preserve bloodstain patterns and to help prevent cross contamination, the item should be layered with butcher paper
(e.g. a piece of butcher paper on the exterior back of a shirt, a piece on the interior of the shirt, and a piece on the exterior front of the shirt). For very wet items that may soak through a paper bag and contaminate adjacent items, a piece of butcher paper or a paper bag can be placed around the item and then the item can be placed into a plastic bag for transport. The item must be removed from the plastic as soon as possible at the laboratory and allowed to air-dry. The transport packaging (paper and plastic) will have dried blood on it and may have additional evidence also. That packaging must be retained and may be folded up and placed into the final packaging with the item after drying.

6. Each item will be packaged individually. Packaging material should never be reused.

C. Collection from Large Objects or Non-movable Objects

1. Whenever possible, collect the biological stain by cutting it from the object using a clean pair of scissors, disposable scalpel or razor blade. Once removed the item is placed into an appropriately sized envelope or brown paper bag which is then properly labeled.

2. Before use, tools with smooth working surfaces such as scissors, forceps and writing materials (pens) will be thoroughly cleaned/sterilized with a bleach solution, rinsed with sterile or distilled water, and dried with a clean paper tissue.

3. Next, collect an unstained area from the object close to the stain. This will be used as a substrate sample (control). This will be packaged in a suitably sized package separate from the portion containing the biological sample. Again the control should be labeled properly.

4. If the biological stain is on an object (such as a wall or concrete flooring) and cannot be removed, then a sample of the biological material will need to be collected. Collect the entire stain.

5. Collect this type of sample by slightly dampening a cotton tip applicator. Absorb the biological stain onto the swab. Let the swab(s) air dry before packaging. This can be accomplished by placing it into a swab stand (if available). The wooden applicator stick attached to the swab can be handled with gloved hands.

6. Package the sample in an appropriate sized envelope and label appropriately.

7. When possible, also collect a control from the object that is void of the biological material in the same manner as the biological sample was taken. This will serve as a substrate sample (control). This must be packaged separately from the biological stain (sample) and must be labeled appropriately.

8. Do not scrape the biological stain from the item in order to collect it. Scraping stains tends to cause them to turn into powder, which can lead to cross contamination of adjacent stains or other material located near the stain.

D. Collection of Contact DNA Samples

(Wet and dry swabs should be used for sample collection on items where a person touched a surface and may have left DNA behind on the object such as metal. Contact surfaces do not include a blood stain or pool of blood).

1. Moisten a sterile cotton tip applicator with sterile or distilled water.

2. Swab the area of interest such as a steering wheel or gearshift, with a moistened cotton tip applicator. Let the sample swab(s) air dry before packaging.

3. Obtain a control swab from an area near the location where the sample swab was collected from. The control swab should also contain the distilled water that was used for the sample collection. Let the control swab air-dry before packaging. Package the control swab in a separate envelope and label accordingly.

4. Package the items according to laboratory protocol including the date, time, initials, item number, and agency case number.

E. Preservation

1. In most circumstances, biological evidence collected at the scene will be collected by the CSI Unit personnel and booked into the Santa Barbara County Sheriffs Property Room. Make a note in your report regarding what items were collected as evidence. Also remember to document proper chain of custody of evidence items. Make sure the exterior packaging is marked for freezer storage. If the CSI Unit is responding for another agency, the CSI Unit may (at times) release all collected items of evidence to that agency's property room/case detective(s), who will then book the evidence into their Property System. Make sure all outer packaging has storage information and that the above is documented in the report.

2. If the evidence still requires further drying, then it may be best to transport the items back to the laboratory for proper drying. This should be done before the items are stored in the freezer.

IV. REFERENCES

1. Spear, Theresa F., "Collection and Handling of Biological Evidence for DNA Analysis- Part I", CAC News Letter, Winter 1996, pgs. 20 and 21

2. Spear, Theresa F., "Collection and Handling of Biological Evidence for DNA Analysis- Part II", CAC Newsletter, Spring 1997, pgs. 10 and 11.

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