

SEXUAL ASSAULT EVIDENCE COLLECTION KIT EXAMINATION**2.1 PURPOSE**

- 2.1.1: To examine Sexual Assault Evidence Collection Kits for the presence of semen, blood and saliva and trace material when warranted.
- 2.1.2: To collect and preserve samples for further analysis.

2.2 RESPONSIBILITY

Personnel qualified to perform Forensic Biology duties.

2.3 SAFETY

Use appropriate measures for the proper handling of biohazardous materials and chemicals according to GL-2 (Safety Manual).

2.4 DEFINITIONS/ABBREVIATIONS

- A. SAECK: Sexual Assault Evidence Collection Kit (may include 'CT 100' Kit from hospital/OCME, or an out-of-state kit)
- B. OCME: Office of the Chief Medical Examiner
- C. LIMS: Laboratory Information Management System

2.5 PROCEDURE

Refer to FB SOP-01 (Evidence Examination and Sample Collection Guidelines) for instruction on cleaning utensils/laboratory areas, personal protective equipment, evidence retrieval and for additional instruction on evidence examination including but not limited to documentation, collection, preservation, verification, sub-itemization, transfers/storage and LIMS.

2.5.1 General Examination/Testing

- A. The results of examination and testing (if conducted) will be documented on the appropriate SAECK Worksheet: FB QR-05/05a (traditional processing) or FB QR-05b/05c (male screen).
- B. Photocopies of the medical report, the SAECK label and any additional labels/seals (as necessary) will be made and attached to the appropriate SAECK Worksheet in the below suggested order. These photocopies will be labeled with the Lab ID# and examiner's initials.
 1. Any worksheets for additional items examined
 2. Copy of medical report form
 3. Copy of front cover of SAECK
 4. Copies of any additional labels/seals

C. The contents of the SAECK will be inventoried as follows:

1. Items not collected may be crossed out or marked with an 'X' on the SAECK Worksheet. The unused envelopes/bags will be placed back into the SAECK (unlabeled).
2. The used envelopes/bags will be labeled with the Lab ID# and sub-item # according to GL-4 (LIMS) and include the examiner's initials.
3. Any relevant information noted on the envelopes/bags, such as sample origin or reason sample not collected, will be recorded on the appropriate SAECK Worksheet.
4. If the swab carton/package labeling doesn't match the exterior envelope labeling, then additional or separate sub-itemization may be necessary.

D. Items/samples collected/retained/forwarded will be designated on the appropriate SAECK Worksheet and handled according to FB SOP-01 and GL-4.

2.5.2 Known blood sample (Male Screen and Traditional Processing)

- A. Make and retain a known bloodstain according to FB SOP-07 (Whole Blood Sample Preservation).
- B. If a Toxicology request has been made, notify Case Management to obtain the necessary consent form prior to Toxicology testing.
 1. Make a bloodstain from the purple top tube.
 2. Refrigerate the purple top tube, handling it according to FB SOP-01, until notified by Case Management that it can be transferred to the Toxicology Unit.
- C. If a red top tube is also present and a Toxicology request has been made, notify Case Management to obtain the necessary consent form prior to Toxicology testing.
 1. Make a bloodstain from the red top tube leaving the purple top tube for the Toxicology Unit.
 2. Refrigerate the purple top tube, handling it according to FB SOP-01, until notified by Case Management that it can be transferred to the Toxicology Unit.
- D. If it is necessary to retain a stain of a known blood sample submitted directly to the Toxicology Unit, notify the Case Management Unit to obtain the necessary consent form prior to retention.

- E. The blood tube(s) will be returned to the SAECK.
- F. If a known blood sample is not included in the SAECK, the oral swabs may be used as a known for DNA analysis according to 2.5.4.3.K.

