

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

Forensic Science Examiners (however titled) from the Division of Scientific Services who have been trained in the discipline of Sexual Assault Evidence Collection Kit handling and examination according to FB SOP-26 (Training Manual and Checklist), GL-4 (LIMS) and GL-13 (General Evidence Handling).

2.3 SAFETY

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

2.4 DEFINITIONS

- A. SAECK: Sexual Assault Evidence Collection Kit ('CT 100' Kit from a hospital or OCME)
- B. OCME: Office of the Chief Medical Examiner
- C. LIMS: Laboratory Information Management System

2.5 PROCEDURE

Refer to FB SOP-01 for instruction on cleaning utensils and laboratory areas (1.5.1), personal protective equipment (1.5.2) and evidence retrieval (1.5.3) and for additional instruction on evidence examination (1.5.4) 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 a SAECK Worksheet.
- B. Photocopies of the medical report, the SAECK label and any additional labels/seals (as necessary) will be made and attached to the SAECK Worksheet in the below suggested order. These photocopies will be labeled with the Lab ID# and examiner's initials in the upper right corner.
1. Any worksheets for additional items examined
 2. Copy of medical report form

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3. Copy of front cover of SAECK
 4. Copies of any additional labels/seals
- C. The contents of the kit 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 pertinent information from the envelopes, such as sample origin or reason sample not collected, will be recorded on the SAECK Worksheet.
- D. Items/samples collected/retained/forwarded will be designated on the SAECK Worksheet and handled according to sections 1.5.4.R, 1.5.4.S, 1.5.4.T and 1.5.4.U in FB SOP-01 (Physical Evidence Examination) and GL-4 (LIMS).

2.5.2 Known blood sample

- 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 until notified by Case Management that it can be transferred to the Toxicology Unit according to section 1.5.4.S in FB SOP-01 (Physical Evidence Examination).
- 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 until notified by Case Management that it can be transferred to the Toxicology Unit according to section 1.5.4.S in FB SOP-01 (Physical Evidence Examination).

- 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:
 - 1. The oral swabs may be used as a known for DNA analysis according to step 2.5.4.3.K below.
 - 2. A known sample (i.e. blood or buccal) from the victim may be requested for DNA analysis.

2.5.3 Male screen

- A. Male screen testing will be conducted on swabs submitted in SAECKs according to DNA SOP-34 (Male Screen Procedure). Future body fluid testing may be conducted on these samples upon request. Items will be selected for male screen based on case information, submitting agency requests and contents of the SAECK.
- B. Samples will be collected from the selected items and handled according to sections 2.5.4.3 and 2.5.4.4 below.
- C. Items not selected (i.e. NEATT) will be handled according to section 2.5.8 below.

2.5.4 Body Fluid Testing

When necessary, serological tests may be conducted according to the applicable 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 flow charts located in FB SOP-01 and below.

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 the SAECK Worksheet.

A second qualified examiner will observe and confirm the identification and initial the appropriate QRW.

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 the SAECK Worksheet 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 and confirm the identification and initial the appropriate QRW. If the smear will be stained regardless, confirmation may be conducted after staining according to FB SOP-14 (Identification of Spermatozoa).

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 (Identification of Spermatozoa).

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 the SAECK Worksheet.
 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 (Screening Tests for Blood) and/or FB SOP-16 (Test for Amylase).
 - a. If all swabs in an item appear reddish-brown stained, it is only necessary to test 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 section 2.5.4.3 below and FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis) or retain according to section 2.5.4.4 below.
 4. For any swabs not tested, note 'NT' (not tested) on the SAECK Worksheet.
- 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 the SAECK Worksheet.
 - a. If warranted, the swabs in each item may be tested for blood according to FB SOP-08 (Screening Tests for Blood) and/or for amylase according to FB SOP-16 (Test for Amylase), prior to extraction for semen.
 - i. If all swabs in an item appear reddish-brown stained, it is only necessary to test a portion of one (1) swab per item.
 - ii. For each item, test a portion of each swab for amylase as one sample.
 - b. Extract the corresponding swabs (vaginal, oral and anal) according to FB SOP-13 (Extraction of Samples for Semen).
 - i. For each item, extract a portion of each swab as one sample, to equal a total of one half to one whole swab, examples:
 - If two (2) swabs are present, combine $\sim 1/4$ of each swab = $\sim 1/2$ swab.
 - If four (4) swabs are present, combine $\sim 1/4$ of each swab = ~ 1 swab.
 - If one (1) swab is present it is acceptable to extract $\sim 1/3$ of the swab to have $\sim 2/3$ remaining for DNA analysis.
 - c. If the assault was vaginal or anal, the genital swabs may be extracted

