



FORENSIC SCIENCE CENTER

OFFICE OF THE SHERIFF - JOHN E. ZARUBA



501 NORTH COUNTY FARM ROAD
WHEATON, ILLINOIS 60187
PHONE: (630) 407-2100
FAX: (630) 407-2106
CRIMELAB@DUPAGESHERIFF.ORG

Forensic Science Handbook

Nineteenth Edition

A Practical Guide to the Proper Packaging, Transport, and Submission of Evidence to the DuPage County Forensic Science Center



John E. Zaruba
DuPage County Sheriff
National Sheriff's Association President, 2009-2010

Forensic Science Center DuPage County, Illinois

A Division of the DuPage County Sheriff's Office

Sheriff John E. Zaruba
(630) 407-2000
sheriff@dupagesheriff.org

Chief Frank Bibbiano
(630) 407-2002
frank.bibbiano@dupagesheriff.org

Director Claire Dragovich
(630) 407-2101
claire.dragovich@dupagesheriff.org

Honor * Integrity * Quality

The DuPage County Forensic Science Center is accredited by the ANSI-ASQ National Accreditation Board to the ISO/IEC 17025:2005, the ASCLD/LAB-*International* Supplemental Requirements for Testing Laboratories:2011 and the FBI Quality Assurance Standards for Forensic Testing Laboratories:2011, certificate number: ALI-014-T.

CONTENTS

General Information and Instructions

- 4 *Our Mission*
- 4 *What all Agencies Must Know*
- 4 *Directions, Appointments, and Hours of Operation*
- 5 *Contacting our Staff*
- 6 *It's Your Forensic Science Laboratory*
- 6 *Understanding Testing Reports*
- 7 *Complaints*
- 7 *General Submission Procedures*
- 9 *Major Case Reviews*

Scientific Services

- 9 *Controlled Substances*
- 10 *Latent Prints*
- 11 *Firearms (Ballistics)*
- 13 *Forensic Biology & DNA*
- 15 *Intoxicating Compounds*
- 17 *Other Resources*

Some excerpts of this handbook were quoted or paraphrased from the FBI [Handbook of Forensic Services](https://www.fbi.gov/file-repository/handbook-of-forensic-services-pdf.pdf/view), which can be found at <https://www.fbi.gov/file-repository/handbook-of-forensic-services-pdf.pdf/view>

Our Mission

The mission of the DuPage County Forensic Science Center is to support the criminal justice system with accurate, efficient, ethical, and professional scientific services that contribute to a higher quality of life for the citizens of DuPage County. Five main objectives to achieve the mission are:

- Maintaining proper facilities for casework and the receipt of evidence.
- Employing and training highly qualified scientists.
- Adhering to scientifically accepted procedures and laboratory quality assurance standards.
- Reporting analytical findings coherently and efficiently.
- Clearly articulating analytical findings in courts of law.

Scientists working within the center have access to state-of-the-art instrumentation, training opportunities, current literature, and a network of professional peers with which to exchange pertinent information. Collectively, these resources enhance the scientific reliability and accuracy of information reported by our laboratory.

What all Agencies Must Know

This handbook is an official communication put forth by the DuPage County Sheriff's Office for the benefit of all users of its forensic science services. Nonconformity to laboratory policies may result in the return of evidence to the submitting agency without analysis or the inclusion of language in a testing report or expert testimony that describes the nonconformity and its potential effect on evidence examinations.

It is critical that all participants in the DuPage County criminal justice system understand that the laboratory employs a complex quality-management system that includes carefully documented methods, scientifically validated procedures, and quality-control policies. They are in place to protect the integrity of the laboratory's work product and to prevent complications to ongoing investigations and court. Each agency that works with the laboratory is, in essence, a part of this quality-management system. As such, each agency should strive to adhere to the guidelines and requirements set forth in this handbook.

Directions

The laboratory is located at the DuPage County Government Center, situated on the east side of North County Farm Road approximately one half-mile north of Roosevelt Road (Route 38) in Wheaton. Located in the James "Pate" Philip Forensic Science Center, the laboratory is on the second floor of the 501 building. Follow signs to the Sheriff's Office / Jail and park at the west end of the 501 building.



