

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/JusticeTrax) 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
- B. LIMS: Laboratory Information Management System
- C. PPE: Personal Protective Equipment

2.5 PROCEDURE

Sexual Assault Evidence Collection Kits will be examined and serological tests will be performed based on the examiner's knowledge, training and experience according to the submitting agency requests, case information and the condition of the evidence.

2.5.1: Cleaning Utensils and Laboratory Areas

- A. Clean utensils and bench top supplies during use as needed and between each kit. The appropriate disinfecting solution is described in FB SOP-21 (General Chemical and Reagent QC) and is followed by ethanol to ensure aseptic conditions. dH₂O may be used between the disinfecting solution and ethanol.
- B. Containers used to clean/soak utensils in disinfecting solution, dH₂O and ethanol, are replaced weekly. The disinfecting solution, dH₂O and ethanol are replaced daily or more often, as necessary.
- C. Clean camera and other electronic equipment during use as needed and between each kit to ensure aseptic conditions. The appropriate disinfecting solution is described in FB SOP-21. Avoid the use of ethanol.

- D. Clean bench top using the appropriate disinfecting solution described in FB SOP-21 and replace examination paper between each kit or more often, as necessary, to ensure aseptic conditions.

2.5.2: Personal Protective Equipment

- A. Examiners must wear lab coats, masks, gloves, disposable sleeves and hair nets while examining evidence.
- B. When conducting microscope work for Sperm Hy-Liter the examiner must wear a lab coat and gloves.
- C. Examiners will wear protective eyewear when it is indicated to do so.

2.5.3: Evidence Retrieval

- A. Generally, examiners will be notified of case assignments by a Forensic Biology Lead, Case Management or the LIMS computer system according to GL-4 (LIMS/Justice Trax).
- B. Examiners will retrieve SAECKs from a secure storage location or from other examiners through a secure transfer within the LIMS computer system according to GL-4 (LIMS/Justice Trax).

2.5.4: Evidence Examination

All examinations are conducted macroscopically. Other types of examinations (i.e. microscopical or stereoscopical) will be recorded, along with the microscope(s) used, on the SAECK Quality Record Worksheet (FBQR-05) located in Appendix 1. For additional information, refer to section 2.6 (Work Instructions and Flow Chart for SAECK Examination).

- A. Initial and document the package and inventory the contents according to the SAECK Quality Record Worksheet.
- B. Record information on the SAECK Worksheet according to section 1.5.4.C.1-2 in FB SOP-01 (Physical Evidence Examination).
- C. Attach photocopies of the medical report form and label information. Attach additional Quality Record worksheets and photographs/sketches if necessary (i.e. step I below) according to section 1.5.4.C.3-6 in FB SOP-01 (Physical Evidence Examination).

- D. All reagents that are used during examination are recorded on the SAECK Worksheet and/or the General Reagent Sheet (FBQR-09) located in Appendix 1. An electronic reference will be maintained for tracking these reagents.
- E. Inventory and label the items in the kit according to the SAECK Worksheet. Include Lab ID #, item #/letter and initials on each envelope/package.
- F. Item(s) that are received wet should be removed from the package and air dried (in a hood whenever possible). Once dry, the item may be examined or re-packaged until future examination.
- G. Preserve a sample of the known blood for further analysis according to FB SOP-07 (Whole Blood Sample Preservation).
- H. Perform serological tests according to the applicable FB SOP-08 through FB SOP-18 (Forensic Biology Serological Tests) and flow charts located in FB SOP-01 and section 2.6 (Work Instructions and Flow Chart for SAECK Examination) below, based on the submitting agency requests, case information, type of evidence/samples(s) and number, size and quantity of sample(s).
- For rush cases as requested, samples may be forwarded for DNA analysis prior to serological testing. FB will simultaneously conduct serological testing on a remaining portion of the sample for the presence of body fluids.
- I. Other physical evidence (i.e. underpants, tampon, sanitary pad, etc.) submitted in the SAECK may be examined according to FB SOP-01 (Physical Evidence Examination) and section 2.6.7.
- J. Sample selection is conducted considering the substrate and the type/amount of sample present. Sample selection details will be included on the SAECK Quality Record Worksheet. These details will not be included with the results stated in the report.
- K. Collect samples from items that semen, blood and/or saliva have been identified or there is information of digital contact. Collect touch/wearer samples on additional items submitted in the SAECK as necessary.

