

Glossary

Accelerant: Any substance used to accelerate (and sometimes direct) the spread of a fire.

Accreditation: An endorsement of a forensic laboratory's policies and procedures by law enforcement professional organizations or industry; a necessary component of establishing credibility within the court system. To qualify for accreditation, a crime laboratory must meet minimum requirements set forth by the certifying authority.

ACE-V: Acronym for Analysis, Comparison, Evaluation, and Verification. A method devised for the scientific comparison of prints to either identify a print (via individualization, as having originated from the same source) or exclude impressions as having no common origin.

Adipocere: The hydration and dehydrogenation of the body's fat, which results in an off-white, waxy, clay-like substance that in many cases preserves the body, and retards the decomposition process; commonly found in the subcutaneous tissues of body extremities, the face, buttocks, breasts, and in individuals with a high percentage of body fat.

Agglutination: The process that creates a network of linked cells from the antibodies that attach themselves to the cells.

Algor Mortis: Postmortem cooling of the body. Heat loss will occur until the body reaches the temperature of the surrounding environment (ambient temperature).

Alternate Light Source (ALS): Light-emitting devices supplied with colored filters that filter the source light so that the potential evidence can be viewed with light of a narrow wavelength range, rather than at the usual "white light" viewing range.

American Academy of Forensic Sciences (AAFS): A multidisciplinary professional organization that provides leadership to advance science and its application to the legal system. The objectives of the Academy are to promote education, foster research, improve practice, and encourage collaboration in the forensic sciences.

Antemortem: Prior to death.

Anthropometry: A series of 11 body measurements of the bony parts of the body, and an in-depth description of marks (scars, moles, warts, tattoos, etc.) on the surface of the body; developed by Alphonse Bertillon.

Antibody: A substance in the body that reacts with another substance called an antigen.

Antigens: A substance, such as bacterium, virus, or protein, that, when coming into contact with an appropriate tissue in an animal body, stimulates that tissue to

produce a state of resistance or sensitivity to infection by the organism (bacterium or virus) or to a toxic substance (such as dust).

Area of Convergence: A two-dimensional point, derived from analyzing bloodstain directionality. It is used to ascertain the point from where an event occurred (i.e., impact) that led to the subsequent dispersal of the blood. This is only a two-dimensional explanation (X and Y axis) and does not determine how far away from the area that the blood event originated; instead it provides an area in which to determine such information.

Area of Origin: (1) Fire. The large track of space or area where a fire would have started. It can be located where the fire was able to grow and develop. (2) Blood Pattern Analysis. By establishing the impact angles of representative bloodstains and projecting their trajectories back to a common axis (Z), extended at 90 degrees from the area of convergence, an approximate location of where the blood source was when it was impacted may be established.

Arson: The willful and malicious burning of a person's property.

Asphyxia: The interruption of oxygenation of the brain (e.g., drowning, strangulation, etc.).

Associative Evidence: Evidence that can be attributed to, or associated with, a particular person, place, or thing, thus establishing inferred connectivity.

Automated Fingerprint Identification System (AFIS):

An automatic pattern recognition system, for the identification of fingerprints that consists of three fundamental stages: data acquisition, feature extraction, and decision-making.

Autopsy: The medical dissection and examination of a body in order to determine the cause of death; entails the removal of internal organs through incisions made in the chest, abdomen, and head.

Backlogged: A case where the analysis has not been completed within 30 days of the item being submitted to the lab.

Ballistics: The study of a projectile (most likely from a firearm) in motion.

Barrier Protection: Involves creating a barrier between the personnel and their surroundings to ensure that they are not contaminated by the scene and that they themselves do not contaminate the scene and evidence therein.

Bayesian Statistics: A statistical method based on Bayes's theorem (a theorem in probability theory named for Thomas Bayes) used in clinical decision analysis and in the evaluation of diagnostic tests, disease progression, case control studies, and certain types of clinical trials.

Biological Profile: A description of an individual in such a way that law enforcement or acquaintances can

narrow the range of possible identities. The profile is assembled by studying the remains of an individual, and noting characteristics of shape and size, which may allow an estimation of height, build, age, sex, ancestry, and any individualistic features such as tattoos, jewelry, medical apparatus, and clothing.

Black Water Diving: Conditions where silt, sediment, algae, and pollution create underwater visibility that is typically less than one foot.

