



Firearms Section
Biological and Trace Evidence Retention SOP
Comparative & Analytical Division



1. Overview

The Firearms Biological and Trace Evidence Retention Standard Operating Procedure (SOP) specifies procedures for the preservation of biological and trace evidence for future analysis. Firearms staff members are required to follow all Firearms Section SOPs and all Houston Forensic Science Center (HFSC) policies and procedures. Other documents that must be followed include, but are not limited to, the Quality Manual, Safety Manual, and Security Manual.

2. Reagents and Labeling

2.1. Reagents for Biological Evidence Collection

- 2.1.1. Sterile Deionized Water - Obtained from the Forensic Biology Section
- 2.1.2. 10% Bleach Solution

2.2. Sterile, deionized water is obtained from the Forensic Biology section. When the lot of water expires or is consumed, the container must be returned to the Forensic Biology section for sterilization.

- 2.2.1. Sterile spray bottles are used to wet swabs for biological evidence collection. A new sterile spray bottle must be obtained from the forensic biology section when a lot of deionized water is depleted or expires.

2.3. Reagents and solutions must be labeled with the lot number and expiration date.

- 2.3.1. The lot number shall include the date of creation and the creator's initials. (Ex. 071923KG)
- 2.3.2. The lot number and expiration date for deionized water will be provided by the Forensic Biology section.
- 2.3.3. The expiration date for 10% bleach solution is the same day that it is created. Lot numbers are not required for 10% bleach solutions. Refer to the Firearms SOPs for details on marking prepared bleach solutions. Bleach solutions may be made with regular tap water.

3. Collection of Biological Swabs

This procedure is used for the collection of possible blood to preserve a representative sample prior to decontamination.

3.1. Equipment, Materials, and Reagents:

- 3.1.1. Sterile cotton swabs
- 3.1.2. Sterile deionized water
- 3.1.3. Swab storage box
- 3.1.4. 10% Bleach solution
- 3.1.5. DNA Away
- 3.1.6. Digital Camera
- 3.1.7. Ruler/Scale
- 3.1.8. Wypall or similar disposable cloth
- 3.1.9. Butcher paper



3.2. Personal Protective Equipment (PPE):

- 3.2.1. Face mask and/or face shield
- 3.2.2. Disposable lab coat
- 3.2.3. Gloves
- 3.2.4. Hairnet

3.3. Procedure:

- 3.3.1. Don PPE listed above.
- 3.3.2. Prepare a solution of fresh 10% bleach **and label appropriately**. A 10% bleach solution can be used by multiple analysts.
- 3.3.3. Decontaminate workspace and tools (camera, ruler, writing utensils, etc.) with 10% bleach solution or DNA Away. DNA Away is best for items that are prone to corrosion (metal).
- 3.3.4. Cover workspace with fresh sheet of butcher paper. A fresh sheet of butcher paper is used for each item being worked, even for items from the same case.
- 3.3.5. Change gloves as needed or use a rag soaked with 10% bleach solution (preferred) or DNA Away to remove biological or contaminating material from gloves. If working multiple items of evidence, gloves shall be changed or cleaned in between each item.
- 3.3.6. Photographs shall be taken of the evidence. **These photographs should be taken prior to the evidence being swabbed.**
 - 3.3.6.1. Photographs should be clear and include the FCN, Item number, **analyst initials, date, and a scale. The scale should be in the same plane as the area of interest.**
 - 3.3.6.2. The camera should be wiped down with a DNA Away-soaked Wypall. Use of bleach on the camera could cause significant damage.
 - 3.3.6.3. For firearms, accessories, and magazines, a minimum of two photographs should be taken, one for each side of the item. More photographs may be required if staining is not adequately documented from the first two photographs.
 - 3.3.6.4. For cartridges and cartridge cases, only one photograph is necessary to document the presence of the stain.
 - 3.3.6.5. Photographs shall be uploaded into the LIMS system and **should be** annotated with the item number, view number, location(s) of stain(s) and swab(s) taken, **if applicable, photograph names should include the item number and view number.** (Ex. Item 001 View 1)
 - 3.3.6.6. **In the instance that evidence is swabbed and/or decontaminated before photographs are captured, photographs shall be taken of the evidence as soon as possible. Areas swabbed shall be annotated in the photograph and a note that the photograph was taken after decontamination shall be included.**
- 3.3.7. Potential blood shall be collected using a sterile swab moistened with sterile deionized water. The lot number and expiration date for the sterile deionized water are recorded in the case record.
 - 3.3.7.1. As the area to be swabbed increases in size, an additional swab may be necessary to adequately collect the evidence. Maximum of two swabs per stain.
 - 3.3.7.2. If a single item has multiple red/brown stains located on different areas/surfaces of the item, separate swabs should be taken from each stain. (Ex. Stain on muzzle and stain on the grip)