- L. For biological screening of hair-like fibers (when necessary) please refer to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination). See sections 2.6.2 and 2.6.5 for additional information.
- M. Designate the items/samples retained/collected, according to the SAECK Worksheet. If necessary, use the letter 'S' for the Forensic Biology Unit with the corresponding sample number (see examples listed under section 2.5.5).

Note: All unexamined items remaining in their original envelope/bag will be sub-itemized under one (1) number and retained together in the appropriate storage location (see section 2.6.8 for additional information).

- N. Examiners will account for all samples collected prior to returning the envelope(s)/package(s) of examined items back into the SAECK and prior to discarding the bench paper used during examination. Document that the samples have been accounted for on the SAECK Worksheet.

Once accounted for, these samples will immediately be placed into a secure location. This may include but is not limited to, being placed under the hood for drying or being transferred into the appropriate storage location once verified. See verification step Q below.

- O. Return the envelope(s)/package(s) of examined items back into the SAECK, re-seal and initial the seals. Store SAECK in a designated storage area.
- P. Create samples collected from the items in the LIMS computer system according to GL-4 (LIMS/Justice Trax) using the designated sub-items.
- Q. All samples collected and retained will be verified for correct labeling and contents by a second analyst (however titled) prior to its final disposition.
1. In LIMS, the sub-item will be created and transferred to the appropriate storage location(s). The transfer sheet(s) will be printed.
 2. The second analyst will review the samples collected/retained and verify that the labeling and contents agrees with the LIMS information.
 - a. If in agreement, the second analyst will initial and date the LIMS transfer sheet.
 - b. If the second analyst discovers a simple discrepancy in documentation, then the appropriate corrections will be performed.

- c. If the second analyst discovers a discrepancy greater than the above, then the Unit lead will be informed, the root cause will be determined and corrected. Further appropriate action may be taken by the Unit Lead.
3. The initialed and dated transfer sheet (or copy) will be retained in the appropriate case jacket(s).
4. Trace material being retained will be verified according to section 19.7 (Verification and Retention of Trace Samples) in FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).
- R. Forward the appropriate samples to the DNA Unit according to section 2.6 (Work Instructions and Flow Chart for SAECK Examination) below and FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).
- S. Store samples in designated, secure and temperature appropriate areas or transfer to other Units of the Laboratory using the LIMS computer system according to GL-4 (LIMS/Justice Trax). Print the LIMS transfer sheets for verification purposes (see 2.5.4.Q above).
- T. If forwarding sample(s) to DNA, create the appropriate DNA request(s) using the LIMS computer system according to GL-4 (LIMS/Justice Trax).
- U. A secure and password protected LIMS computer system is used in accordance with GL-5 (Ethics).
- V. The transfer of samples from laboratory cases which were opened prior to 1998 (which are not in LIMS) may be recorded on the Evidence Transfer Sheet (FBQR-11) located in Appendix 1 when necessary.

2.5.5: Examples of kit evidence/sample itemization in LIMS

- A. Kit samples are itemized according to the SAECK Worksheet and may be retained as itemized, for example:
 1. #1A (known blood sample)
 2. #1B (vaginal smear)
 3. #1C (vaginal swabs), retained as itemized
 4. #1L (known pubic hair sample), retained as itemized
 5. #1N-L (fingernail clippings-left hand), retained as itemized
 6. #1R (underpants)

7. #1-1 Five (5) sealed envelopes/bags/other
- B. Samples retained from the kit items are sequentially itemized, for example:
1. #1A-S1 for a stain made from the known blood sample
 2. #1C-S1 for trace removed from the vaginal swabs
 3. #1R-S1 for a cutting from the crotch area of the underpants
 4. #1R-S2 for trace removed from the underpants
- C. Any portion of a sample being forwarded for DNA analysis while the remaining portion is being retained in Forensic Biology should be itemized as follows, for example:
1. #1C* for the portion of vaginal swabs being forwarded to DNA
#1C for the remaining vaginal swabs retained in Forensic Biology
 2. #1R-S1* for the portion of a cutting from the crotch area being forwarded to DNA
#1R-S1 for the remaining cutting from the crotch area retained in Forensic Biology