Bloodborne Pathogen: Microorganisms found within the blood that can cause infection and disease, and may be transported in other biological fluids.

Bloodstain Pattern Analysis (BPA): The science of examining and interpreting blood present at a bloodshed event in order to determine what events occurred, in what order, and who possibly left the stains.

Blood Type: Determined by the kind of antigen on the surface of each red blood cell.

Bore: Interior of a firearm barrel.

Buoyancy Control Device (BCD): The jacket-like piece of equipment used to keep a diver neutrally buoyant.

Cadaver Dogs: Canines that are trained to seek out the scent of decomposition; used in area searches for a victim(s) or for clandestine gravesites.

Cadaveric Spasm: Immediate stiffening of a dead body, with no prior period

of flaccidity and no extended onset. It will typically involve the victim's hands clenched around an object, such as a weapon, debris from a lake floor, clothing, or another object, and sometimes is associated with events (i.e., drowning or homicide) that involved considerable excitement or tension preceding death.

Caliber: Diameter of the bore of a rifled firearm, measured between opposing lands; usually expressed in hundredths of an inch or millimeters.

Cast-off Patterns: Bloodstain patterns created when blood is released from an object through the influence of centrifugal acceleration, cessation, or stop-action.

Cause of Death: The injury or disease responsible for the pathological and physiological disturbances that resulted in death; the medical reason for death.

Certification: A voluntary process of peer review by which a practitioner is recognized as having attained the professional qualifications necessary to practice in one or more disciplines of criminalistics.

Chain of Custody: A log or other record of who collected and subsequently handled evidence of a crime. Accurate accounting strengthens the court case; if evidence is found to be illegally collected, whether intentionally or unintentionally, then it will be found to be inadmissible in court.

Circumstantial Evidence: A series of facts that, although not the fact at issue, through inference tends to prove a fact at issue.

Clandestine Laboratories: Where the production of illicit compounds are done whether or not the laboratories are true laboratories.

Classification: A formula given to a complete set of 10 fingers as they appear on a fingerprint card generally based on pattern type, ridge count, or ridge tracing. The FBI National Crime Information Center—Fingerprint Classification (NCIC-FPC) and Henry System are used to classify prints.

Close-Up Photographs: A type of image that allows the viewer to see all evident detail on a particular item of evidence. This frame is filled with the evidence itself; photos are taken with and without a scale; and can be called comparison, examination, or macro photographs.

Code of Ethics: A contract signed by an employee who agrees to function by the terms of employment or membership. This code lists what the department or organization believes are acceptable behaviors, professional expectations, and values to which employees should adhere. Failure to comply with the code can result in job dismissal or removal of membership and certification.

Combined DNA Index System (CODIS): An electronic database of DNA profiles administered through the Federal Bureau of Investigation (FBI), where federal,

state, and local crime labs can share and compare DNA profiles to match DNA from crime scenes with convicted offenders and other crime scenes.

Command Post: Established to coordinate on-scene activities and efforts; also called incident command under the incident command and control structure. From this location, all supervisory decisions are made and the crime scene is managed.

Comparison Microscope: Two compound microscopes connected by an optical bridge; allows two specimens to be viewed side-by-side.

Complimentary Base Pairing: The unique way that the two strands of the DNA double-helix formation are bonded together. Bases in the nucleotides (adenine [A], cytosine [C], guanine [G], and thymine [T]) on each strand align in specific paired combinations, where G always pairs with C, and A always pairs with T (see *Deoxyribonucleic Acid*).

Compression Evidence: Marks left when an instrument is in some way pushed or forced into a material capable of picking up an impression of the tool.

Computer Network: Two or more computers linked by data cables or by wireless connections that share or are capable of sharing resources and data.

Concentric Fractures: Cracks or breaks that appear to make a typically broken series of concentric circles around an impact point.

Conchoidal Fractures: Stress marks in glass that are shaped like arches, located perpendicularly to one side of the glass surface, and curved nearly parallel to the opposite glass surface.

Cone of Foam: In some cases of drug overdose and drowning, the victim will exhibit exudates in the form of froth emanating from the mouth and nostrils; a result of severe pulmonary edema; may appear initially off-white but will advance to pinkish in color as the decomposition process advances.

Contraband: An item that is found to be illegally possessed or for some legal reasons is illegal to possess.

