



INDIANA STATE POLICE LABORATORY DIVISION

PHYSICAL EVIDENCE BULLETIN

FIBER EVIDENCE

INTRODUCTION: Many crimes involve direct physical contact between victim and suspect. Whenever such contact occurs, there is almost always an inadvertent transfer of microscopic evidence. This transfer may include fibers. However, these types of evidence, which can be microscopic in form, may often be overlooked by investigating officers because they are not easily observed.

Fibers can be classified as animal (e.g. hair and silk), vegetable (e.g. cotton and linen), mineral (e.g. asbestos), or synthetic (e.g. polyester and nylon), and are often identified by sub-classification through laboratory examination.

Cases in which fibers are being used as associative evidence are typically valuable in investigations in which the suspect(s) are not known to have been to the location where the evidence was collected.

TYPES OF CASES IN WHICH FIBERS MAY BE OF VALUE AS EVIDENCE

ASSAULT AND HOMICIDE - These types of crimes usually involve personal contact of some sort. Therefore, clothing fibers and hair may be interchanged between victim and suspect; that is, fibers and hairs from victim's clothing may be found on suspect's clothing and vice versa. Weapons and fingernail scrapings may also be important sources of fiber evidence. Bindings, such as rope, may also leave distinct fibers if a person was tied up.

RAPE - The nature of this crime can result in the cross transfer of fibers and hairs between clothing of victim and suspect and such articles as blankets or carpeting. Weapons and fingernail scrapings may also be sources of fiber evidence.

BURGLARY - Clothing fibers may be found at the point where the burglar crawled through a window or other opening, or climbed over a fence.

HIT-AND-RUN - Due to the forceful contact between victim and automobile, clothing fibers and hair may be found adhering to the fenders, grill, side mirrors or parts of the undercarriage. Fabric impression patterns may also be observed on surfaces with which the fabric came into contact.

COLLECTION, PRESERVATION, AND MARKING OF FIBER EVIDENCE

Before attempting specific procedures listed below, note the following general precautions:

1. The size of the container should correspond to the size of the object.
2. Do **not** package wet evidence. Fibers or objects containing fiber evidence should be air dried before placing in sealed containers. Biological stains degrade with time. This process is accelerated when items are wet and sealed in airtight containers.
3. Do **not** package items on a surface without first thoroughly cleaning that surface. Avoiding cross contamination between **all** evidence and standards is imperative!
4. **All** seams of the packaging must be sealed to prevent the loss of trace evidence.
5. Label all evidence containers with submitter's initials, ID/badge number, agency name, case number, item number, source, and date.

COLLECTION PROCEDURES

1. Where fibers are visible and firmly attached to an inanimate object to be transported to the laboratory:
Leave fibers intact.
 - (a) Diagram and note exact location and approximate number of fibers adhering to each object (photograph if possible).
 - (b) Label object and package in a container so that fibers cannot become dislodged in transit.
 - (c) Label packaging with appropriate information.
2. Where fibers are visible and not firmly attached, or if firmly attached and object is too large to send to the lab:
 - (a) After diagramming and noting each location and the number of fibers present, carefully remove with clean tweezers and package.
 - (b) Place fibers in a small pill box, glass vial or other tightly sealed container. Fibers may also be placed in small folded paper bindles.
 - (c) Label packaging with appropriate information.

3. Where fibers are possibly transferred to clothing of victim or suspect:

- (a) Be sure clothing is dry before packaging.
- (b) Keep each item separate.
- (c) Avoid disturbing soil, dust, blood, seminal stains, or other foreign materials adhering to clothing.
- (d) If any of the aforementioned are apparent, see appropriate Physical Evidence Bulletin for special instructions.
- (e) Place ID mark on each item in an easily located area that does not damage the clothing.
- (f) After allowing wet apparel to air dry, carefully fold and wrap each article separately, package, and label with appropriate information (layers of clean wrapping paper and new paper bags are suitable for this purpose).

4. For fingernail scrapings/clippings:

- (a) Take scrapings/clippings from both suspect and victim.
- (b) Use either a clean knife, clippers, or other instrument such as a fingernail file or toothpick.
- (c) Use a separate folded paper bundle for each hand to collect scrapings/clippings.
- (d) Place the folded and labeled bindles (i.e. "left hand", "right hand") in a pill box, glass vial or other small tightly sealed container and label with appropriate information.

5. Where fibers are in hair of suspect or victim:

Comb the individual's hair over clean white paper using a clean fine-tooth comb. Carefully fold the paper together with the comb into a bundle to prevent loss of any trace evidence. Place the bundle in an envelope and label with appropriate information.

COLLECTION OF FIBER STANDARDS FOR COMPARISON

FIBER STANDARDS: You need to have a fiber standard from an individual or the scene in order to try and place a victim or suspect at a location. If a someone can already be placed at a specific location the fiber analysis has limited value. When fibers have been collected by the investigating team it is imperative that appropriate and adequate standard samples also be submitted. For example, if fibers are found on the soles of the robbery suspect's shoes, standard samples of the carpet or carpets at the crime scene should also be submitted. The standard samples should be a representative sampling and include variations due to color, style, type, fading, staining, or wear. Standard samples with a minimum size of a quarter should be submitted.

It will not always be known to the investigating officer whether there are fibers present in the submitted evidence. For this reason, care must be exercised when handling any item that could shed fibers and thereby cause cross contamination between items from suspects and victims.

RESULTS POSSIBLE FROM LABORATORY EXAMINATION OF FIBER EVIDENCE

Fibers

- a. Fiber classification (i.e. animal, vegetable, mineral, or synthetic) and sub-classification (e.g. polyester, nylon, acrylic).
- b. Determination as to whether questioned fibers are the same type and similar color as the standard. Determination as to whether questioned and standard fibers share similar microscopic characteristics. (Note: Color and microscopic characteristics of fibers may vary within a garment, carpet, drape, rope, etc. due to many factors, such as wear or fading.)
- c. An opinion as to whether questioned fibers could have originated from the standard.

For further information you may wish to consult with your local District Indiana State Police Crime Scene Investigator or the Indiana State Police Laboratory in Indianapolis. The laboratory phone number is: toll free 1-866-855-2840 or 317-921-5300.