- 3.3.8. Swabs are packaged in a swab box. Each swab box is labeled with initials, item number, and FCN and placed inside an envelope. Multiple swabs from the same stain may be packaged in the same swab box. Swabs taken from separate areas of the item should be packaged in separate swab boxes and envelopes. The envelope(s) are sealed and prepared for transfer. The item is appropriately described in LIMS and assigned a sub-item number. **A biohazard sticker should be added to the outer envelope of the swab item.**
- 3.3.9. The analyst who collects the swab(s) shall complete a Trace Collection worksheet in LIMS and associate the collected item(s) with the request.
- 3.3.9.1. **If an analyst is swabbing evidence for another analyst, the swabbing analyst will complete the Trace Collection worksheet and use the textbox to add:**
- **[Collected item] was collected by [Firearms Examiner/NIBIN Technician] [name] on [date].**
- 3.3.9.2. **The swabbing analyst will annotate, and upload associated photographs into the LIMS system.**
- 3.3.9.3. Refer to the Firearms SOP for decontamination procedures following biological evidence collection.

4. Collection of Trace Evidence

This procedure is used for the collection of hair/fibers for preservation to protect from loss. Apparent hairs/fibers are typically collected by staff authorized to collect possible blood. However, any staff member may collect hair/fiber as needed. Apparent hairs/fibers should be documented and collected from firearms' related evidence.

4.1. Equipment, Materials, and Reagents:

- 4.1.1. Disposable Tweezers
- 4.1.2. Glassine Envelope
- 4.1.3. Coin Envelope

4.2. PPE:

- 4.2.1. Gloves
- 4.2.2. Hairnet

4.3. Procedure:

- 4.3.1. Don PPE listed above.
- 4.3.2. Clean disposable tweezers with 10% bleach or DNA Away.
- 4.3.3. Locate and remove trace evidence from the evidence item with disposable tweezers. If tweezers are reused, they must be cleaned with 10% bleach or DNA Away in between uses.
- 4.3.4. Recovered trace shall be placed in a suitable labeled container (e.g., glassine envelope inside coin envelope) to prevent loss or contamination of the sample.
- 4.3.5. Analysts will not make any attempt to identify on their worksheets what was collected (i.e., hair, fiber, etc.) unless they also possess current training/authorization in the disciplines of Trace Evidence.



- 4.3.6. It is permissible for sample descriptions to include adjectives, such as “apparent” or “-like” when describing trace evidence (e.g., hair-like or apparent fibers).
- 4.3.7. The analyst who collects the hair(s)/fiber(s) shall complete a Trace Collection worksheet in LIMS and associate the collected item(s) with the request.
- 4.3.7.1. If an analyst is collecting hair(s)/fiber(s) for another analyst, the collecting analyst will use the textbox in the Trace Collection worksheet to add:
- [Collected item] was collected by [Firearms Examiner/NIBIN Technician] [name] on [date].
- 4.3.7.2. If any photos are taken during the collection process, the collecting analyst will annotate, and upload associated photographs into the LIMS system.

5. Abbreviations

Abbreviations Used:

NVB	No Visible Bloodstains
NTC	No Testing Conducted
R/B	Red/Brown

6. Reporting Guidelines

Reports that include the collection of biological or trace evidence should comply with the Firearms SOP and Quality Manual.

6.1. Specific Wording for Biological/Trace Evidence Collection Section:

- 6.1.1. Hair(s)/fiber(s) Collected:
- Apparent hair(s)/fibers(s) were collected from [evidence item]. These apparent hair(s)/fiber(s) are designated [evidence child item].
- 6.1.2. Biological Evidence swabbed from Item:
- Swab(s) were taken from [evidence item] for possible blood. These swab(s) are designated [evidence child item].
- 6.1.3. Item labeled as biohazard, but no biological evidence noted or collected:
- [collected item] was labeled/described as having blood/bodily fluids present, but no possible blood was observed.
- 6.1.4. Swab(s)/Hair(s)/Fiber(s) collected by another analyst:
- [Collected item] was collected by [Firearms Examiner/NIBIN Technician] [name] on [date].
- 6.1.5. Should analysis and comparison of the swab(s)/hair(s)/fiber(s) be necessary, please contact HFSC by emailing triage@hfsctx.gov.

- 6.2. Instances may occur in which the individual collecting the trace evidence or biological swabs is not the issuer of the report. In these instances, the collector will be listed in the additional information section of the report. The collector information will be included in the notes for each item collected along with the date of collection.