



INDIANA STATE POLICE LABORATORY DIVISION

PHYSICAL EVIDENCE

BULLETIN

EVIDENCE COLLECTION FOR DNA ANALYSIS

DNA analysis of biological evidence has the potential of eliminating possible sources of a sample or, in the case of inclusions, indicating the likelihood the DNA profile originated from a person of interest rather than an unknown, unrelated individual. The ability to successfully perform DNA analysis will often depend on how well the specimens are collected and preserved.

Potentially, DNA analysis can be performed on any human material containing cellular nuclei. The following are examples of evidence that should be considered for DNA analysis:

- Blood and bloodstains
- Semen and semen stains
- Epithelial cells (e.g. from cigarettes, bottles, cans, etc.)
- Skin and other tissues
- Bones
- Organs
- Hair

Due to extremely low success rates, the Indiana State Police (ISP) Laboratory Division will not examine cartridges, cartridge cases, or swabs of these items for the presence of DNA except in extenuating circumstances with the approval of the Laboratory Manager or a Biology Unit Supervisor.

I. STANDARDS FOR COMPARISON

The submission of DNA standards from all individuals believed to be involved in a case can significantly increase the speed and efficiency of DNA analysis. Elimination standards from individuals whose DNA may be reasonably found on an item should be submitted. Cases that are not eligible for entry into the DNA Database and in which there are no suspect standards nor elimination standards will not be accepted. Items submitted as standards shall be clearly labeled as standards on the Request for Laboratory Examination Form and on the item of evidence.

A. DNA standards from living individuals

- 1) Oral/buccal swabs (swabbings from inside the cheek) shall be air dried and sealed in an envelope.
- 2) Note on the Request for Laboratory Examination Form if the person has received a blood transfusion within the last 120 days.
- 3) Note on the Request for Laboratory Examination Form if the person has ever received a bone marrow transplant.
- 4) The presence of a suspect's convicted offender or arrestee sample in the Combined DNA Index System (CODIS) does not replace the requirement for a new evidentiary suspect standard for comparison to crime scene evidence. Matches generated by CODIS database searches are meant to provide investigative leads and probable cause information. An evidentiary standard will still be requested from the individual for criminal prosecution.

B. DNA standards from deceased individuals

- 1) Collect venous blood on a stain card and air dry completely before packaging in a paper envelope.
- 2) If a stain card is not available, one sample of venous blood, at least 5 milliliters (ml), can be collected in a purple top vacutainer (EDTA tube).
- 3) When venous blood is not obtainable, blood from the heart or major internal blood vessel or organ should be collected on an approved stain card or in a purple top vacutainer.
- 4) Liquid blood samples should be refrigerated (not frozen) until submitted to the ISP Laboratory Division.
- 5) If a blood sample is unobtainable, hair, bone, and/or tissue sample should be collected.
 - a. A hair sample should consist of approximately 30 hairs. Hairs should be pulled out.
 - b. A bone sample, at least the size of a die (about 1/2 inch cubed), should be collected from any bone that is relatively dry, without pooled blood (for example a rib or leg bone).
 - c. A tissue sample, at least the size of a quarter, should be collected from any muscle that is free of pooled blood.
 - d. Hair, bone, and tissue samples should be packaged in a clean container without any preservatives and frozen until submitted to the ISP Laboratory Division.
- 6) Alternately if a blood sample is unobtainable, an individual's clothing and/or blood stained evidence immediately below the body may be used as a secondary standard.
- 7) Prior to submission, check with ISP Laboratory Division personnel for appropriate secondary standards.

NOTE: If blood alcohol or toxicology analysis will be conducted, an additional sample should be obtained in a blood alcohol vacutainer provided by the Indiana State Department of Toxicology. These

vacutainers contain the preservatives sodium fluoride and sodium heparin.

II. CRIME SCENE EVIDENCE HANDLING

If needed, please contact your local ISP District for a Crime Scene Investigator for assistance with crime scene processing.