2.5.3 Male screen (FB QR-05b/05c)

- A. Male screen testing will be conducted on swabs submitted in SAECKs according to DNA SOP-34 (Male Screen Procedure) and below.
 - 1. Items will be selected for male screen based on case information, submitting agency requests and the contents of the SAECK.
 - 2. Upon request, future body fluid testing may be conducted according to FB SOPs listed in 2.5.4.
 - 3. Male screen testing may be conducted on swabs submitted separately from a SAECK when a body fluid(s) is suspected.
- B. In general, the following samples will be collected from each item consisting of swabs according to the case information.
 - 1. If there is the potential for future body fluid testing then three (3) separate samples will be collected from each item as follows:
 - a. Sample for male screen according to DNA SOP-34
 - b. Sample for DNA according to 2.5.4.3
 - c. Sample for future body fluid testing according to DNA SOP-34 and 2.5.4.3 and 2.5.4.4
 - 2. If there is no potential for body fluid testing (i.e. 'Touch' swabs) then only the samples for male screen and DNA will be collected. Typically, the entire remaining 'Touch' sample is forwarded for DNA according to 2.5.4.3.C.
 - 3. Items in a SAECK typically contain 2-4 swabs. However, if an item contains greater than 4 swabs then the portion removed from each swab will be adjusted to equal the following:
 - a. No more than three (3) total swabs for DNA analysis
 - b. No more than one (1) total swab for future body fluid testing
 - c. Any remaining sample will be retained according to 2.5.4.4.
- C. Items not selected for male screen (i.e. not examined at this time) will be handled according to 2.5.8.

2.5.4 Traditional SAECK Processing (FB QR-05/05a)

When necessary, SAECKs (including but not limited to SAECKs collected from a biological male) will be processed as follows:

- A. Serological tests may be conducted according to FB SOP-08 (Screening Tests for Blood), FB SOP-12 (Screening Test for Semen), FB SOP-13 (Extraction of Samples for Semen), FB SOP-14 (Identification of Spermatozoa), FB SOP-15 (Rapid Immunoassay Test for Semen) and FB SOP-16 (Test for Amylase) and according to the flow chart below (2.5.10).
- B. Touch samples may be handled according to 2.5.4.2.C.1.e.

2.5.4.1 Smears

- A. Label the smear holder with the Lab ID#, sub-item # and examiner's initials.

Hospital prepared smears may or may not be examined prior to the analysis of the corresponding swabs based on the case information.

- B. Label the smear(s) on the frosted edge of the slide in pencil with the Lab ID#, sub-item # and examiner's initials.

If two (2) smear(s) per orifice are present, the second smear may be examined if the case warrants.

- C. Conduct a preliminary, unstained search at 200X of the smear(s) appropriate for the case scenario (vaginal, oral and/or anal), placing the slide on a microscope stage with the frosted edge to the left.

1. Record the microscope(s) used and note red blood cells, if present, on SAECK Worksheet(s) FB QR-05/05a.

A second qualified examiner will observe/confirm the identification and initial/date SAECK Worksheet(s) FB QR-05/05a.

2. If positive (the identification of intact spermatozoa, i.e. the head, neck and tail or the identification of non-intact spermatozoa, i.e. only the head portion), record the results of the sperm search on SAECK Worksheet(s) FB QR-05/05a according to the following rating:

4+ - numerous sperm in every field

3+ - a few sperm in every field

2+ - sperm not in every field but easy to locate

1+ - a few sperm (coordinates are needed to relocate)

1 spermatozoon - head portion or intact (coordinates are needed to relocate)

A second qualified examiner will observe/confirm the identification and date/initial SAECK Worksheet(s) FB QR-05/05a.

- a. If the smear will be stained regardless, confirmation may be conducted after staining according to FB SOP-14.
- b. The rating of the sperm search will not be confirmed.
3. Record coordinates (if needed to relocate the sperm).
4. If no spermatozoa are located after a quick preliminary search, stain the smear from each appropriate orifice according to FB SOP-14.

2.5.4.2 Swabs

- A. Multiple swabs collected from the same orifice/area and submitted as one item will be considered one sample and therefore tested for semen, amylase and blood accordingly. See below for additional information.
- B. If one (1) spermatozoon or more are identified on the stained smear(s), proceed with the corresponding swabs and other relevant swabs as the case/sample warrants (i.e. examination of the genital swabs is not necessary unless there is information of multiple suspects or a consensual partner).
 1. Label the swab packaging with the Lab ID#, sub-item # and examiner's initials. Note the appearance and quantity of swabs on SAECK Worksheet(s) FB QR-05/05a.
 2. It is not necessary to test the corresponding swabs for semen. Conduct other serological testing on each item as warranted according to FB SOP-08 and/or FB SOP-16.
 - a. If all swabs in an item appear reddish-brown stained, it is only necessary to conduct blood screening test(s) on a portion of one (1) swab per item.
 - b. For each item, test a portion of each swab for amylase as one (1) sample.
 3. Prepare the corresponding swabs to be forwarded to the DNA Unit for processing according to 2.5.4.3 and FB SOP-01 or retain according to 2.5.4.4.
 4. For any swabs not tested, note 'NT' (not tested) on SAECK Worksheet(s) FB QR-05/05a.