Evidence Submission BY APPOINTMENT ONLY

Monday through Friday

7:00 AM to 11:30 AM
12:30 PM to 3:30 PM

Please contact Mary at:

(630) 407-2111

OR

mary.dastych@dupagesheriff.org

Contacting our Staff

Managing Scientists

Laboratory Director / Quality Manager
(630) 407-2101

Drug Chemistry Technical Leader / Chemistry Supervisor
(630) 407-2103

DNA & Forensic Biology Technical Leader / Supervisor
(630) 407-2151

Latent Print Technical Leader
(630) 407-2110

Section Contacts

Chemistry Section
(630) 407-2099

Forensic Biology/DNA Section
(630) 407-2104

Criminalistics Section – Latent Prints
(630) 407-2112

It's Your Forensic Science Laboratory

Sheriff John Zaruba has taken a proactive approach to crime fighting in DuPage County by investing resources that allow scientific technology and forensic expertise to aid law enforcement agencies in solving crimes. Since 1969, the citizens of DuPage County have benefited from the services provided by the laboratory, which are available to all law enforcement agencies in the county. As a result, our criminal justice system is more efficient, more effective, and more prepared to dispose of criminal matters brought before it.

To maximize the benefits of these services, each agency within the DuPage County Criminal Justice System must work in partnership with their laboratory in the following ways:

- Have a full understanding of the laboratory's capabilities and limitations.
- Be specific when requesting services. The role of a forensic science laboratory is to answer questions. The more specific the questions are, the more specific our answers will often be.
- Submit evidence with ample case information such as a copy of an incident report, summary of the incident, or other narrative describing the crime scene, incident, and persons involved.
- Be familiar with your evidence and the case so that laboratory personnel can ask questions if necessary.
- In the event of a change in case status, for example, adjudication or charges dropped; contact the laboratory for cancellation of the testing request.
- The laboratory evaluates all requests for testing to include a determination that the request is a reasonable use of resources.

In the interest of this on-going partnership, the laboratory offers a number of services to enhance professional awareness of its capabilities:

- The *Introduction to Crime Laboratory Services Seminar* for submitting agencies.
- The *Forensic Science Handbook* – a practical guide to the proper packaging, transport, and submission of evidence to the DuPage County Forensic Science Center.
- A website, www.dupageforensics.org that allows 24-hour-a-day access to information about our laboratory.

Ultimately, efforts to enhance this partnership will pay dividends, helping to make DuPage County safer for our citizens and the police officers that work day and night to keep them safe.

Understanding Testing Reports

The laboratory reports its results and conclusions in the form of a testing report with a unique identifier. The unique identifier is the laboratory case number followed by a sequential digit, e.g. 18-0093-03 where:

- 18 is the year, 2018, in which the case was created.
- 0093 represents the ninety-third case accepted by the lab in 2018.
- 03 represents the third testing report issued for case number 18-0093.

The results communicated in a laboratory testing report contain observations, results, and conclusions rendered by a scientist who has the requisite training to conduct the analyses. Laboratory staff are available to answer questions regarding reports, are available for pre-trial conferences with both prosecution and defense and will testify in court when needed.

Complaints

The law enforcement community of DuPage County is strongly encouraged to voice any dissatisfaction with our forensic science services or personnel as soon as possible. Feedback forms are available at the submission desk. Direct complaints to the attention of the director by phone or in writing. If it is necessary to bypass the director, direct complaints to Sheriff John Zaruba at (630) 407-2001.

It is vitally important for instances of substandard service to be reported in a timely fashion. Complaints are often the first step towards improving an organization's level of service.

To report a complaint to the laboratory director please call (630) 407-2101 or email the director at claire.dragovich@dupagesheriff.org.

General Submission Procedures

This section provides basic instructions for the submission of evidence to the laboratory. No set of instructions, however, can encompass every possible scenario that may arise. Use common sense in the collection, preservation, and transport of evidence. Be sure to read the section titled "Special Considerations" for more information.

1. **Place evidence exhibits in appropriate containers.** Contact the laboratory when needing to submit large and bulky items that do not easily lend themselves to packaging.
2. **Seal each container** with tamper-indicating tape.
3. **Handwrite your initials and the date** across the tape and onto the surface of the package.
4. **Mark each package** with the agency name, case number and a unique identifier if there are multiple packages for the same case number (e.g. Package 1 of 2, Package 2 of 2).
5. **Complete an Evidence Submission Form.** Sample forms are available to assist you in completing this form. ALTERNATIVELY, for agencies that utilize the BEAST evidence management software print a copy of the lab submission sheet.
6. **Complete a DNA Evidence Submission Form.** This form must accompany all forensic biology/DNA submissions: <http://dupageforensics.org/documents/LAB-F.15%20FBDNA%20Analysis%20Request.pdf>
7. **Write or include a summary of the incident.** The length and detail of the summary should be commensurate with the complexity of the case.
8. **Transport your evidence and documentation to the lab.** You must schedule an appointment with Evidence Intake prior to transporting evidence to the laboratory.
9. **Retrieve evidence from the laboratory.** Upon receipt of testing report, retrieve evidence from laboratory. The laboratory mails or hold testing reports for pick-up. Reports are also available electronically to the DuPage County State's Attorney Office.