- A. Wear disposable latex gloves (or equivalent) while processing or collecting any evidence that may be used for DNA analysis. Gloves should be changed regularly and/or between items collected.
- B. Photograph the evidence and its relative position at the crime scene before it is touched, moved, or collected.
- C. Sketch the crime scene to establish spatial relationships.
- D. Collect physical evidence for DNA analysis.
 - 1) Evidence with wet body fluid stains should be completely air dried, not in direct sunlight.
 - a. After dried, package the articles in separate paper containers.
 - b. Do not package in plastic bags.
 - 2) For objects stained with body fluids that are too large to be removed from the crime scene stains should be collected using one of the following techniques:
 - a. Scrape the stain onto a clean sheet of paper using a clean scalpel. Carefully fold the paper and package in a paper envelope.
 - b. Moisten one or more cotton tipped applicators with water (distilled water should be used) and collect the stain. Air dry and package in paper.
 - c. Place a fingerprint lifter over the dried stain, press, and lift. Replace the backing and package in paper.
 - 3) Phenolphthalein reagent can interfere with the DNA analysis process.
 - a. Phenolphthalein testing should only be performed when a sufficiently large stain or multiple stains are available to collect and submit an untested sample to the ISP Laboratory Division.
 - b. If a portion of the stain was collected on a swab and tested for the presence of blood using the Phenolphthalein test, that swab should not be submitted for DNA analysis unless it is the only sample available.
 - 4) For pooled liquid body fluid stains, use one or more cotton tipped applicators to absorb the liquid. Air dry and package in paper.
 - 5) Samples such as cigarette butts, envelopes, stamps, etc., to be analyzed for epithelial cells should be collected with tweezers or gloves and packaged in paper.
 - 6) Bottles or cans should be carefully emptied of any remaining contents before packaging in paper.
 - 7) Hair evidence should be collected using clean tweezers.

- a. Hairs collected from different locations should be packaged separately.
- b. If hairs are mixed with wet body fluids, they shall be air dried.
- c. Package all hair evidence in paper.

III. SEXUAL ASSAULT INVESTIGATIONS

In sexual assault cases, the investigator or police officer is not able to collect the physical evidence from the victim's person, or in most cases be present when the evidence is collected. The collection of this evidence can only be done by health care personnel during the medical examination of the victim.

- A. A sexual assault evidence collection kit should be used by medical personnel to collect evidence from sexual assault victims. For the best possible evidence to be collected, medical personnel must be properly trained in the complete evidence collection procedures.
- B. In sexual assault cases, additional items should be considered for collection, such as underpants from the victim(s) and suspect(s).
- C. A chain of custody should be maintained from the time evidence is collected until transferred to a law enforcement agency.
 - 1) A procedure should be developed and implemented at the medical facility to ensure that the chain of custody documents the identity of the item(s). The chain of custody record should include the individual(s) receiving or transferring the item(s), evidence storage location(s), and the chronological order of transfers.
 - 2) Evidence should be handled by a minimal number of individuals.
- D. Medical facilities should establish and follow a procedure for:
 - 1) Collecting all necessary specimens and other evidentiary material.
 - 2) Labeling all evidence including the contents of each container with the victim's identifier.
 - 3) Obtaining consent for release of evidentiary material.
 - 4) Notifying a law enforcement agency that the evidentiary material has been collected.
 - 5) Storing the evidence in a secure location pending release to a law enforcement agency. Kits with liquid blood vial or vaginal wash should be stored in a refrigerator. Kits without a liquid blood standard or vaginal wash may be stored at room temperature or in a refrigerator.
 - 6) Submitting the evidence to a law enforcement agency.
- E. Evidence Collection Kits
 - 1) Instructions for proper evidence collection are present in evidence collection kits provided by the ISP Department.
 - 2) It is recommended that the Victim Sexual Assault Evidence Collection Kit be used to collect evidence as close to the time of the incident as possible, preferably within five (5) days of the incident. However, kits can be used to

collect evidence at a later date if the investigation warrants it and the victim is cooperative.