Controlled Substance: A substance (typically a drug) whose possession or use is regulated by the government; Title 21 of the United States Code (21 USC) defines the substances.

Controlled Substances Act (CSA): Title II and Title III of the Comprehensive Drug Abuse Prevention and Control Act of 1970 regulate the manufacture and distribution of drugs and other substances placed by the Drug Enforcement Agency (DEA) or the Department of Health and Human Services (DHHS) into five schedules based upon medical use, potential for abuse, and safety or potential for dependence.

Cortex: The region of hair between the medulla and cuticle in the hair shaft, which contains the pigment cells

responsible for imparting hair color characteristics.

Credentials: A certificate, letter, experience, or anything that provides authentication for a claim or that qualifies somebody to do something. In the context of forensic and crime scene–related work, credentials as an expert will be established by the court through questioning pertaining to the witness' education, training, and experience.

Crime: An act or the commission of an act that is forbidden by a public law and that makes the offender liable to punishment by that law.

Crime Scene: Anywhere that evidence may be located that will help explain the events that occurred.

Crime Scene Investigation (CSI): The systematic process of documenting, collecting, preserving, and interpreting physical evidence associated with an alleged crime scene, in an effort to determine the truth relating to the event in question.

Crime Scene Sketch: A permanent mapped record of the size and distance relationships of the crime scene and the physical evidence within it; serves to clarify the special information present within the photographs and video documentation, because it allows the viewer to easily gauge distances and dimensions.

Criminalistics: The application of science through the analysis of physical evidence within the enforcement of law.

Cross-Contamination: The movement or transfer of material between two objects during the investigative processing efforts; should be avoided when possible.

CSI Effect: A phenomenon whereby forensic drama television has created unreasonable expectations in the public, thereby increasing the prosecution's burden of proof, while presenting an air of infallibility with regards to forensic science; also has educated the public and increased the overall interest in the area of forensic science and crime scene work.

Cuticle: The outermost layer of hair; contains the scaly protective layer that covers the shaft of the hair. Each species has identifiable cuticle characteristics.

Cyanoacrylate Ester Fuming: A technique that stabilizes latent prints using super glue. Super glue is induced to fume and the fumes interact with latent fingerprint residue by polymerizing them, yielding a stable friction ridge impression off-white in color (see *Latent Prints*).

Daubert Standard: From the case *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993), the court held that federal trial judges are the gatekeepers of scientific evidence. Under this standard, trial judges must evaluate whether testimony is both relevant and reliable, resulting in a two-pronged test of admissibility.

Death: The irreversible cessation of circulatory and respiratory functions.

Decomposition: Postmortem breakdown of body tissues.

Delay Device: An incendiary or detonation device of some type that is employed to allow the arsonist to depart the scene or establish an alibi.

Deoxyribonucleic Acid (DNA): The nucleic acid that contains the genetic instructions used for the growth, development, and programmed death for cells of all organisms and some viruses; is a double-helix structure.

Depressant: Type of psychoactive drugs that temporarily reduce or incapacitate a specific area of the body or mind; also referred to as downers and sedatives.

Detonation Point: The location point where the device was detonated.

Digital Evidence: Information and data of value to an investigation that is stored on, received, or transmitted by an electronic device.

Dillie-Koppanyi: A test for barbiturates, in whose presence the reagent turns violet-blue.

Direct Evidence: A type of evidence that proves a fact without the necessity of an inference or a presumption.

Directionality: In a crime scene, the direction that blood traveled that is determined by the bloodstains' shape.

Disaster Mortuary Operational Response Team (DMORT):

A program of the U.S. Department of Health and Human Services that responds only when requested by local law enforcement agencies. Its goal is to assist local authorities during a mass fatality incident that is beyond the scope and abilities of local agencies.

Drug: Any chemical substance, other than food, which is intended for use in the diagnosis, treatment, cure, mitigation, or prevention of disease or symptoms.

Duquenois-Levine: A chemical color test that is used to confirm the presence of cannabinoids which is the primary psychoactive compound.

Electrostatic Lifting Device (ELD): A type of machine that operates by electrically charging a lifting film that has been placed over a surface bearing a dust print impression. During operation, the electrostatically charged film is drawn down to the surface, and the dust particles in the impression are attracted to the lifting film. The construction of the lifting film allows it to store the electrostatic charge and thus retain the dust particles after the power supply has been disconnected. The impression-bearing film is then viewed with an oblique light source to search for any impressions that may have been recovered.