C. If no spermatozoa are identified on the stained smear(s), examine the corresponding swabs and other relevant swabs as the case/sample warrants. *Note: It is not necessary to conduct Acid Phosphatase testing on vaginal, oral, anal and genital swabs.*

1. Label the swab packaging with the Lab ID#, sub-item # and examiner's initials. Note appearance and quantity of swabs on SAECK Worksheet(s) FB QR-05/05a.
 - a. If warranted, the swabs in each item may be tested for blood according to FB SOP-08 and/or for amylase according to FB SOP-16, prior to extraction for semen.
 - i. If all swabs in an item appear reddish-brown stained, it is only necessary to conduct blood screening test(s) on a portion of one (1) swab per item.
 - ii. For each item, test a portion of each swab for amylase as one (1) sample.
 - b. Extract the corresponding swabs (vaginal, oral and/or anal) according to FB SOP-13.

Combine ~1/4 of each swab per item to **equal a total of one half to one whole swab** according to the number of swabs present. Exceptions:

 - i. If one (1) swab is present it is acceptable to extract ~1/3 of the swab to have ~2/3 remaining for DNA analysis.
 - ii. If greater than four (4) swabs are present then reduce the portion removed from each swab accordingly.
 - c. Genital swabs may be extracted if the assault was vaginal or anal, according to FB SOP-13. This is not necessary if spermatozoa were identified on the vaginal and/or anal smears unless there is information of multiple suspects or a consensual partner. (See 2.5.4.2.C.1.b)
 - d. Dried secretion swabs: Test each location collected, as warranted, based on case information. Prepare and forward swabs according to 2.5.4.3 or retain according to 2.5.4.4.
 - i. Acid phosphatase testing will be conducted for each location, as warranted, according to FB SOP-12. A portion of each swab will be tested as one (1) sample.
 - ii. Each location will be extracted, as warranted, according to FB SOP-13. (See 2.5.4.2.C.1.b)

- iii. For each location, if only amylase testing is warranted, test a portion of each swab as one sample, according to FB SOP-16 (Test for Amylase).
- e. 'Touch' swabs (Kit step): Prepare and forward swabs from each location to DNA based on case information according to 2.5.4.3 or retain according to 2.5.4.4.
 - i. Test for blood or other body fluids, as warranted, according to FB SOPs listed under 2.5.4.
 - ii. If this testing is warranted and male screen is being conducted then an additional sample will be retained for potential future testing. (See 2.5.3)
2. Prepare a smear from each extract when necessary. Stain and search each extract smear according to FB SOP-14 (Identification of Spermatozoa). Christmas Tree stain is typically used for extract smears.
Note: It is not necessary to prepare extract smears from the vaginal, oral and/or anal swabs if the corresponding hospital prepared smear was examined and no spermatozoa were identified.
3. If an extract smear was not prepared or if no spermatozoa were identified on the extract smear, test the extract for the presence of semen according to FB SOP-15 (Rapid Immunoassay Test for Semen).
Note: If sample is heavily stained with fecal-type material or if the presence of breast milk is suspected, do not conduct the ABACard® p30 test. The sample may still be forwarded for DNA analysis at the discretion of the Forensic Biology Lead, Deputy Director or Assistant Director.
4. The remaining extract may be tested for amylase, if not previously conducted on the swabs, according to FB SOP-16 (Test for Amylase).

2.5.4.3 Forwarding samples

- A. Forward the appropriate samples to the DNA Unit according to 2.5.3, DNA SOP-34 (Male Screen Procedure) and/or FB SOP-01.
- B. Prepare swabs being forwarded to DNA by removing the swab tip(s) or portions of swab tip(s) from the sticks and placing into a centrifuge tube.
- C. Do not place more than three (3) swabs into one (1) tube.

