



Indianapolis-Marion County Forensic Services Agency *Focus*

Serving the Citizens &
Criminal Justice System
of Marion County

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Results Begin with Protecting the Crime Scene

Crime Scene Specialists arrive at major crime scenes after witnesses, first responding officers, medical personnel, additional officers, and detectives. All of these people have had the opportunity to enter the crime scene and potentially compromise evidence. While at the crime scene, and back in the Crime Lab, every step necessary is taken to prevent contamination of evidence. Crime Scene Specialists cannot control what happens to the evidence before arrival at the scene – that is the responsibility of the first responding officer as well as law enforcement officers who enter and/or protect the crime scene.

hand.

Many times Crime Scene Specialists respond to scenes where a firearm has been relocated by the first responding officer. With officer safety being the overriding factor, the best



*Crime Scene Perimeter Established
with Crime Scene Tape*

Locard's Exchange Principle states that every contact leaves a trace – when two items make contact with each other, there will be an exchange between the items; some of item A will transfer to item B and vice versa. This is why it is essential that all personnel entering a crime scene are cautious of what they interact with inside the crime scene. For example, opening doors, especially an entry door, should be done wearing gloves and with minimal contact. Holding the door open for someone else should be done with a clothed elbow or foot, not an exposed

thing an officer can do is leave the weapon alone if possible. However, if the weapon needs to be moved, detailed information regarding where the firearm was located, i.e. which hand it was in or near, and which way the barrel was pointing, should be noted. Important forensic evidence may be compromised when the weapon is handled and unloaded.

In a recent case, a shoe impression was discovered on a "suicide note" located near the victim in the bedroom of the residence. It appeared to be a boot impression made by someone stepping on the piece of

paper. The note was not discovered until the body was removed from the residence and a final search was conducted; several authorized people (mostly wearing boot-type shoes) had been near the body. As a result, the Crime Scene Specialist had to determine each individual person who entered the bedroom and take photographs of the soles of the shoes they were wearing. All of those shoes, in addition to the shoes collected from the suspect, had to be compared to the shoe impression on the note. Fortunately, there was a scene entry log in use which eased the process.

All personnel must work together to keep the crime scene as contamination-free as possible. The number of people who enter a crime scene should be kept to a minimum and documented. If someone enters the scene who thinks they may have contaminated something, this information should be relayed to the Crime Scene Specialist as it will be helpful when working with potential DNA, latent prints and other aspects of the scene, to include future forensic comparisons in the lab.

- *CSS Brittney Raper*
Crime Scene Specialist

Collection of Biological Evidence

Biological evidence - which potentially contains human cells - can range from visible pools of colored liquid, to dried stains, to microscopic droplets, which are not visible with the naked eye.

In general, probative items potentially containing biological evidence should be collected and packaged in their entirety, if possible, i.e. taking the entire bed sheet or beer bottle, as opposed to cutting or swabbing these items. This allows the items to be

packaged more efficiently and the sampling to be done under controlled conditions in the laboratory, thereby reducing the possibility of contamination.

Swabbing for potential DNA, or cutting out portions of evidentiary items, should be reserved for situations when bringing the whole item to the laboratory is impractical or impossible, i.e. a potential biological stain on a concrete floor or on a large appliance. When sampling, proper precautions

should be taken to minimize the potential for contamination of the sample with your own DNA, as well as protecting yourself from the possible biohazard.

Visible stains can be collected by either swabbing or scraping (generally dry stains). Dry stains can also be collected with sterile swabs, moistened with sterile, distilled water.

- *F/S Ron Blacklock*
Deputy Laboratory Director

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Of Note:

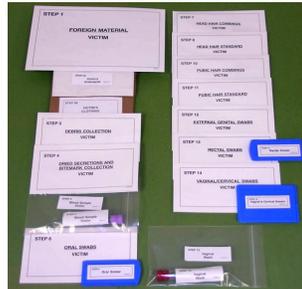
- The Crime Scene Unit responded to more than 750 crime scenes in 2009
- 481 rape kits were collected from area hospitals and processed in 2009
- The I-MCFSFA, the first Uni-gov agency - providing services to both the City of Indianapolis and Marion County - turns 25 years old this year



Sexual Assault Cases & Kits - What is Probative?