Describing Your Evidence

When listing evidence on the submission form, it is not necessary to give lengthy descriptions or describe secondary containers. For example:

- "DNA buccal swab from Victim Jane Doe"
- "White powder (from John Doe)"

- “Latent lift from exterior rear window”

The purpose of an evidence submission form is to inventory what is in the package and (in some cases) from whom or where it was recovered.

Laboratory Evidence Routing

Forensic science laboratories process evidence in a specific order. The following is the routing policy of the laboratory:

The sequence in which the laboratory processes evidence can have a significant impact on the integrity of the evidence. The following is the recommended sequence unless case specifics dictate otherwise:

1. Forensic Biology
2. Latent Fingerprints
3. Controlled Substances
4. Firearms/Toolmarks (*Service not currently available in-house*)

By virtue of their expertise, analysts will assess how and if a specific analysis may compromise the suitability of the evidence for analysis by subsequent disciplines. When such circumstances are present, the analysts from the corresponding sections of interest will confer and act accordingly.

Selecting Your Packages

The packages or containers selected for evidence will often depend on the evidence itself. Evidence packages fall under two broad categories: *External Packaging* and *Secondary Packaging*. An external package is the outermost container. A secondary package is one or more that is inside of the external package. An evidence technician’s goal in selecting a suitable package for evidence is to protect the evidence from loss or damage, to allow for a proper seal and the ability to utilize the original packaging for repackaging after analysis.

Sealing Your Packages

The purpose of a seal is to accomplish the following:

- Prevent loss of evidence
- Prevent cross-transfer of evidence or evidence samples
- Prevent deleterious change or degradation resulting from exposure to air or ambient conditions
- Render the package *tamper evident* making it impossible to access the interior of the package without causing obvious damage to it
- Identify the person who created the seal and the date it was sealed

Make a seal with tamper-indicating tape when possible, with the officer’s initials, badge number, and date written across the tape and onto the package itself. Manufacturer/factory seals such as those found on envelopes are considered sealed, and need not be marked or over-sealed in any way.

It is vitally important that law enforcement officials be aware of how to properly package and seal their evidence for submission to the laboratory.

Marking Your Packages

There are many different kinds of evidence packages and containers. Some have pre-printed fields for completion by the submitting agency. Not all packages, however, have such fields. At a minimum, the following information should be marked on the external package when submitted: *Agency Name, Agency Complaint Number and a unique identifier when multiple packages exist.*

Refer to forensic disciplines in the table of contents for more specific evidence packaging procedures.

Major Case Reviews

It may be necessary to conduct a major case review on cases requiring multidiscipline analysis and/or with large amounts of items for testing. The review typically includes laboratory staff, representatives from the investigating agency and representatives from the DuPage County State's Attorney Office. This process provides a means for all parties to discuss which evidence to test and staging submissions.

To schedule a major case review contact Mary at 630.407.2111 or via email at mary.dastych@dupagesheriff.org.

Controlled Substances

Description of the Science

Utilizing microscopical, instrumental, chemical and other techniques, unknown substances in various forms including, but not limited to, plant material, powders, tablets/capsules, paper and liquids, are analyzed for the presence of controlled substances and cannabis as defined in the Illinois Controlled Substances Act. Illinois Compiled Statutes. §720 ILCS 570; the Kratom Control Act. Illinois Compiled Statutes. §720 ILCS 643; and the Cannabis Control Act. Illinois Compiled Statutes. §720 ILCS 550.

The laboratory does not conduct quantitative analysis nor analysis to determine the presence of a clandestine laboratory.

Special Considerations

Submissions for controlled substance analyses come in a wide range of sample types and sizes. Packaging and submission procedures are dependent upon the specific items submitted. Testing is limited based upon the controlled substances that would reasonably be expected to be found in the form of the item submitted. Although a sample may contain a mixture of controlled substances, the laboratory may only report the component with the highest schedule or the component positively identified.