- D. For 'Touch' samples (Kit step) or if digital/touch contact or penetration is reported, forward all remaining swabs available, up to four (4) when appropriate.
 - 1. If four (4) swabs are present then separate into two (2) tubes. Note this in LIMS/on the LIMS transfer sheet.
 - 2. If greater than four (4) swabs are present then adjust the portion removed from each swab to equal no more than four (4) total swabs.
- E. Label the tube(s) with the Lab ID#, sub-item # and examiner's initials.
- F. Create the appropriate DNA request(s) in LIMS.
- G. Refer to FB SOP-01 for samples forwarded.
- H. Store in the designated location of Refrigerator Storage.
- I. Document the number of swabs/portion of each swab being retained and forwarded for DNA analysis on SAECK Worksheet(s) FB QR-05/05a.
- J. Up to one (1) single oral swab (not combining a portion of each) may be forwarded as a known for DNA analysis, if it is negative for male screen, negative for semen and/or based on case information.
- K. For any swabs not tested, note 'NT' (not tested) on SAECK Worksheet(s) FB QR-05/05a.

2.5.4.4 Retaining items/samples

- A. Retain any remaining swabs or portions of swabs by placing the tip(s) with ~ 1/2" of the stick into a centrifuge tube or paper fold or by removing the swab tips or portions of swab tip(s) from the stick. Label the tube or paper fold with the Lab ID#, sub-item # and examiner's initials.
- B. Extracts generated during serology testing are considered work product. These extracts are not sub-itemized.
- C. Place smears and swabs, remaining swabs or portions of swabs and other items/samples into a plastic bag.
- D. Refer to FB SOP-01 for verification of items/samples retained.

- E. Heat seal the bag, initial the seal and store in the designated location of Freezer Storage.
- F. For any items not examined, see 2.5.8 for additional information.

2.5.5 Fingernail Samples

- A. If the SAECK is negative for body fluids and there is information that the victim scratched the suspect or there was a struggle then examine according to FB SOP-27 (Fingernail Sample Examination).
- B. If the Fingernail Samples are not examined, then retain with other retained items/samples in the designated location of Freezer Storage as described in 2.5.8.

2.5.6 Trace items

- A. Hair-like fibers noted during examination will be collected, verified and retained according to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).
- B. Unless necessary, SAECK items such as the Pubic Hair Combings, Debris Collection, Examination Paper, and Known Head and Pubic Hair samples (if present) will not be examined.

These items will be retained according to 2.5.8.

- C. For biological screening of hair-like fibers (when necessary) refer to FB SOP-19.

2.5.7 Other evidence (i.e. underpants, tampon, sanitary pad etc.):

- A. The necessity of examining other items submitted in the SAECK will be evaluated on a case-by-case basis. Examination will be conducted according to FB SOP-01.
- B. If not examined:
 - 1. When appropriate, clothing such as underpants may be retained with other retained trace related items/samples at room temperature in 'Trace Storage - retained trace'.
 - 2. Tampons or sanitary pads should be retained with other retained items/samples in the designated location of 'Freezer Storage'.

2.5.8 Items not examined at this time ('NEATT')

- A. For any items not examined, note 'NEATT' on the SAECK Worksheet.
- B. All unexamined items will be sub-itemized and retained in the appropriate storage location.
 - 1. Each item will be sub-itemized according to the SAECK contents and GL-4.

2. These items will be retained in their original packaging as received. If they were not received sealed, they will be sealed and the seal initialed.

The examination paper should be placed into a separate envelope, labeled with the Lab ID#, sub-item # and examiner's initials, sealed and the seal initialed.