2.6 WORK INSTRUCTIONS and FLOW CHART FOR SAECK EXAMINATION

- A. Transfer the SAECK into your name in LIMS according to GL-4 (LIMS/Justice Trax).
- B. Obtain a SAECK Worksheet to record results of examination and analysis.
- C. Make a copy of the medical form, the front cover of the kit and any additional labels/seals as needed. Label these photocopies with the Lab ID# and examiner's initials in the upper right corner.
- D. Inventory:
 1. Inventory the contents of the kit and cross out or use an 'X' by any items that were not collected on the SAECK Worksheet. Place the unused envelopes and bags back in the SAECK (unlabeled).
 2. Label the used envelopes/bags with the Lab ID#, item #/appropriate letter (according to the SAECK Worksheet) and examiner's initials.
 3. Record any pertinent information from the envelopes, such as sample origin or reason sample not collected, on the SAECK Worksheet.

2.6.1 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.
- 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.
- 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 SEACK.
- 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 section 2.6.4.C.5.i below.
 2. If a saliva sample is present, it may be used as a known for DNA analysis. Retain the inner envelope of the known saliva sample. Label this envelope with the Lab ID#, item #/letter and examiner's initials.
 3. A known sample (i.e. blood or buccal) from the victim may be requested for DNA analysis.

2.6.2 Hair-like fibers noted during examination

Collect any hair-like fibers noted during examination, before proceeding, according to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination). See section 2.6.5 below for additional information.

Note: Once the SAECK examination has been completed, the hair-like fibers will be retained and verified according to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).

2.6.3 Smears

- A. Label the smear holder with the Lab ID#, item #/letter and examiner's initials.
1. Hospital prepared smears may or may not be examined prior to the analysis of the corresponding swabs based on the case information.
 2. Retain smear(s) according to section 2.6.4.C.7 below.
- B. Label the smear(s) on the frosted edge of the slide in pencil with the Lab ID#, item #/letter 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.
 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)
 3. Record coordinates (if needed to relocate the sperm).
 4. If no spermatozoa are located after a quick preliminary search, stain a smear from each appropriate orifice according to FB SOP-14 (Identification of Spermatozoa).

2.6.4 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#, item #/letter 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 FB SOP-16 (Test for Amylase).
 - a. If the 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 sample.
 3. Prepare the corresponding swabs to be forwarded to the DNA Unit for processing according to section 2.6.4.C.6 below and FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis) or retain according to section 2.6.4.C.7 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#, item #/letter 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 the 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).

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).
5. Examiners will account for all samples collected prior to returning the envelope(s) or package(s) of examined items back into the SAECK and prior to discarding the bench paper used during examination. Document that the samples have been accounted for on the SAECK Worksheet.

Once accounted for, these samples will immediately be placed into a secure location. This may include but is not limited to, being placed under the hood for drying or being transferred into the appropriate storage location once verified. See verification steps 6.f or 7.d below.

6. Forward the appropriate samples to the DNA Unit for processing according to FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).
 - a. Prepare swabs being forwarded to DNA by removing the swab tip(s) from the sticks and placing into a centrifuge tube.
 - b. If digital contact/penetration is reported, when appropriate, forward all remaining swabs available up to four (4).
 - c. 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 sheet.
 - d. Label the tube(s) with the Lab ID#, item #/letter and examiner's initials.
 - e. Place the tubes in a plastic bag with the Lab ID#, heat seal and initial the seal.
 - f. All samples collected and retained will be verified for correct labeling and contents by a second analyst (however titled) prior to its final disposition.
 1. In LIMS, the sub-item will be created and transferred to the appropriate storage location(s). The transfer sheet(s) will be printed.
 2. The second analyst will review the samples collected/retained and verify that the labeling and contents agrees with the LIMS information.