Susceptibility to Contamination

Possible sources of contamination include the unintentional introduction of a controlled substance by sample cross-contamination. This can result from careless handling or improper packaging.

Safety Hazards

Exposure to substances of unknown origin represents a significant health and safety hazard. This exposure may be through ingestion, respiration, or absorption through direct contact with the skin or mucous membranes.

Submission Restrictions

As part of the laboratory's ongoing management of its case volume, it is common for the laboratory to return evidence on adjudicated cases. The purpose for such action is to clear our caseload so that our chemists can devote their time to open investigations/pending prosecution.

The following submission policies apply to controlled substance cases:

1. The laboratory does not accept cases where there is no suspect. An exception includes overdose deaths, which may result in drug induced homicide charges. The laboratory will accept an initial submission of one item for analysis. Contact the laboratory to request analysis of additional items.
2. The laboratory does not test cannabis pipes for drug paraphernalia charges unless accompanied by a request from the State's Attorney's Office.
3. Syringes, liquid from syringes and any part of a syringe (barrel, needle) are not accepted.
4. The laboratory reserves the right to decline testing of residues subjected to field-testing by police personnel.

- The laboratory will not conduct analysis of evidence in cases limited to violations of local ordinance (this includes suspected cannabis less than 10 grams).

Proper Packaging and Submission

Adhere to the following whenever possible. If circumstances arise that cannot be addressed by this list, contact the laboratory immediately.

- Do not submit field test kits.
- Submit cannabis plants in a dry state, packaged in paper or cardboard. If the plants are found growing, remove from their containers and remove as much dirt as possible, leaving the root system intact. A plant is considered 'plant material' when there is no attached root system. Allow the plant to air dry before packaging.
- Analysts are available to go on location to assist in the documenting and collection of samples from suspected cannabis plants. This service is provided for larger grow operations and is more efficient than submitting the entire plant. If you require this service, please contact the laboratory prior to packaging of the plants.
- Remove growing mushrooms from their growing media and air dry, prior to packaging in paper or cardboard.
- Submit liquid evidence in a leak-proof container. (Refrigerator during storage). If the original container leaks when tipped, transfer the contents to a new container (jar, vial, etc.).
- For controlled substance analysis of liquids, submit the entire sample. The laboratory does not conduct alcohol analysis.
- Please note on the submission form if the case is a garbage pull and, if so, mark it as a biohazard. Garbage pulls are prioritized for obtaining search warrants. The laboratory does not accept garbage pulls if a search warrant has been obtained or executed.
- Please note on the evidence and/or submission form, the retrieval location and associated suspect for each item. Additionally note if an item was the probable cause to search.
- Inform the laboratory when submitting suspected PCP as the solvent may be flammable.
- If the evidence is from a controlled buy, please indicate if it was an informant buy (agency designation A, B, C etc.), or an agent controlled buy (agency designation 1, 2, 3 etc.).
- Testing of pharmaceutical tablets and capsules will be limited to the highest schedule.
- Electronic cigarettes should have their batteries removed prior to submission to the laboratory
- Upon exposure to potential body fluids, affix biohazard stickers to outer packaging. Examples include evidence located in a toilet, found in a person's underwear.
- DO NOT use biohazard stickers to indicate the presence of toxic chemicals such as LSD, PCP, Fentanyl and other potent synthetic opioids. Document this information on the submission form.
- When multiple items of e-cigarette cartridges or vape pens are collected, submit one for analysis. After the analysis of one cartridge/pen is completed and upon consultation with the State's Attorney's Office, additional analysis may be requested by contacting the Chemistry Supervisor at 630-407-2103.

Latent Prints

The laboratory has reestablished service in latent prints.

Description of the Science

Utilizing visual, photographic, and chemical processing techniques, the laboratory is able to compare the fingerprints of known individuals with latent fingerprints recovered from or developed at a crime scene. The

basis for the science of fingerprint examination is that friction ridge patterns present on the human fingers, palms of the hands, and bottoms of the feet are both persistent and unique to an individual.

Submission Restrictions

Lift cards may contain multiple latent prints; therefore, contact the laboratory prior to submission of more than 10 lift cards.

Special Considerations

Fingerprints are primarily made of water and therefore are inherently fragile. Protect them from accidental contact and from environmental conditions such as precipitation and extreme temperatures.

