VIRGINIA DEPARTMENT OF FORENSIC SCIENCE

EVIDENCE HANDLING & LABORATORY CAPABILITIES GUIDE

TRACE EVIDENCE: HAIRS & FIBERS

Contact Information

If you have any questions concerning the Trace Evidence laboratory examination capabilities or evidence handling procedures, please call the Training Section or the Trace Evidence Section at the Forensic Laboratory that services your area.

Laboratory	Section Contact	Phone Number
Central	**Mary Keehan**	**(804) 588-4040**
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HAIR & FIBERS OVERVIEW

When two objects come into contact, materials such as hairs and fibers may be transferred. Hairs will be assessed to determine if they are animal or human. Human hairs will be assessed to determine if it is appropriate to refer them to the Forensic Biology Section for nuclear DNA testing. For fibers, the color and generic class (e.g., nylon, polyester, acrylic) may be identified and known sources requested for comparison. If known and questioned fibers have been submitted, a comparison of physical, chemical and optical properties may be made between them and a conclusion rendered based upon the obtained results.

In the course of an investigation, the officer/investigator may consider the following as particular areas of deposition and/or sources of hairs and fibers: victim and/or suspect clothing and person, window and/or doors, other points-of-entry/exit (roof), carpeting/floors, furniture, vehicle upholstery, vehicle floor mats, damaged areas on vehicles (e.g., grilles, windshields), undercarriage of a vehicle.

CAPABILITIES AND SERVICES

Differentiate hairs from fibers.

Differentiate human hairs from animal hairs.

Determination of suitability for nuclear DNA PCR-based typing.

Fracture match of rope/cordage or clothing/fabrics.

Identification of fiber generic class (e.g., nylon, polyester, cotton, silk, wool).

Comparison of questioned fibers to known fiber samples.

COLLECTION GUIDELINES

ITEM – Individual Hairs and/or Fibers

METHOD – Remove the individual hairs and/or fibers with forceps or gloved fingers. Place the hairs and/or fibers into a properly folded paper evidence fold, a glassine envelope or onto the adhesive edge of a low tack adhesive note (e.g., sticky note, Post-it® note). If the hairs and/or fibers are very small, the use of a low tack adhesive note is preferred. Place the evidence fold, glassine envelope or note into an envelope for submission.

DISCUSSION – Do not collect or package hairs and/or fibers in a manner that crushes or bends them. Do not use high tack adhesive tapes for recovery. Examples of high tack tapes are: duct tape, latent print lift tape, first aid tape, regular adhesive tape, lint rollers, masking tape, strapping tape, and packing tape. These adhesives make recovery of hairs and/or fibers

difficult at best and may result in damage, distortion, or adhesive contamination to the hair and/or fiber evidence as it is lifted from the tape.

ITEM – Clothing

METHOD – When collecting the clothing an individual is wearing, have the person remove one article of clothing at a time while standing on pieces of new, clean butcher paper. The paper can then become a paper evidence fold to retain whatever debris may have fallen off during disrobing as well as that particular clothing item. Each clothing item should be packaged separately. Individual hairs and fibers that may have been recovered from a clothing item which is also being submitted for examination should be packaged in the manner described above and included with the clothing item from which they were recovered, and submitted as one item. For example, standing on a new, clean piece of butcher paper, the blue jeans are removed, folded up in the piece of butcher paper and then placed into a paper bag for submission. A new, clean piece of butcher paper is used to stand on for the removal of the jacket, the jacket wrapped in the paper and placed into a paper bag. The jacket also previously had several apparent hairs and/or fibers individually recovered which were placed into a paper evidence fold. The paper evidence fold was placed into an envelope and the envelope was included in the paper bag with the jacket for submission as one item.

If a subject's clothing has already been bagged together or has been removed and placed in one pile, do not separate the clothing items for individual submission. Collect all clothing items together as one item, wrap in paper and place in a paper bag for submission.

ITEM – Items Too Large for Submission

METHOD – It is always suggested that an item be submitted for the lab to conduct hair and/or fiber recovery to include collection of known fiber samples. However, it is recognized that this may not be possible in all instances. Items that are too large (or too difficult) for submission may include area rugs, vehicle seats, sofas, chairs, etc. These items may be taped with low tack tape such as that found on Post-it® type notes. A low tack tape with a clear/colorless backing and a clear/colorless adhesive is ideal. Alternatively, painter's masking tape may be used to recover hairs and/or fibers. Use successive strips of tape until the strip of tape begins to lose its stickiness. Place the strips of tape with the recovered hairs and fibers onto a clear/colorless plastic sheet (like a page protector), a transparency sheet, or onto a plastic bag. Place the plastic sheet or plastic bag containing the strips of tape into an envelope for submission.

ITEM – Collection of Known Samples

METHOD – Collection of Known Hairs:

The collection of known hairs is only for potential future microscopic hair comparisons, **which are not conducted by the Department of Forensic Science (DFS).** The FBI has the capacity to perform additional types of hair examinations. Information can be found on page 28 in their Handbook of Forensic Services.

Collection of Known Fabric:

For fabrics, submit the entire item when possible, wrapping in paper and placing in a paper bag. Otherwise, submit a representative sample of the known by cutting out a section that will include all colors and types of fibers in the known. Either place in a properly folded paper evidence fold and place in an envelope for submission or wrap in paper and place in an envelope or paper bag for submission.

ITEM – Rope, Twine and Cordage

METHOD – Package in plastic bags, paper bags or envelopes. Be sure to label ends you may have cut. While DFS does not conduct examinations of knots, this type of evidence should be preserved for possible future analysis. Do not disturb knots. Maintain tension on the knot so it does not unravel.

DISCUSSION – Fracture matches of ends will be attempted first. If a fracture match is not made, a physical and chemical comparison of the material will be conducted.

SUBMISSION REMINDERS

NEVER use a high tack (strong) adhesive to collect hairs and fibers.

If possible, submit the entire item for the laboratory to perform the hair and/or fiber recovery.

Indicate the ends that have been cut by investigators, first responders or medical examiner staff in rope, twine, or cordage.