- i. If in agreement, the second analyst will initial and date the LIMS transfer sheet.
 - ii. If the second analyst discovers a simple discrepancy in documentation, then the appropriate corrections will be performed.
 - iii. If the second analyst discovers a discrepancy greater than the above, then the Unit lead will be informed, the root cause will be determined and corrected. Further appropriate action may be taken by the Unit Lead.
 3. The initialed and dated transfer sheet (or copy) will be retained in the appropriate case jacket(s).
 - g. Store in the designated location of Freezer Storage.
 - h. Document the number of swabs/portion of each swab being retained and forwarded for DNA analysis on the SAECK Worksheet.
 - i. One (1) oral swab may be forwarded as a known for DNA analysis, if it has been determined to be negative for semen or based on case information.
 - j. For any swabs not tested, note 'NT' (not tested) on the SAECK Worksheet.
7. 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#, item #/letter and examiner's initials.
 - b. Retain the extracts by removing the extracted portions of swabs from the basket, returning them to the extract tube and sealing the tube with parafilm. Place the extract tubes in a small plastic bag. This bag may be heat sealed and the seal initialed.

Note: Extracted samples (remaining extract and/or extracted substrate) will be considered work product and therefore not tracked through LIMS.
 - c. Place smears and swabs, remaining swabs, extract tubes/bag and other items/samples into a plastic bag.

- d. All samples collected and retained will be verified for correct labeling and contents by a second analyst (however titled) prior to its final disposition.
 1. In LIMS, the sub-item will be created and transferred to the appropriate storage location(s). The transfer sheet(s) will be printed.
 2. The second analyst will review the samples collected/retained and verify that the labeling and contents agrees with the LIMS information.
 - i. If in agreement, the second analyst will initial and date the LIMS transfer sheet.
 - ii. If the second analyst discovers a simple discrepancy in documentation, then the appropriate corrections will be performed.
 - iii. If the second analyst discovers a discrepancy greater than the above, then the Unit lead will be informed, the root cause will be determined and corrected. Further appropriate action may be taken by the Unit Lead.
 3. The initialed and dated transfer sheet (or copy) will be retained in the appropriate case jacket(s).
- 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 2.6.8 for additional information.

2.6.5. Trace items and known hair samples (if present)

- A. Unless necessary, the Pubic Hair Combing, Debris Collection, Examination Paper, and Known Head and Pubic Hair samples (if present) will not be examined.
 1. Retain these items according to section 2.6.8.
 2. Before retaining, the examination sheet should be placed into a separate envelope, labeled with the Lab ID#, item #/letter and examiner's initials, sealed and the seal initialed.
- B. If necessary, these items may be examined, and if applicable, samples collected, verified and retained according to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).

2.6.6. 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 2.6.8.

2.6.7. 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 2.6.8:
 - 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.

2.6.8. '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 (1) number and retained together in the appropriate storage location.
 - 1. This group of items will be sub-itemized as follows (for example):
 - a. If the SAECK is submission #1, then this group of items will be sub-itemized as item #1-1.
 - b. If this group consists of five (5) items, then create in LIMS as:
#1-1 Five (5) 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.
 - 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.

2.6.9. Attach the photocopies to the worksheet in the following suggested order:

- A. Any worksheets for additional items examined
- B. Copy of medical report form
- C. Copy of front cover of SAECK
- D. Copies of any additional labels/seals

2.6.10. LIMS

- A. Create sub-items/samples retained according to GL-4 (LIMS/Justice Trax) and section 2.5.5.
Note: It is not necessary to record in LIMS the number of swab(s) retained or forwarded.
- B. Transfer the retained sub-items/samples to the appropriate LIMS storage locations.
- C. Retain the SAECK according to Public Act No.15-207 (section 2.6.12) in a designated secure storage location at room temperature.

2.6.11. Reports

- A. Write a report to the submitting agency summarizing the results of the examination according to FB SOP-05 (Case Records and Reports).
- B. Positive SAECKs:
Request known samples from the victim and suspect if not submitted.
- C. Negative SAECKs:
More evidence may need to be examined if the SAECK is negative. The submitting agency may be contacted to see what other evidence may be relevant/significant and is available for testing.
- D. Return the finalized report to the Evidence Receiving Unit.