Elimination Prints

The laboratory requires comparison of elimination prints to latent prints prior to all Automated Fingerprint Identification System (AFIS) searches. This conserves time and better utilizes laboratory resources. In addition, the State of Illinois requires comparison of elimination prints to latent prints prior to registering of latent prints in the AFIS system for continued searching. Elimination prints are ***record prints of an individual who had legitimate access to a crime scene or who is known to have touched a particular item in question.*** It is required that elimination fingerprints of all such individuals be submitted along with questioned evidence in any latent print cases in which AFIS searches are requested.

Susceptibility to Contamination

Contamination can occur by the unintentional deposition of fingerprints on items prior to examination, often by first responders or other law enforcement personnel. In order to prevent contamination, wear gloves when handling all questioned evidence for latent prints.

Safety Hazards

There are no specific safety hazards associated with this kind of evidence; however, utilize universal precautions when necessary.

Proper Packaging and Submission

Package latent print evidence in paper or cardboard. If possible, secure the item within the package to minimize movement and prevent the destruction of any latent prints.

Comments

Photographs of latent prints submitted to the laboratory for examination should be in RAW or TIFF format and must include a scale. If investigating agencies choose to process evidence prior to submission to the laboratory, document the method of processing on the submission record. In addition, investigating agencies should be aware that any processing done prior the submission might affect the capability of the laboratory to process the item further. Agencies are encouraged to contact the laboratory with questions prior to processing any items for submission.

Firearms (Ballistics)

The laboratory does not currently have a qualified firearms analyst on-site. Please contact the laboratory to determine if out-sourcing of firearms evidence is available prior to submission of your evidence.

Description of the Science

In its most basic form, firearm identification involves determining if a fired bullet or discharged cartridge case was or was not fired from a particular firearm. Such conclusions are possible due to the microscopic imperfections left in the barrel and other components of the firearm during the manufacturing process. The resulting pattern of striae and impressions imparted to bullets and cartridge cases are unique to the gun that fired them.

Firearms examination offers various types of analysis:

- Microscopical Comparative Analysis – Commonly referred to as “ballistics” or the identification of bullets and cartridge cases as being fired from a particular firearm.
- Determine Type of Weapon (DTW) – An examination (DTW) provides investigators with makes of firearms that may have fired the submitted evidence when absent a suspect firearm.
- Firearm Function Testing – This involves the examination of the gun for operability as well as the amount of force required to pull the trigger.
- Serial Number Restoration – The attempted recovery of an obliterated serial number.
- IBIS (Integrated Ballistics Identification System) Entry – Entry of fired cartridge cases into a computerized database, IBIS, and compared to fired evidence from prior crime scenes.

Special Considerations

Submit incident reports with firearm evidence recovered from a crime scene.

Susceptibility to Contamination

Firearm evidence is often durable and not susceptible to environmental or ambient contamination. Use caution when removing bullets from walls or other structures. Toolmarks imparted to the bullet during extraction can destroy the unique markings used for comparison purposes.

Safety Hazards

Firearms pose a significant safety hazard, the possibility for an accidental discharge warrants the exercise of extreme caution.

Firearm evidence often introduces a biological hazard, particularly in suicide cases or when exposed to bodily fluids. Bullets that pass through bodies are a biological risk, and often have sharp jagged edges that can puncture the skin if handled carelessly.

Guns that are bloody or bear a potentially biohazard residue should be secured in a box with punch holes and then further wrapped in a paper bag. This will prevent biological material “falling” out of the punch holes from contaminating external surfaces.

Proper Packaging and Submission

Submitters must ensure that firearms are unloaded at the time of submission and indicate the barrel direction on the package. Contact the laboratory prior to submission of a suspected loaded weapon.

Package evidence bullets individually in small cardboard boxes, envelopes, or film canisters. Bullets may be rinsed clean of bodily fluids to preserve the markings used for comparison; however, it is not recommended brushes or abrasive materials be used to remove substances from the surfaces of bullets as this may affect the integrity of toolmarks used during the comparison process.

Package cartridge cases in a single container; however, package multiple cartridge cases according to their location at a scene and marked accordingly. This often aids reconstructing the crime scene, particularly when multiple shooters are involved.

Package firearms recovered from a body of water in a container with water from where the firearm was located. This will prevent rapid rusting of the firearm.

Comments

Firearm evidence is often an extension of the crime scene itself. Proper documentation of the condition of a firearm (such as whether or not the hammer was cocked or safeties were engaged) should be recorded by on-site personnel as needed.