Ethics: The study of moral standards and how they affect conduct.

Evidence: Anything that can help to prove or disprove that a crime was or was not committed, and by whom.

Excusable Homicide: Unintentional, truly accidental killing of another person; the result of an act that under normal conditions would not cause death, or from an act committed with due caution that, because of negligence on the part of the victim, results in death.

Expert Witness: A person who is called to answer questions on the stand in a court of law in order to provide specialized information relevant to the case being tried.

Expired patterns: Images created when blood is blown out of the nose, mouth, or wound as a result of air pressure and/or airflow; often numerous, relatively small stain sizes are displayed that may vary in shape.

Exsanguination: Death due to loss of blood or bleeding out.

Exterior Ballistics: The study of the flight of a projectile beginning at the muzzle end of the barrel of a firearm and terminating at the target.

Extractor: A component found within the chamber area of a firearm (nonrevolver) that is responsible for ejecting the spent shell casing after it has been fired. This hook-like object will often leave a compression or striated mark within the ejector groove at the base of a spent shell casing that is potentially identifiable

to a particular firearm (also called an extractor).

FBI National Criminal Identification Center—Fingerprint Classification

(NCIC-FPC): A system of fingerprint classification developed by the FBI that assigns a 20 character string of letters and numbers to a person's fingerprints. The database is used to compare existing prints with those from unsolved crimes.

Federal Rules of Evidence (FRE): Adopted in 1975, these rules govern the introduction of evidence within proceedings, both civil and criminal, in U.S. Federal Courts. While they did not specifically apply to suits brought within state courts, the rules of many states have been closely modeled upon the provisions found within the FRE.

Final Sketch: A finished rendition of the rough sketch usually prepared for courtroom presentation; often will not show all of the measurements and distances originally recorded on the rough sketch but only significant items and structures. It may be either inked or a computer model, in a manner that is not able to be modified. The sketch is clutter-free and should accurately depict all pertinent items of evidence, typically through the use of an accompanying legend (see *Rough Sketch*).

Firearm: Any device that can fire a projectile or projectiles as a result of an explosive or propellant charge.

Firing Pin: The component in a firearm that strikes the base of the cartridge and causes the initial incendiary event leading to expulsion of the bullet from the barrel. These may leave marks upon a cartridge casing that may be identifiable to a particular firearm or brand of firearm.

First Responder: The police officer, fire fighters, and/or emergency medical personnel who is dispatched or arrives at the potential crime scene first.

Flammable Range: The mixture of fuel vapors and oxygen, expressed as a concentration (percentage) of fuel vapors in air, which will result in flammability.

Flash Point: The lowest temperature at which a solid or liquid material produces sufficient vapors to burn under laboratory conditions.

Forensic Crime Laboratory: A scientific laboratory (with at least one full-time natural scientist) where physical evidence in criminal matters is examined; staff provides reports and opinion testimony with respect to such physical evidence in courts of law. These laboratories provide services for all levels of government.

Forensic Science Educational Program

Accreditation Committee (FEPAC): A professional working group established by the American Academy of Forensic Science (AAFS) to maintain and enhance the quality of forensic science education through a formal evaluation and

accreditation of college-level academic programs.

Fruit of the Poisonous Tree Doctrine: If evidence is found to be illegally collected (whether intentionally or unintentionally), the evidence will be found to be inadmissible in court.

Frye Test: The Federal Court of Appeals ruling (*Frye v. U.S.* 293 F. 1013 [D.C. Cir. 1923]); held that evidence could be admitted in court only if “the thing from which the deduction is made” is “sufficiently established to have gained general acceptance in the particular field in which it belongs.”

Gas Chromatography: The carrier gas flows through a column constructed of glass (also called the moving phase).

Gauge: The number of spherical lead balls that have the diameter of the interior of the barrel of the firearm that add up to weigh one pound.

Grooves: The low-lying portions between the lands within a rifled firearm bore.

Hallucinogen: A type of drug or substance that, taken in nontoxic dosages, produce changes in perception, thought, and mood.

Handgun: A type of weapon designed to be held in and fired with one hand; two primary subcategories are pistols (semi-automatic and automatic) and revolvers.