The unique nature of sexual assault kit evidence requires that it be examined in a methodical way. When considering the nature of a sexual assault, it soon becomes apparent that the body area involved can be considered the scene of the crime. Thus a review of the preliminary information sheet allows the analyst to determine the probative nature of the available evidence which then can be examined in an efficient manner.

In sexual assault cases, the intimate evidence recovered is often the most probative. Items of underclothing are the next most probative level of evidence. Items of outer clothing are next lowest in terms of probative value, with items from the scene being the least probative.



Sexual Assault Kit

Depending on the nature of the assault, the analyst can assess the probativity of the contents of the sexual assault kit. The vaginal, oral and external genital swabs are likely to be the most probative items. In some cases slides prepared from these swabs at the time of collection are included in the sexual assault kit and these can prove useful when assessing

the amount of seminal material present by microscopic examination. The underwear may also be probative as they are likely to retain drainage from anogenital area. Dried secretion/bite mark swabs from the body may be of a probative nature if licking/kissing/biting were involved in the assault. The vaginal wash can prove useful (especially in cases where the kit has been collected some time after the assault) as it collects material from the entire vagina not just the relatively discrete areas covered by the vaginal swabbing. Trace evidence (i.e. pubic and head hair combings along with debris collected from the victim and/or her clothing) may provide evidence of an associative nature. Outer clothing and items from the scene may be able to provide evidence

which could substantiate the victim's story. The blood standard from the victim is used in any subsequent DNA analysis.

Obviously these are just rules of thumb – for example if there is a case with multiple suspects, then the outer clothing and scene samples take on a more probative nature in an effort to identify as many individual suspects as possible.

The methodical examination of sexual assault kit evidence results in a more efficient analysis and can eliminate the needless duplication of effort.

- F/S David Smith
DNA Analyst
Serology Section Supervisor

Forensic Paint Analysis

This is a brief introduction to the forensic examination of paints and coatings. It is intended to assist personnel who conduct criminal investigations by explaining the value this evidence can bring to the investigation.

Our environment is composed of millions of objects whose surfaces are painted. There is one dominant reason that objects are painted – protection of the surface. The surface molecules of any object are vulnerable and can interact with air, sun, pollution, sunlight, fluorescent light, water, colliding objects and radiant thermal energy. These and many more factors can cause the surface to

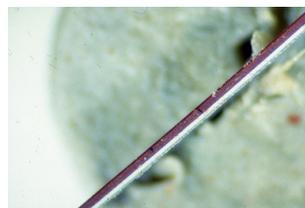


Red Paint Smear on Hit & Run Victim's Book Bag

rust, warp, corrode, crack, shrink, chip, scratch, dent and generally disintegrate. Paint is a liquid composed of pigment and carrier (vehicle) that converts into a solid protective film. Modern paint or coating products produce a high degree of protection while also providing artistic beauty, charm and attractiveness. Some of the common types of surfaces that are painted are: vehicles, walls, houses, roads, fences, signs, tools and a myriad of other objects used in everyday life.

The samples that are encountered by the Forensic Laboratory are paints in use as protective agents for surfaces – those where the surface is cured forming a skin on the object. This paint can be in the form of paint smears or intact paint chips which often means very small amounts of material with which to work. Paint samples that have been doing their task for many years can be weathered and physically damaged. These challenges require that the Forensic Paint Examiner choose test methods that are customized to each specific case. Paint films are characterized by a number of physi-

cal and chemical features which can be determined and evaluated by a variety of macroscopical, microscopical, chemical, and instrumental methods. The layer structure of a questioned paint



Red Paint Chip from Suspected Hit & Run Vehicle

sample can be compared with a known source, i.e. from a suspect vehicle. The sequence, relative thickness, color, texture, number, and chemical composition of each of the layers can be compared.

As so many objects are painted in the normal living environment, they are often present at the scene of a crime. Thus circumstances do occur where paint could be transferred from a surface at a crime scene. These transfers can be of evidentiary

value in many occurrences; homicides, vehicular hit-and-runs, sexual assaults, and burglaries. In a normal paint case, a known paint standard is compared to an unknown paint sample to determine if they came from the same source. Through comparison it may be possible to associate an individual, object, or vehicle with a crime scene. In most cases the best that can be reported is that the samples are consistent and thus reported as having some potential for common origin. However, this information can be a powerful piece of circumstantial evidence in some cases, by associating a subject or an object to the scene of the crime. In some cases, where a large number of individual layers exist, two samples can be determined as having the same origin (i.e. from a particular vehicle to the exclusion of all others); a very powerful piece of forensic evidence.