Forensic Biology & DNA

Description of the Science

Forensic Biology (FB) searches for the presence of body fluids and trace evidence. FB currently provides presumptive tests for blood, semen, and saliva, and a confirmatory test for semen. In the case of contact with skin (see “contact DNA” below), the Forensic Biologist is limited to preparing the submitted item for a DNA analyst to test.

Deoxyribonucleic acid (DNA) is a chemical that provides the instructions for a person’s physical characteristics. A person is made of trillions of various kinds of cells. Each cell containing DNA has a complete and identical copy of DNA in its nucleus (i.e., nuclear DNA). Additional locations of DNA exist for example, mitochondrial DNA. Taken as a whole, each person’s DNA is unique (with the exception of identical twins). Forensic DNA only examines a few portions of uncorrelated DNA, resulting in a high level of discrimination. DNA collected from a crime scene can either link a person to the evidence or eliminate them as the source of DNA. DNA can show familial relationships. The DNA database (known as CODIS), is used to compare DNA from crime scenes to DNA of convicted offenders or with DNA left by the perpetrators at other crime scenes.

DNA results can be obtained from evidence that is decades old. However, several factors can affect the DNA left at a crime scene, including environmental factors (e.g., dilution, sunlight, and bacteria). Not all DNA evidence will result in useful DNA results, generally, there needs to be several cell’s worth of DNA to obtain useful DNA results.

Special Considerations

When transporting and storing evidence that may contain DNA it is important to keep the evidence dry, and at room temperature (or lower). Paper or other breathable packaging is preferable. However, freeze (without thawing) any evidence that may contain DNA that is stored in plastic bags, metal cans, Styrofoam, or glass. Do not expose evidence to direct sunlight and avoid places that may get hot, such as a police car without air conditioning.

Per the statutory requirements of the Illinois Sexual Assault Evidence Submission Act, Illinois Compiled Statutes. §725 ILCS 202 (2010.), evidence submitted for analysis must include a certification that the evidence is submitted in connection with a criminal investigation and must be submitted to a laboratory within ten days of collection.

Cases do not have a monetary minimum dollar loss and do not require a known suspect.

Susceptibility to Contamination

Due to the sensitivity of the tests used by our laboratory, take extra care to prevent contamination. Contamination can occur when someone sneezes or coughs over the evidence or touches his/her mouth, nose, or other part of the face and then touches the area that may contain the DNA to be tested. It can even happen by leaning over the evidence because skin cells could be unknowingly deposited on its surface. The DNA testing process will copy whatever DNA is present in the sample; it cannot distinguish between the original DNA and contamination DNA. However, the DNA tests are semi-quantitative, so if there is a preponderance of DNA from one person, the DNA from another person may not even be detectable. If a mixture is detected, it may be possible to attribute the portion of results attributed to a particular person.

Safety Hazards

Biological evidence samples and materials may contain hazardous pathogens. Use universal precautions upon collection and submission of blood or other body fluids. Mark all evidence thought to contain body fluids with a biohazard label.

Proper Packaging and Submission

Investigators and laboratory personnel should work together to determine the most probative pieces of evidence and to establish priorities. Useful information includes (but not limited to):

- finding blood or other body fluid with the victim’s DNA profile on the suspect, something in the suspect’s possession, or something associated with the suspect

- Finding blood or other body fluid with the suspect's DNA profile on the victim, something in the victim's possession, or something associated with the victim.

How to Collect Questioned Samples - When samples are small and easily transportable, such as a cigarette butt, they can be collected and packaged whole. In most instances, it is better for the crime scene investigator to collect the stain via swabs or cuttings. The method chosen will vary depending upon the absorbency of the surface. For an item that is absorbent, such as a carpet, the best collection method may be to cut out the stained portion. Non-porous surfaces, such as a glass window, are amenable to swabbing. Do not handle the stained area directly. Wear gloves when collecting stains.

To collect dried stains, use distilled water to moisten a swab made of cotton (preferable) and rub this across the stain. Make the stain as concentrated as possible on the swab, but be sure to collect the entire stain. Air-dry wet stains at room temperature before packaging. Do not fan or heat-dry stains. If multiple swabs of a single stain are collected, it is good practice to number the swabs in the order they were collected. A **control** sample is not necessary due to the sensitivity of DNA and the semi-quantitative nature of DNA results.