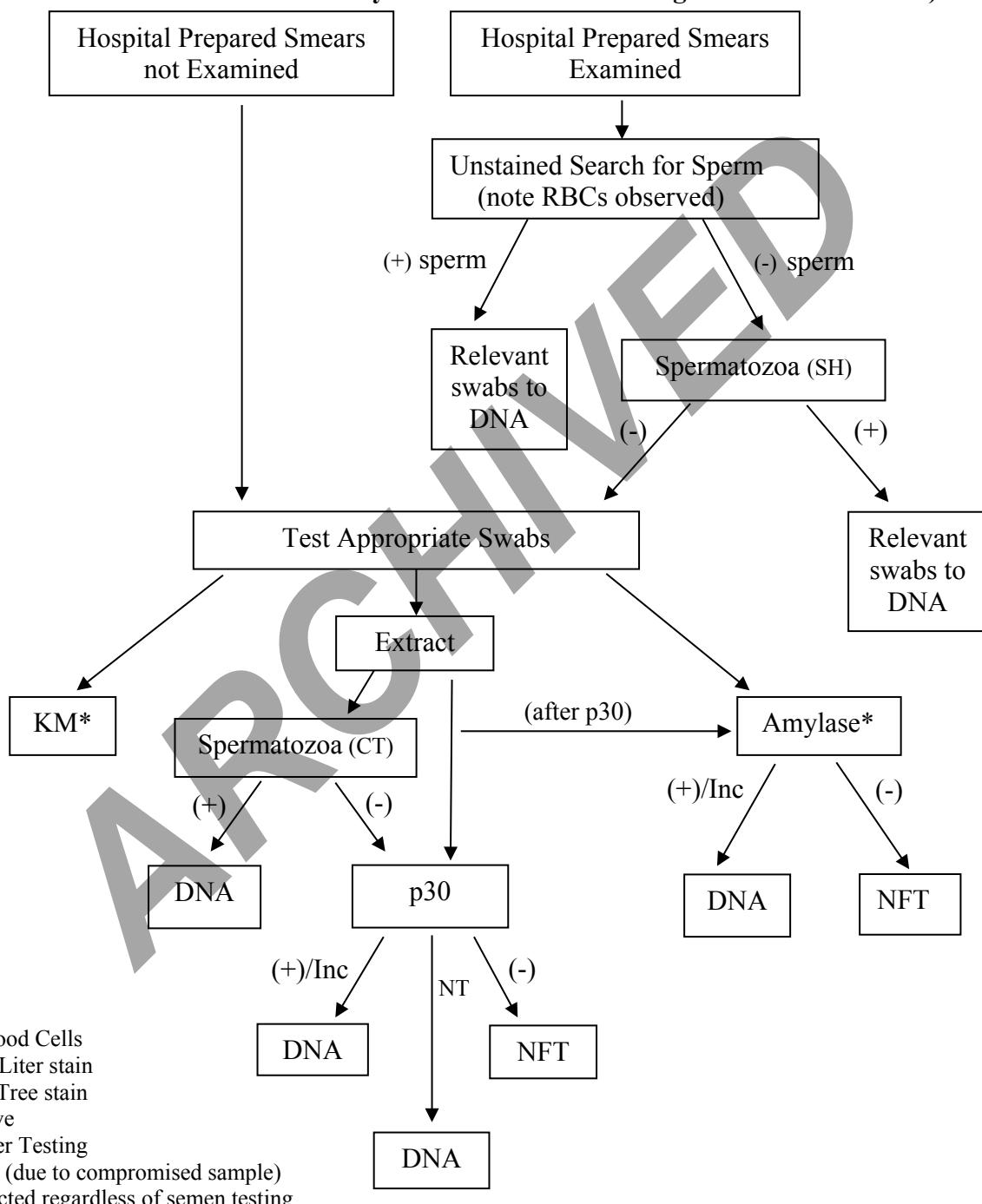
3. Case related items/samples going to the same storage location will be placed together into one (1) bag and/or envelope. This bag and/or envelope will be sealed, the seal initialed and then transferred into the appropriate storage location (i.e. 'Freezer Storage' or at room temperature in 'Trace Storage - retained trace').

2.5.9 Public Act No. 15-207

- A. SAECKs and other evidence related to sexual assault cases that are submitted to the DSS will be handled according to Public Act No. 15-207 (An Act Concerning Evidence in Sexual Assault Cases) and the procedure above.
- B. SAECKs and other evidence related to sexual assault cases will be retained according to Public Act No.15-207 in a designated secure storage location at the appropriate temperature.
- C. The following statement will be used to report out the disposition of SAECKs and other evidence related to sexual assault cases. For additional information see FB SOP-05 (Case Records and Reports):

Submission [] will be retained at the Laboratory per Public Act No. 15-207.

2.5.10 Flow Chart: General Pathways of Traditional SAECK Testing (Steps during analysis are evaluated on a case-by-case basis and according to case information.)



2.6 REFERENCES

- A. GL-2 (Safety Manual)
- B. GL-4 (LIMS)
- C. GL-5 (Ethics)
- D. GL-13 (General Evidence Handling)
- E. Public Act No. 15-207 (An Act Concerning Evidence in Sexual Assault Cases)

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