- according to FB SOP-13 (Extraction of Samples for Semen). 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.
- i. Extract a portion of each swab as one sample, to equal a total of one half to one whole swab, examples:
 - If two (2) swabs are present, combine $\sim 1/4$ of each swab = $\sim 1/2$ swab.
 - If four (4) swabs are present, combine $\sim 1/4$ of each swab = ~ 1 swab.
 - If one (1) swab is present it is acceptable to extract $\sim 1/3$ of the swab to have $\sim 2/3$ remaining for DNA analysis.
 - d. Test each location of the dried secretion swabs, as warranted, for acid phosphatase according to FB SOP-12 (Screening Test for Semen) and extract as necessary according to FB SOP-13 (Extraction of Samples for Semen).
 - i. For each location, test a portion of each swab for acid phosphatase as one sample.
 - ii. For each location, extract a portion of each swab as one sample, to equal a total of one half to one whole swab, see examples above.
 - iii. If only amylase testing is warranted, for each location, test a portion of each swab as one sample, according to FB SOP-16 (Test for Amylase).
 - e. Based on case information, prepare 'Touch' swabs and forward to DNA according to section 2.5.4.3 below or retain according to section 2.5.4.4 below.

Test for blood or other body fluids, if warranted, according to FB SOPs above.
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 for processing according to FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).
- B. Prepare swabs being forwarded to DNA by removing the swab tip(s) from the sticks and placing into a centrifuge tube.
- C. If digital contact/penetration is reported, when appropriate, forward all remaining swabs available up to four (4).
- D. Do not place more than three (3) swabs in one (1) tube, separate into two (2) tubes if necessary. Note this in LIMS/on the LIMS transfer sheet.
- E. Label the tube(s) with the Lab ID#, sub-item # and examiner's initials.
- F. Place the tubes in a plastic bag labeled with the Lab ID#, heat seal and initial the seal.
- G. Create the appropriate DNA request(s) in LIMS.
- H. Refer to section 1.5.4.U in FB SOP-01 (Physical Evidence Examination) for verification of samples forwarded.
- I. Store in the designated location of Freezer Storage.
- J. Document the number of swabs/portion of each swab being retained and forwarded for DNA analysis on the SAECK Worksheet.
- K. A total of one (1) oral swab (i.e. a portion of each swab as one (1) sample) may be forwarded as a known for DNA analysis, if it has been determined to be negative for semen or based on case information.
- L. For any swabs not tested, note 'NT' (not tested) on the SAECK Worksheet.

2.5.4.4 Retaining items/samples

- A. Retain any remaining swabs by placing the tip(s) with ~ ½" of the stick into a

centrifuge tube or paper fold or by removing the swab tips from the stick. Label the tube or paper fold with the Lab ID#, sub-item # and examiner's initials.

- B. Semen extracts will be retained and preserved for future testing as follows:
1. Remove the extracted substrate (i.e. cutting/portions of swabs) from the basket and return to the extract tube. Discard the basket.
 2. Seal the tube(s) with parafilm and place in a small plastic bag. This bag may be heat sealed and the seal initialed.
 3. Extracts retained will be uniquely identified with the Lab ID # and designated sub-item # utilizing LIMS for secure tracking.
 4. If no extract remains, the extracted substrate (i.e. cuttings/portions of swabs) will be discarded.
 5. The disposition of retained extracts will be reported out. See FB SOP-05 (Case Records and Reports).
- C. Place smears and swabs, remaining swabs, extract tubes/bag and other items/samples into a plastic bag.
- D. Refer to section 1.5.4.U in FB SOP-01 (Physical Evidence Examination) 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 section 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 section 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 Combing, Debris Collection, Examination Paper, and Known Head and Pubic Hair samples (if present) will not be examined.