- 3) An oral/buccal swab or purple top vacutainer for collection of a whole blood standard and cotton tipped applicators are present in the ISP Suspect Evidence Collection Kit. It is recommended that if a suspect is arrested within 24 hours of the incident, external penile swabs should be collected using moistened, clean cotton tipped applicators (distilled water should be used).
- 4) Victim Sexual Assault Kits (SAK) collected on or after April 1, 2020 must be entered in the Indiana Criminal Justice Institute's (ICJI) [Statewide Sexual Assault Kit Tracking System](#) (SAKTS) prior to submitting the kit for analysis to ISP Laboratory Division. The associated personal identification number (PIN) shall be recorded on the SAK box near the SAK bar code, as well as provided on the Request for Laboratory Examination Form.
- 5) SAKs collected during autopsies are not required to be entered into the Indiana SAKTS, consistent with ICJI operating guidelines for the SAKTS, and those SAKs shall be clearly marked at the time of submission as "autopsy".
- 6) All SAKs from reporting victims, regardless of the date of collection, will be accepted for analysis by the ISP Laboratory Division. SAKs from non-reporting victims (also known as "anonymous" or "Jane Doe" kits) will not be accepted for analysis by the ISP Laboratory Division.

IV. PATERNITY ANALYSIS FOR CRIMINAL PROSECUTION

- A. Paternity analysis requires DNA standards from the child, mother, and alleged father(s) following the procedure in [section I](#) above.
- B. In the case where there is a pregnancy that does not go to full term, the product of conception representing the child is needed for analysis.
 - 1) The type of sample(s) obtained is dependent on the medical facility collecting the sample(s).
 - 2) A representative sample(s) of the product of conception should be collected, which may include umbilical cord blood, a portion of the placenta, and/or other tissue samples.
 - 3) Product of conception samples should be stored frozen with no preservatives until submission to the laboratory.
 - 4) Standards from the mother and alleged father(s) should be collected as described in [section I](#) above.
- C. Record on the Request for Laboratory Examination Form if other genetic relationship calculations are required.

V. GENERAL EVIDENCE HANDLING

- A. Air dry body fluid stains before packaging.
- B. Package all dried body fluid stain evidence separately and in paper. Never use plastic bags or containers to store stained articles.
- C. Securely affix a biohazard sticker to the outside container in a conspicuous place.

- D. Store all dried body fluid stain evidence dry and as cool as possible to minimize degradation. Storage in a refrigerator or freezer may be preferred. Factors to consider include; the size of the evidence item, the available space, type and material of item, and impact on subsequent examinations.
- E. The Request for Laboratory Examination Form shall be completed when submitting biological evidence. Information included on this Form is necessary to determine CODIS eligibility. The ISP Laboratory Division is required to collect and maintain documentation on CODIS eligibility.

VI. CONTACT INFORMATION

The proper collection and preservation of biological evidence is critical for DNA analysis. Please contact the Biology Section of the ISP Regional Laboratory in your area with any questions at the following numbers.

Evansville	(800) 852-3970
Fort Wayne	(800) 552-0976
Indianapolis	(866) 855-2840
Lowell	(877) 874-0009

Regional Laboratory hours are 8:00 a.m. to 4:30 p.m.; Monday through Friday.

BASIC DNA EVIDENCE COLLECTION RECOMMENDATIONS SUMMARY

(SEE SECTIONS I AND II FOR DETAILED INSTRUCTIONS)

STANDARDS	Collect an oral/buccal swab. Air dry. Or collect blood in purple top vacutainer. Refrigerate.
POOLED LIQUID BLOOD OR SALIVA SAMPLES	Collect on sterile cotton swabs. Air dry.
DRIED SAMPLES	Either collect object, use a lifter, scrape into a clean container, or use a distilled water moistened clean cotton swab to collect. Air dry.
TISSUE SAMPLES	Collect in clean specimen container without preservative. Freeze.