Laboratory Services Bureau

Evidence Screening Section

PROVIDING THE HIGHEST QUALITY FORENSIC SCIENCE SERVICES TO THE CITY OF PHOENIX

The Evidence Screening Section (ESS) consists of Forensic Scientists, a Crime Scene Specialist, and a Laboratory Technician. This unit examines thousands of items each year for biological material, latent prints, and trace evidence. We forward the evidence we preserve to other sections including Forensic DNA, Latent Print Comparative, and Trace.

⇒ **Touch DNA** is skin cells left on an item after touching it, the amount left depends on the person and the force or "heaviness" of the touch

⇒ **Latent Prints** are chance impressions left on a surface (deposited by oils, perspiration and other substances on the skin) that usually require some type of development to be seen

It is possible to collect both fingerprints and DNA

Must use clean techniques

- Personal protective equipment including a mask, gloves, goggles and a lab coat
- Clean all tools used with 10% bleach before starting analysis and in between items

Must follow the proper sequence for the best preservation of all evidence

ESS receives a large variety of physical evidence

- Firearms, cans, bottles, tools, bicycles, purses, various types of tape, and miscellaneous papers may yield latent prints, biological material and trace evidence
- Clothing, bedding, footwear, swabs and other types of materials may yield biological material and trace evidence

The **SERVICES** provided by the ESS are::

Forensic Biology Screening

Items of evidence are examined for blood, semen, saliva and other biological material to determine the best evidence to forward for DNA analysis.

Latent Print Development

Evidence is examined and processed with various forensic light sources, powders and chemical applications, depending on the substrate type. Then, digital darkroom photography is used to develop and preserve latent prints.

Court Testimony

Evidence Screening analysts provide testimony about our knowledge, skills, training, and our analysis of items. Our testimony is considered expert opinion testimony.

Training

The Evidence Screening Section has an 18 month comprehensive training program consisting of two branches: Friction Ridge Development (fingerprints) and Serology (body fluids).

Training modules include trace preservation, identification of biological material, photography, development of latent prints on various surfaces, and courtroom testimony.

A Mock Trial, a Competency Exam and supervised casework must be passed prior to release to independent casework.

Forensic Biology Screening

Items of evidence are examined to determine the best evidence to forward for DNA analysis. A visual examination is performed on all items.

◊ **Suspected Blood**

* Chemically tested using the Kastle-Meyer test
* HemaTrace test may be used to determine if the blood is of human origin

◊ **Suspected Semen**

* Examine item under a forensic light source (FLS)
* An Acid Phosphatase test, a presumptive two-step color change test, is performed to see if semen is present
* A microscopic exam is used to search for further identifying characteristics (sperm)

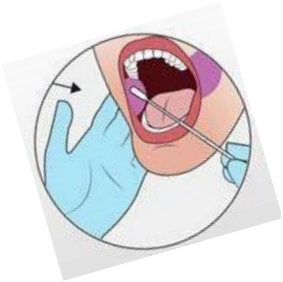
◊ **Suspected Saliva**

* Examine item under a forensic light source
* An RSID antibody test is used to determine if saliva is present

◊ **Touch DNA**

* Item is swabbed and swabs are sent to DNA

STANDARDS



A standard is a sample from a known source or individual

* Usually a buccal swab (swab of the inside cheek) or a blood blot (fluid collected by the medical examiner)
* Can be other things including fingernails, muscle tissue, a blood sample or a tooth

Forensic Light Source

An FLS filters light into individual color bands including ultra-violet, visible, and infrared

An FLS is used to enhance the visualization of evidence (biological or latent prints) by causing:

* fluorescence (evidence "glows") or
* absorption (evidence darkens)

Latent Print Development

Evidence is examined and processed to develop and preserve latent prints, which are forwarded to Latent Print Comparative for analysis. A visual and FLS examination is performed on all items.

◊ **Non-Porous** items—mainly smooth surfaces where water is not able to

penetrate (glass, hard plastic, metal)

* Cyanoacrylate (superglue) fuming

*Application of a powder (optional, may occur before or after the application of a dye stain)

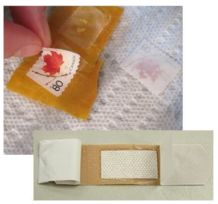
*Application of a dye stain—must be viewed with FLS

◊ **Porous** items—items which are permeable by water, air and other fluids (paper, cardboard, documents, checks, some receipts, business cards)

* DFO (1,8-diazafluoren-9-one) or IND (1,2-indanedione) - must be viewed with FLS

*Ninhydrin

*Silver Nitrate or Physical Developer



◊ **Adhesive surfaces**—tape, envelopes, stamps, adhesive bandages, labels, etc.

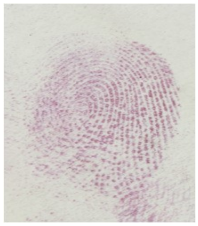
*order of processing depends on the non-adhesive surface (porous vs. non-porous)

Non-porous side > Adhesive side > Porous side

*Wetwop/Wet Powder, Gentian Violet, or Sticky Side Powder applied to adhesive surface

◊ **Photography**—latent prints may appear or disappear at any step during processing, therefore suitable latent prints are photographed when they develop

* various filters may be used to enhance the visibility of the prints
* photos of latent prints are forwarded to Latent Print Comparative for further analysis



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