Handheld Devices: Portable data storage devices that provide communications, digital photography, navigation systems,

entertainment, data storage, and personal information management.

Hearsay: Unfounded information that is heard from other people. It must be corroborated by other sources to be admissible in court.

Henry System: Developed by Sir Edward Henry, a system of print classification used for well over a century. The system was built around the individual’s whorl patterns in a fingerprint (primary classification) that were subdivided into five categories depending upon the type and size of the patterns.

High-Order Explosive: A type of material designed to detonate and yield a near instantaneous release of energy; chemically detonates at a speed greater than 3,300 feet per second.

Homicide: The killing of one person by another.

Hyperthermia: Rising of the body’s core temperature.

Hypothermia: Lowering of the body’s core temperature.

IDLH Environment: Level A of the PPE levels, contains the greatest risk for exposure to potentially life-threatening biological hazards. IDLH stands for immediately dangerous to life or health.

Incendiary Evidence: Includes crime scene debris.

Incision: A type of wound caused by sharp force trauma.

In Situ: When items have not been moved, altered, or otherwise molested, and can be documented in their originally discovered location and condition.

Instrumentality: A device, system, or its associated hardware that has a significant role in the commission of a crime.

Integrated Ballistic Identification System

(IBIS): A national imaging system developed by the FBI and ATF that digitally records images from fired bullets and cartridge cases used in crime scenes and test fires from recovered firearms for comparison with those used in unsolved crimes.

Interior Ballistics: The study relating to the transition of chemical energy within the barrel of a firearm and the motion of the projectile(s) as it moves through the barrel.

Investigate: To make a systematic examination, or to conduct an official inquiry.

Iterative Process: Where the investigator continually re-checks and re-analyzes the crime scene to assure that processing is done properly; continues until the results are negative, meaning that nothing further is required, and nothing has been overlooked.

Justifiable Homicide: The killing of a person under authority of the law. Includes killing in self-defense, killing an enemy during wartime, capital punishment, and deaths caused by police

officers while attempting to prevent a dangerous felon's escape or to recapture a dangerous felon who has escaped or is resisting arrest.

Known Evidence: Any type of evidence that originates from a known, acknowledged, or accounted for source that is to be compared to an unknown or questioned material.

Laceration: A type of wound caused by blunt force trauma; subdivided into firearm and non-firearm types.

Lands: The raised portion between the grooves within a rifled firearm bore.

Latent Prints: Finger, hand, or other body part prints that require additional processing to be rendered visible and suitable for comparison.

Legend: A note of explanation inserted outside of the sketch area that relates to a specific item, symbol, or information contained within the graphical representation of a sketch (see *Rough Sketch*).

Ligature: An item used to bind, incapacitate, or kill; often leaves patterned impression evidence that can be matched later to the item that was used; the ligature or binding impressions may be either striated or compressed.

Livor Mortis: The visible color change that occurs from the pooling of blood once the heart stops pumping; also called hypostasis or postmortem lividity.

Locard's Exchange Principle: Whenever two objects come in contact with one another, a cross-transfer of evidence occurs.

Low-Order Explosive: A type of material that burns or detonates at a speed lower than 3,300 feet per second; they typically involve pyrotechnics that create smoke, light, heat, and sound.

Luminol: A type of presumptive search technique for blood that results in chemiluminescence as a result of the chemical reaction occurring between the reagent and the biological stain. It is fast acting and must be documented in darkness, with photography in an expeditious manner.

Manner of Death: Circumstances under which the cause of death occurred; is classified as natural or unnatural. A death is classified as natural when it is caused by disease. Other deaths are classified as unnatural, including: homicide, suicide, accident, or undetermined, based on the circumstances surrounding the incident causing death.

Mapping: Measurements and drawings associated with a crime scene. The basic methods utilized for crime scene sketching and mapping are: (1) baseline, (2) rectangular coordinates, (3) triangulation, and (4) polar/grid coordinates (see *Rough Sketch*).

Marquis Test: Tests for heroin, morphine, and opium derivatives.

Masking Fire: Fire set to mask the commission of other crimes.

Mass Spectrometry: After the mixture has been separated by the gas chromatograph, a direct connection of the chromatograph columns and the mass spectrometer allows each component to flow into the spectrometer as it leaves the chromatograph.

Mechanical Loss: When, through the efforts of saving a life, evidence is lost. This is an accepted loss of physical evidence, and is easily articulated in the court.