PLEASE DO NOT USE FLOQ SWABS. Due to the many different manufacturers of FLOQ swabs, the Forensic Biology & DNA Section no longer recommends the use of FLOQ swabs for the collection of evidence. Do not use FLOQ swabs for collection of a standard (see below).

How to Collect Known Samples - To collect a **standard** (a DNA sample witnessed to have come directly from a person, and used for the purposes of comparing to DNA results from evidence), blood or saliva (i.e., buccal) samples may be submitted. For buccal swabs, be sure to use a sterile cotton swab. Do not let the subject eat, drink, or place anything in their mouth, except for water, for approximately 15 minutes prior to collection. It may be helpful to have the subject rinse their mouth with water before collecting the sample. Rub the inside of either cheek a few times. It is not necessary or helpful to swab the subject's tongue, teeth, throat or lips, or to collect different areas of the mouth.

Collect standards from suspects whenever possible. Submit elimination standards from anyone not suspected to be the perpetrator, such as a victim, consensual sexual partner, family member who recently drove the stolen vehicle, and for any individual who had legitimate access to the crime scene and may have deposited their DNA on the evidence.

Other Considerations - Items submitted for DNA analyses are categorized and prioritized as follows: (1) associative analysis, (2) corroborative analysis, and (3) crime recreation. Analyses will not be conducted for the sole purpose of crime recreation when a suspect has been identified and case information provides no compelling indication that additional suspects were involved. Visible stains will be screened and tested for DNA only when the questioned contributor had no legitimate or innocent access to those surfaces.

'Contact DNA' - The laboratory will strive to limit DNA testing to visible stains, residues (such as a fingerprint smudge), or materials. "**Contact DNA**" (or *touch* DNA) that is not discovered through an observable residue will be tested when the surface upon which the DNA is collected was in consistent or exclusive prolonged contact with the questioned contributor. For contact DNA evidence, the laboratory may opt to defer the analysis pending submission of elimination standards from emergency and police personnel who accessed the crime scene and anyone else who had legitimate access to the area.

Contact DNA will be limited to 2 exhibits (swab/item) for theft/burglary cases (not including victim elimination standards)

Vehicle burglary:

- 1st choice: Steering wheel swab (swab steering wheel with maximum of 2 swabs) over gear shift or door handles, OR,
- 2nd choice: Area broken into (such as console/glove compartment)

Residence/business burglary:

- 1st choice: Possible blood evidence, AND/OR,
- Clothing or object left behind such as hat, gloves by perpetrator, AND/OR,

- Visible smudge on glass or windows at point of entry

CODIS

The Combined DNA Index System contains DNA profiles from convicted felons, crime scene samples, unidentified human remains, and other sources. The database accepts profiles from evidence from a crime scene, evidence collected in relation to the crime, evidence probative to the crime, and evidence associated with the putative perpetrator but not seized directly from that person. The database accepts DNA profiles from standards lawfully collected from suspects.

Laboratory Consumption of DNA Evidence

Unless specifically directed otherwise, the act of submitting evidence to the laboratory authorizes the laboratory to consume that evidence, or a portion of that evidence, during testing. The FB/DNA Section attempts to preserve at least half of the evidence for re-testing; however, when, in the sole discretion of the analyst, dividing the evidence will potentially prohibit the laboratory from obtaining the most complete result possible, the entire evidence may be consumed.

Visual observation of the DNA chemical is not possible, but observation of a body fluid/tissue may infer its presence. Testing for body fluids/tissues may not occur either because no test for the assumed body fluid/tissue is available at this laboratory or because testing for a body fluid/tissue would likely consume the evidence to the point that it would impede or prevent efforts to obtain a complete DNA profile. DNA may be present with no observable body fluid/tissue, but because the laboratory has no other way to observe DNA, the laboratory may not be able to detect or recover the entire probative DNA on an item. The laboratory will attempt to collect DNA from where it would reasonably be expected to occur. DNA may be left on the item, the collection may not occur over the entirety of the item, and the collection is not expected to recover 100% of any DNA present.

Using this laboratory's DNA extraction procedure(s) collections are consumed. If sufficient DNA is recovered from the collections, then a portion of the DNA extract will be preserved by our laboratory; however, DNA extracts are laboratory work-product and are not the virgin evidence. Therefore, the laboratory may discard this work-product at any time.