These items will be retained according to section 2.5.8 (NEATT).

- C. For biological screening of hair-like fibers (when necessary) please refer to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).

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 (Physical Evidence Examination).
- B. If not examined, retain according to section 2.5.8:
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.
- C. The necessity to retain the examined evidence will be assessed on a case-by-case basis.

2.5.8 Items 'NEATT'

- A. For any items not examined, note 'NEATT' (not examined at this time) on the SAECK Worksheet.
- B. All unexamined items remaining in their original envelope/bag will be sub-itemized under one number as one group and retained together in the appropriate storage location.
1. This group of items will be sub-itemized according to the SAECK contents and GL-4 (LIMS). For example, if there are 10 items in the kit (3 examined and 7 NEATT) this group may be sub-itemized last as: #1-4 Seven (7) sealed envelopes/bags/other.
 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.

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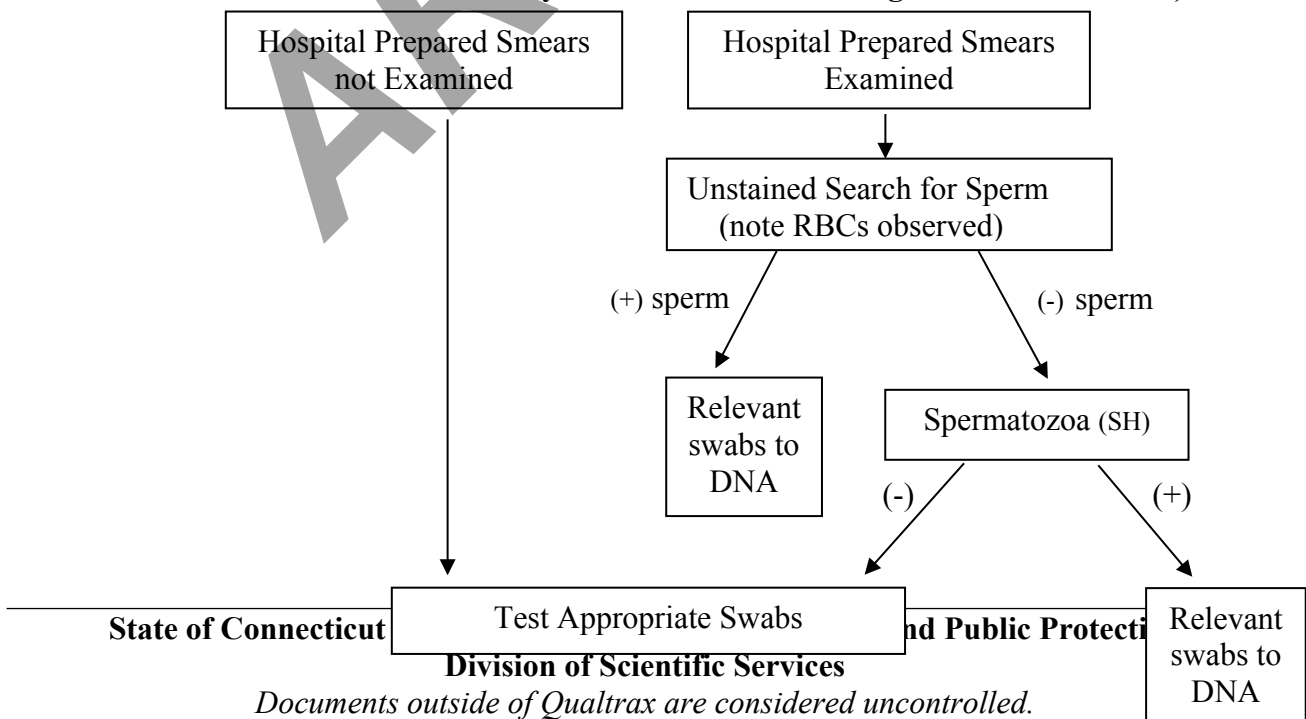
- 3. They will be placed together into one (1) bag or envelope. This bag or envelope will be sealed, the seal initialed and then transferred into the appropriate storage location along with other case related items/samples:
 - a. If any items in the group require freezer storage, then the entire group will be stored in the designated location of Freezer Storage.
 - b. If no items in the group require freezer storage (i.e. trace/underpants) then the entire group will be stored at room temperature in Trace Storage-retained trace.