Medulla: The innermost region of hair in the hair shaft. In humans it is amorphous and lacks visible cellular material, whereas the medulla of other species is often seen as cellular in nature, with some displaying characteristics similar to a bead of pearls.

Microcrystalline Test: A small quantity of the substance is placed on a microscopic slide, and a drop of chemical reagent is added. The chemical reagent causes a precipitate reaction, creating crystals of a size and shape characteristic of a particular drug.

Microtaggants: These fluorescent, color-coded, multilayered particles identify the residue as dynamite and indicate the source of manufacture.

Mid-range Photographs: Their purpose is to frame the item of evidence with an easily recognized landmark, which visually establishes the position of the

evidence in the scene in relationship to the item's surroundings.

Minutia: Tiny variations and irregularities within fingerprint ridges that are identifiable; also known as ridge characteristics.

Miranda Ruling: From the 1966 case of *Miranda v. Arizona*, mandated greater emphasis on the collection, preservation, and analysis of physical evidence. Established the Constitutional rights of an accused individual to be advised they can have legal counsel and can remain silent. Eliminated confessions by suspects and placed the emphasis on physical evidence relating to the crime in question.

Mitochondrial DNA (mtDNA): Found outside of the cell nucleus and is inherited solely from the mother. Each cell contains one nucleus and hundreds to thousands of mitochondria. Therefore, there are hundreds to thousands of mtDNA copies in a human cell compared to just one set of nuclear DNA in that same cell.

Morals: Although similar to values, morals are more widely reaching, socially accepted rules of conduct. A person is judged by others by societal definitions of immorality/morality.

Multi-level Containment: A crime scene preservation method utilizing several tiers of perimeters; the most effective for ensuring evidence integrity while also allowing a workable scene structure.

Mummification: The dehydration of soft tissues as a result of high temperatures,

low humidity, and wind or other form of ventilation. Skin will appear brown, leather-like, and tight. The mummification process begins at the tips of the fingers and toes and progresses towards the hands and feet, face, and other extremities.

Narcotic: Derived from the Greek word for stupor, originally referred to a variety of substances that dulled the senses and relieved pain. Currently refers to opium, opium derivatives, and their semisynthetic substitutes; here the term refers to drugs that produce morphine-like effects.

National Firearms Act of 1968: Requires retailers to record the serial number of a weapon and the name of its purchaser.

National Integrated Ballistic Information Network (NIBIN): A networked computer database of fired cartridge casing and bullet images used by crime laboratories; developed to solve open cases by allowing firearms examiners to compare existing evidence with fired bullets, cartridge casings, shotgun casings, and firearms recovered in other jurisdictions.

Negative Impression: A type of pattern that an item, such as footwear, has left in a dusty area, essentially removing the dust that was present.

Ninhydrin: A chemical used to detect ammonia or amino acids within print residue. It reacts with these amino acids and forms a bluish-purple color; most useful on porous surfaces (e.g., paper

and raw wood) and is primarily used in document processing efforts.

Nucleotide Polymer: It is a molecule that is formed by linking together a series of repeating units known as nucleotides.

Overall Photographs: Taken with a wide angle lens or in a fashion that allows the viewer to see a large area in the scene. This documents the condition and layout of the scene as found and helps to eliminate issues of subsequent contamination (e.g., tracked blood, movement of items). Typically they are shot from the four corners of a crime scene looking inward.

Passive Bloodstain: A type of blood evidence that is not related to a specific violent action within the context of the scene. They are the aftermath associated with this violence, as the resulting bloodshed begins to move and cure due to environmental and gravitational forces.

Patent Prints: Finger or other body prints that require no processing to be recognizable and may be suitable for comparison.

Penetrating Gunshot Wound: A type of firearm projectile injury with an entrance but no exit, thus allowing a projectile be recovered at autopsy.

Perforating Gunshot Wound: A type of firearm projectile injury with an entrance wound and an exit wound. Generally no projectile will be recovered by a pathologist at autopsy; those responsible

for processing the crime scene should try to recover a projectile for each identified exit wound.

Perimeter: The outer confines of a crime scene; involves some sort of delineation (e.g., plastic tape, rope, etc.) or physical boundary as to what area is considered inside of the supposed crime scene, and what is external to the area of investigation.

Perimortem: At or near the time of death.