- F/S Bob McCurdy
Chemistry Unit Supervisor



Identifying Firearms as Stolen - A Sometimes Tricky Proposition

Police officers, federal agents, crime laboratory personnel, property clerks, police dispatchers and countless others have been tasked with trying to identify the markings on firearms in order to determine if the firearm has been reported stolen. The task is one of the most daunting and challenging faced by law enforcement today. The proper identification of these firearms markings may assist in determining if the law has been broken. The "Gun Control Act of 1968" was passed which required that every firearm produced or imported into the United States be uniquely marked for identification; hence the need for serial numbers and other identifying marks on each and every firearm.

Sounds pretty simple – simply look at the firearm, find the serial number and check it against the National Crime Information Center (NCIC) or run a Bureau of Alcohol Tobacco and Firearms and Explosives (BATFE) trace on it. In reality, it's not quite that easy and there are many reasons why.

The NCIC requirement to check if a weapon is stolen is simply make and serial number, however, additional information can be entered, such as model, country of origin, other remarks, etc, that may make identifying the firearm easier. The BATFE trace

requirement is: make, model, caliber, firearm type, serial number, importer and country of origin.

Prior to 1968, there was no requirement that a manufacturer serial number a firearm and, therefore, some manufacturers



German P38 Markings

did not. Due to age, many guns in use today do not have a serial number. Secondly, many manufacturers use of other numbers to track frames and parts within the factory can be found marked on a firearm. These are known as bin number, lot number, part number, etc. These numbers can be easily confused for the firearm serial number.

In the 1940's, Hitler moved across Europe and took over the firearm manufacturers of many other countries. During wartime a code system was developed by the Nazis to hide the country of origin and manufacturer from the allies. Without reference material, individuals would be unable to decipher the code. Other countries, as well, have used

crests, monograms or other symbols, which would be used for identifying manufacturer, country of origin or other pertinent information that may be needed for an NCIC or BATFE request.

In the twentieth century, several name brand stores such as Sears, Western Auto, K-mart, Montgomery Ward and others sold guns under unique brand names (i.e., Ted Williams and J.C Higgins) and had them produced by several different manufacturers. The retail stores would often request that the manufacturer list the catalog number on the firearm as well, occasionally which can be mistaken for the firearm serial number.

To make matters worse, the federal government originally did not regulate how a manufacturer would serial number a firearm, and as such, each manufacturer had its own scheme for marking each firearm which may vary widely between different models or within the same model made in different years.

Firearms imported to the United States after 1968 must bear the importer information and be uniquely identified as well. The importer may choose to record the serial number stamped by the foreign countries manufacturer or the importer may place its own number on the firearm.

In some instances a firearm may have two serial numbers: manufacturers and importers, with both recorded and run through NCIC.



German Serial Number

A tremendous amount of information may be found on a firearm: make, model, caliber, country of origin, logo, bin lot, part, code, patent, catalog proof and rack number, choke type, barrel type, and inspector stamp. On the other hand, a firearm may have no markings at all. These are just a few of the problems associated with properly identifying a firearm. It is suggested that law enforcement personnel continue training on properly identifying firearms. BATFE offers classes, and as always, officers can submit firearms to the crime lab for proper identification.

- F/S Mike Putzek
Firearms Section Supervisor

Requests for Analysis of Biological Evidence

When an item of potential biological evidence is submitted to the laboratory it is important to request the appropriate analysis. The request provides the Forensic Scientist with important information regarding the suspected nature of the biological evidence. While the analyst can use various methods to research the crime and the circumstances surrounding it, the nature of specific items of evidence is usually omitted in the narratives available on the



Serologist Examining a Pair of Blue Jeans for Biological Evidence

various databases. The inclusion of

specific information can also expedite the completion of analysis.

The use of the cover all "touch DNA" request is not appropriate for all cases.

The use of the cover all "touch DNA" request is not appropriate for all cases. This request indicates that no suspected stain was observed and that serological (body

fluid identification) analysis is not required. For example if a stain is suspected to be blood then that is the appropriate request. Please remember that in many cases the Forensic Scientist is "blind" to the nature of the item of evidence submitted and relies on the requesting officer to provide essential information.