2.5.9 Public Act No. 15-207

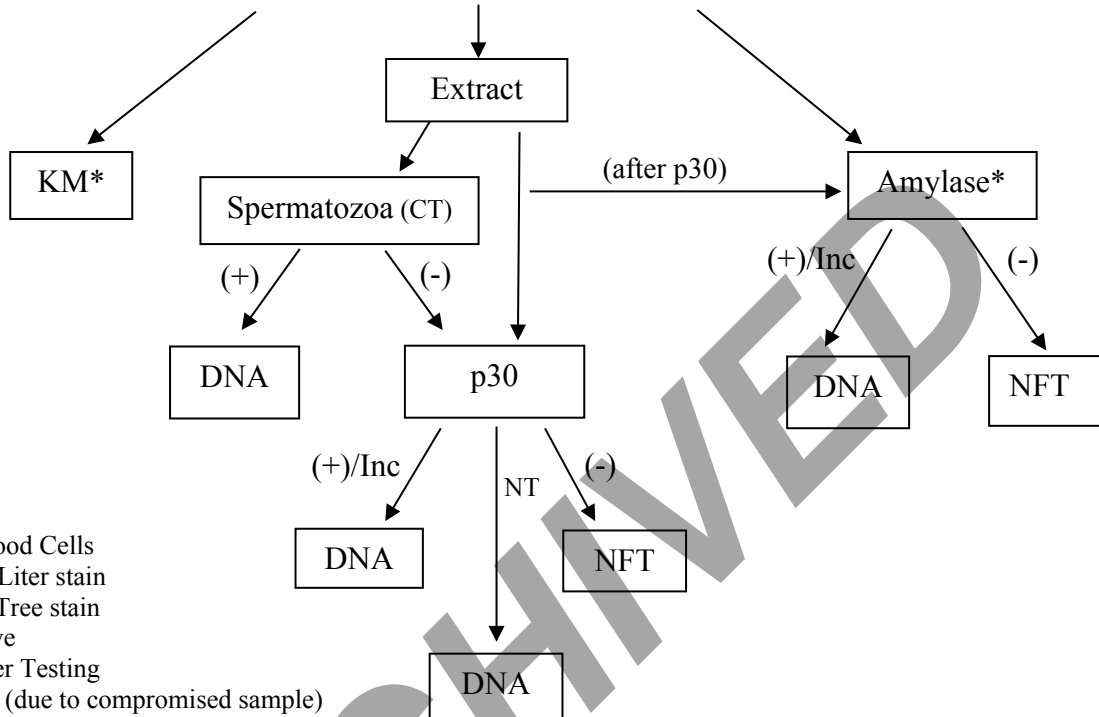
- A. SAECKs and other evidence related to sexual assault cases that are submitted to the DSS will be handled according to Public Act No. 15-207 (An Act Concerning Evidence in Sexual Assault Cases) and the procedure above.
- B. SAECKs and other evidence related to sexual assault cases will be retained 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 SAECK Testing (steps during analysis are evaluated on a case-by-case basis and according to case information)



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RBC's=Red Blood Cells
 SH=Sperm Hy-Liter stain
 CT=Christmas Tree stain
 Inc=Inconclusive
 NFT=No Further Testing
 NT=Not Tested (due to compromised sample)
 *May be conducted regardless of semen testing

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