Peripheral Devices: Equipment that can be connected to a computer or computer system to enhance user access and expand the computer's functions.

Perjury: A lie told within a court of law by someone who has taken an oath to tell the truth.

Personal Protective Equipment (PPE): A type of barrier protection that typically consists of gloves, Tyvek suits, shoe covers, eye protection, and respiratory equipment; designed to protect crime scene personnel from the hazards inherent at the scene.

Photo Log: A permanent written record of all information pertaining to photodocumentation. Department policy often dictates what is included in a photo log; however, the following information should be included: date, time, case number, agency name, photo equipment used, numerical ordering of each photo taken, brief description of photo taken, direction facing for each photo taken,

approximate distance from subject matter in each photo taken, and shutter speed, aperture setting, and ISO if taken on film (digital cameras automatically record such photo information).

Photo Placard: A handwritten or agency-developed sheet or board that lists pertinent case information for the photographs to follow. Taking a shot of the placard as the first photo on a roll of film or digital card ensures that personnel know which photographs pertain to a particular case and identifies the photographer.

Physical Evidence: Any type of evidence that has an objective existence; anything with size, shape, and dimension. Examples are gases, fingerprints, glass, paint, hair, blood, soil, and drugs. Also called real evidence.

Plant: A pool of flammable liquids or pile of combustibles (newspapers, rags, etc.) that is used to heat up a fire at a select location; designed to produce hot heat in the specific area the arsonist wishes to cause great damage; also called a booster.

Plastic Prints: A type of finger or other body print having a distinct three-dimensional appearance; these often do not require further processing.

Point of Origin: The location where a fire actually started; the place where it began.

Points of Comparison: Matching ridge characteristics between two compared prints. In the United States, prints should

match at 12 points of comparison before an identification can be considered as positive. Current training in fingerprint comparison stresses that the quality of the print and the quality of the comparison are more important than placing emphasis on a numerical match.

Postmortem: After death.

Postmortem Interval (PMI): Time elapsed since a person died; estimated through various scientific observations of the biochemical changes that occur to a body after death.

Preliminary Scene Survey: An overview of the entire crime scene to identify any threats to the scene's integrity and ensure protection of physical evidence. The primary purpose is to carefully assess the scene for logistical and safety considerations.

Primary Packaging: The trace evidence is placed onto a clean sheet of paper and the paper is then folded into thirds and then into thirds again, with one end of the paper tucked back into itself so as to safely encapsulate the trace material.

Primary Scene: The first encountered location where evidence was located, which often is the location where dispatch sends the officer, or from which a witness called in a complaint.

Primary Transfer: Occurs when a fiber from a fabric is transferred directly onto a victim's clothing.

Primer: In a firearm, the metal cup located within the center of the base of a cartridge that contains a small amount of incendiary compound that, when crushed by the firing pin, sets off the initial incendiary event. In rimfire weapons (e.g., a .22 caliber), the entire base of the cartridge serves as a primer.

Probability: Frequency with which an event will occur; also known as the odds of occurrence.

Probing: An invasive search technique that attempts to locate a gravesite periphery through pushing a metal rod into the ground and marking where the rod enters more easily than its surroundings; soil density is measured and this also gives some idea as to grave depth.

Product Rule: When the frequency of independently occurring variables is multiplied together to obtain an overall frequency of occurrence for the event or item.

Proficiency Testing: A measure for determining whether lab workers as individuals and the lab as a whole are operating at an industry established standard.

Projected Pattern: Images produced by blood released under pressure (i.e., arterial spurting). These patterns generally result from volumes of blood larger than those that produce passive drop stains or other dynamic patterns (i.e., impact patterns).

Protocols: The steps and processes that are undertaken by the laboratory to ensure that the correct tests are performed accurately.

Putrefaction: Postmortem changes produced as a result of biochemical actions by bacteria and microorganisms.

Pyrolysis: Transformation of a compound into one or more other substances by heat alone.

Pyromaniac: Serial fire starters.

Quality Assurance (QA): A method to ensure and verify quality control. A laboratory's QA assessment measures are necessary to oversee, verify, and document the performance of the laboratory.

Quality Control: Measures to ensure that analysis results meet a specified standard of quality.

Questioned Evidence: Any type of evidence or material of an unknown, unacknowledged, or unaccounted for source.