- F/S David Smith
DNA Analyst
Serology Section Supervisor



**Indianapolis-Marion County
Forensic Services Agency
40 S. Alabama St.
Indianapolis, IN 46204**

**Phone: 317-327-3670
Fax: 317-327-3607**

<http://www.indy.gov/eGov/County/FSA/Pages/home.aspx>

Customer Survey Link:
<http://spspp01/sites/Crimelab/Lists/Customer%20Survey/overview.aspx>

**Serving the Citizens &
Criminal Justice System
of Marion County**

Laboratory Management Team:

Michael Medler, Laboratory Director
Ronald Blacklock, Deputy Laboratory Director
Brenda Keller, Quality Assurance Manager
Muhammad Amjad, DNA Tech. Leader/Supervisor
Lee Ann Harmless, FDE/Latent Prints Supervisor
Robert McCurdy, Chemistry Unit Supervisor
Michael Putzek, Firearms Section Supervisor
Michael Smilko, Crime Scene Spec. Supervisor
David Smith, Serology Section Supervisor
Amanda Sondgeroth, Forensic Evidence Tech. Sup.
Larry Schultz, Forensic Operations Manager
Jeani Nolte, Forensic Administrator
Newsletter edited by Ronald Blacklock



The Indianapolis-Marion County Forensic Services Agency shall provide forensic services to the Marion County Community by supporting the needs of the Criminal Justice System. The forensic services provided shall be built on a foundation of quality, integrity, accountability and ethics. All I-MCFS personnel shall strive to meet forensic needs of today and into the future in all their work endeavors.

Forensic Services Board

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Dr. Sam Nunn, City-County Council Appointee, IUPUI School of Public & Environmental Affairs

Processing a Crime Scene - Do You Have the Right Stuff?

The Indianapolis-Marion County Forensic Services Agency routinely responds to "Major Crime Scenes." Many of the agencies we work with process scenes related to crimes generally classified as "minor" or less severe, such as, theft, burglary, etc. which are not included in the FBI Type I Uniform Crime Report. Even though these types of crimes may be classified as "minor" they still have victims and it is essential that those given the responsibility of processing the crime scene conduct a thorough and well documented crime scene investigation. It is also critical that the appropriate equipment and supplies to identify, protect, document and collect potential physical evidence are available. Personnel using the equipment must be trained on its use with effective protocols in place to ensure the crime scene is appropriately processed and documented.

Personnel assigned the task of

crime scene processing should have the knowledge and ability to use the following equipment: digital camera with flash and tripod; cutting instruments (box



Latent Print Lifting Supplies

cutter, scalpel, scissors, knife); evidence tape; flashlight; latent print kit; measuring tape; evidence marking pen; photographic scale; sterile distilled water and swabs; paper envelopes and sacks; sketch pad; tweezers; magnifying glass; small bullet boxes; biohazard bags; general evidence collection containers; hand disinfectant, and personal protective equipment (PPE). These basic "tools of the trade" are essential in conducting any crime scene investigation. Obvi-

ously, training is required prior to processing a crime scene with this list of equipment and supplies. For example, training on the use of a digital camera is essential and takes both time in the classroom and practical exercises to gain proficiency and confidence. The camera is considered one of the most critical pieces of equipment for the crime scene investigator. Good crime scene photography documents the scene and allows the investigator to later remember, in court, photographs that were taken to indicate the location of critical evidence. Recording the location of physical evidence, in both notes and a sketch, is essential in order to reorient the evidence observed at the crime scene. The sketch cannot be completed without a measuring device to measure the locations of the items of evidence after establishing a "standard reference point." Of course, a photographic scale indicating an inch to 12 inches is necessary when

photographing specific items of evidence, such as, visible fingerprints, shoe impressions, fingerprints in suspected blood, or any other evidence item requiring a comparison and examination in the Crime Lab. Even if some of the other tools of the trade, such as fingerprint development kits, swabs, etc. are not available for crime scene processing, the use of a camera and a sketch, with notes and measurements of where items of evidence were located, may provide the needed information for the investigation to be resolved. Other evidence from the scene, such as, broken glass with suspected blood, saliva from the floor, and a fingerprint left in putty along a window ledge, must be properly documented and packaged before submitted to the Crime Lab for analysis and examination to further resolve the investigation.

- Mike Medler
Laboratory Director