The laboratory utilizes Short Tandem Repeat Polymerase Chain Reaction (STR PCR) analyses as described in the laboratory's current Technical Process Manual. The number and type of STR PCR methods used are at the discretion of the DNA analyst unless the submitting agency makes a specific analysis request.

This testing may preclude further testing by other methods such as analyses for human origin or human hemoglobin (to identify human blood), additional STR analyses, mitochondrial DNA analyses, specialized procedures for samples with few copies of DNA, analyses by this or another laboratory, or any other analyses. Additionally, DNA results may or may not be obtained from the DNA collection. Unless new techniques are implemented, no further testing will be possible at this laboratory.

If there is no indication of a biological tissue, no quantity of DNA observed in a DNA extract, and no DNA profile obtained, then all portions used for laboratory testing, which may include small portions from the item submitted, are typically discarded. All portions of standards (i.e., biological samples from known individuals), which may include small portions from the item submitted, will be discarded.

Intoxicating Compounds

Description of the Science

Utilizing the scientific principles of chemistry, the laboratory is able to analyze unknown liquids for the presence of intoxicating compounds as defined under the Use of Intoxicating Compounds Act, Illinois Compiled Statutes, §720 ILCS 690. A comparison of analytical data generated by our instrumentation to known standards occurs, allowing the forensic chemist to identify the presence of these substances. The law prohibits the use of nitrite compounds for their intoxicating effects.

Special Considerations

Samples must be submitted as soon as possible due to the volatility of some compounds. The laboratory should be advised of how much time has passed between sample collection and sample submission.

Susceptibility to Contamination

Possible sources of contamination include the unintentional introduction of specific compounds by sample cross-contamination.

Safety Hazards

Exposure to substances of unknown origin represents a significant health and safety hazard. This exposure may be through ingestion, respiration, or absorption through direct contact with the skin or mucous membranes.

Proper Packaging and Submission

Submit liquid samples to the laboratory in a secured and sealed vial or bottle. Keep the sample refrigerated at all times. If concerned the original bottle/vial is leaking package in a vapor tight containers, for example an arson can.

Other Resources

Questioned Document (Handwriting Analysis), Soil Comparisons & Explosives
Federal Bureau of Investigation (FBI) Laboratory

Quantico, Virginia
 Main Line: (703) 632-7690
 Questioned Document Unit: (703) 632.8444
 Soil Comparisons: (703) 632.8449
 Explosives Examination Unit: (703) 632.7626
 Glass Examination Unit: (703) 632.8449

Questioned Document/Ink Analysis
IRS National Forensic Laboratory

525 W. Buren, Suite 400
 Chicago, IL 60607
 Questioned Document Section: (312) 542-7808

Accidental Poison Identification
DuPage County Health Department
 (630) 682-7400

Cases involving possible intentional food or beverage contamination
Illinois Department of Public Health
 (312) 793-4758 or (217) 782-4977

Poison Control Center
 (800) 222-1222

SET Laboratories
 (847) 537-9221, Contact Bijan-Saeedi

Soil Comparisons, Glass, Explosives & Lamp Filaments
Microtrace - Skip Palenik
 Elgin, Illinois
 (847) 742-9909

Forensic Dentistry / Bite mark examinations
Dr. Denise Murmann, DDS, DABFO
 2531 W. 75th Street, Suite 202
 Naperville, IL 60540
 (630) 718-1234
murmanndc@sbcglobal.net

Forensic Entomology
Neal Haskell, PhD

425 Kannal Avenue
 Rensselaer, IN 47978
 (219) 866-7824 Fax: (219) 866-7628

Counterfeit Money

Secret Service
1050 Connecticut Avenue, NW
Washington, DC 20036
(202) 406-5708

Toxicology and DUI Kits
ISP Chicago
 Toxicology Unit

International Forensic Automotive Paint Data Query (PDQ)
Gunshot Residue Analysis
Fiber & Paint Analysis
Fire Debris
Glass Examination
ISP Chicago
 Trace/Microscopy Unit

Firearms, Toolmarks
ISP Chicago

Latent Print Analysis
Shoe & Tire Impressions
ISP Chicago & Joliet
 Criminalistics Unit

Illinois State Police
Forensic Science Center at Chicago
 1941 West Roosevelt Road
 Chicago, IL 60608
 Main Line: (312) 433-8000

Illinois State Police
Joliet Forensic Science Laboratory
 515 East Woodruff Road
 Joliet, IL 60432
 Main Line: (815) 740-3543