2.6.12. 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.

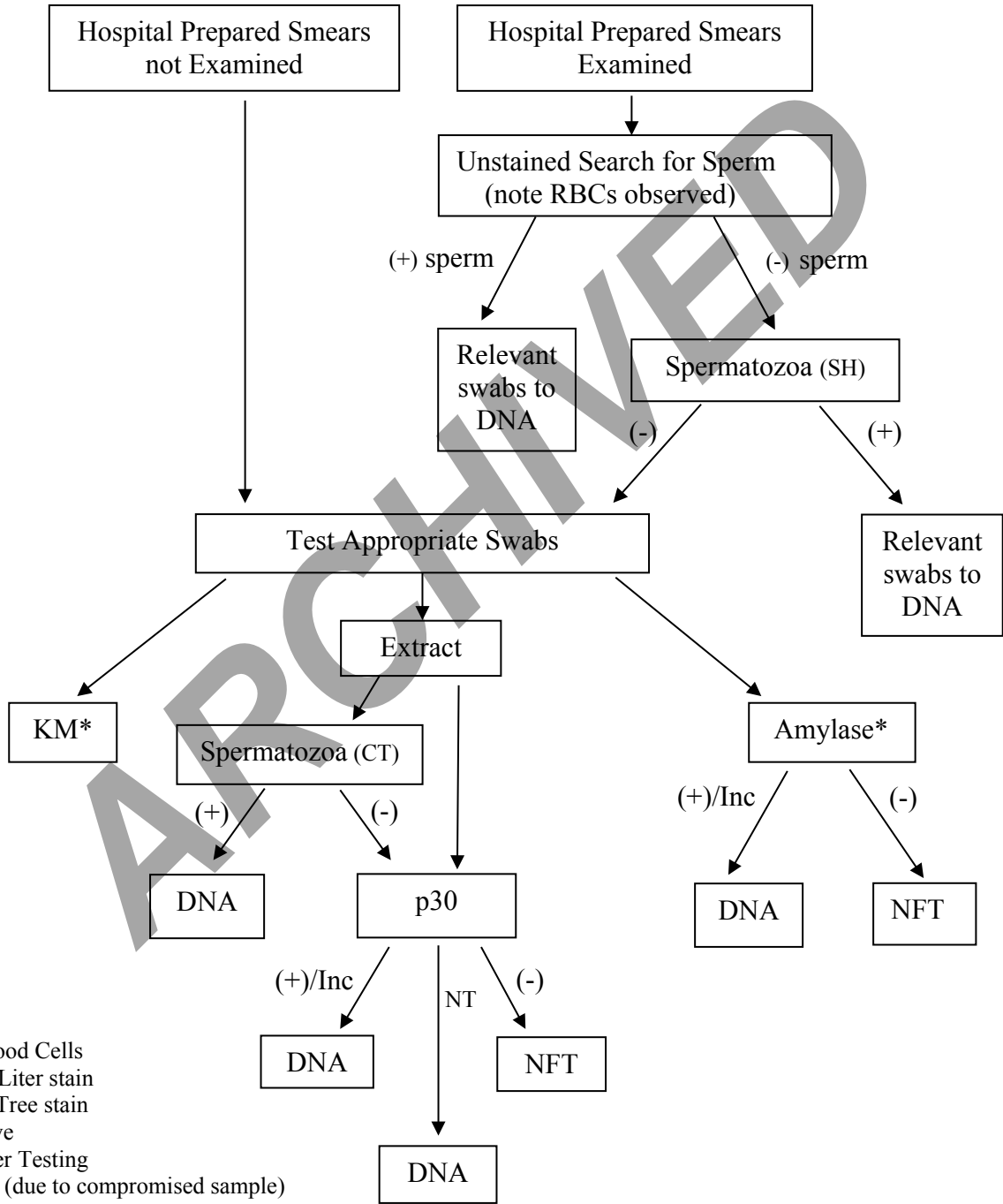
- B. The following statement will be used to report out the disposition of SAECKs and other evidence related to sexual assault cases:

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

See 2.6.13 Flow Chart below.

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



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

2.7 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)

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