Radial Fractures: Breaks or cracks originating from the point of impact and moving away from that point, in a radiating pattern.

Rifle: A type of weapon designed to be held in two hands while being fired from the shoulder.

Rifled Firearm: A type of weapon that contains rifling within the bore of the firearm's barrel.

Rifling: The spiral grooves that are formed in the bore of a firearm that is designed to impart spin upon a projectile as it passes through the barrel. The rifling is made up of grooves and lands; a spinning projectile improves its accuracy to impact its target.

Rigor Mortis: Stiffening of the body postmortem. It involves the contraction of body muscles, beginning in the smaller muscle groups and progressing to the larger groups and is a result of chemical changes that occur within the body upon death.

Rough Sketch: A hand-drawn image developed while on-scene, typically during the crime scene assessment/preliminary scene evaluation phase, to assist with development of a strategic plan for processing. The sketch is not done to scale, can be drawn with any implement (crayon, chalk, pencil, pen, etc.), and is crude in its artistry. As work progresses at the crime scene, the sketch will include not only the crude crime scene layout, but also be used to record measurements of items and structures, and distances between items.

Schedules: Placement of drugs or substances into one of five schedules according to the Controlled Substances Act. This is based upon the substance's medical use, potential for abuse, and safety or liability for psychological and/or physical dependence.

Scientific Investigation Method: An iterative process incorporating the fundamental principles behind the scientific method, which guides the investigator in ensuring a thorough and systematic investigatory methodology.

Scientific Method: Utilizes principles and procedures in the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of a defined hypothesis.

Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST): A working group established in 1997 in response to a number of inconsistencies and controversies relating to fingerprint identification and technological advancement; operates through Federal Bureau of Investigation sponsorship with a mission to assist the latent print community in providing the best service and product to the criminal justice system.

Scott Test: Screen test for cocaine.

Scraping/Striation Evidence: Marks produced by a combination of pressure and sliding contact by a tool that result in microscopic patterns imparted to the surface onto which the tool was worked.

Screening Test: A specimen is subjected to a series of reagents that yield characteristic colors for commonly encountered drugs.

Secondary Device: A second explosive bomb placed at a scene to detonate after the original explosion. Secondary devices are typically targeted at emergency responders and investigators who respond to a bombing.

Secondary Packaging: Serves to protect the primary packaging from damage and ensures that no trace material will be added to nor lost from the initial evidence that was collected.

Secondary Scene: Other crime scenes that are later identified as being associated with a primary scene.

Secondary Transfer: Occurs when already transferred fibers on the clothing of a suspect transfer to the clothing of a victim.

Sexual Assault Kit (SAK): Tools and instructions to assist the crime scene investigator and attending medical professional to properly collect and document the specimens required by the laboratory; can be used to collect appropriate samples from both male and female sexual assault victims and suspects.

Shoeprint Image Capture and Retrieval (SICAR): An automated shoeprint identification system, developed in England by Foster and Freeman Ltd., which incorporates multiple databases to search known and unknown footwear files for comparison against footwear specimens found in crime scenes.

Skeletonized Stain: The center of a dried bloodstain flakes away and leaves a visible outer rim.

Small Particle Reagent (SPR): A suspension of molybdenum sulfide grains in water and a detergent solution. The grains adhere to the fatty components of a latent print deposit, and assist with the visualization of latent print evidence.

Smoothbore Firearm: Type of firearm weapon with no rifling present within the bore.

Spatter: A random distribution of bloodstains that vary in size and may be produced by a variety of mechanisms. The pattern is created when sufficient force is available to overcome the surface tension of the blood.

Spoliation: The intentional or negligent altering of evidence.

Spontaneous Combustion: A product of a natural heat-producing process.

Stellate Defect: An irregular, blown-out entrance wound associated with a gunshot. This type of wound is caused by the propellant gases separating the soft tissue from the bone and creating a temporary pocket of hot gas between the bone and the muzzle of the weapon.

Stimulant: A type of drug or substance (also called uppers) that can reverse the mental and physical effects of fatigue.

Stippling: Type of injury resulting from an impact of burned and unburned particulates associated with the discharge of a firearm. They surround the bullet impact wound in a roughly circular pattern due to the fact that gunpowder is

discharged in a conical pattern as it exits a firearm.

Swath: The effective area a searcher can cover while conducting a search.

Swipe: Occurs when a bloodied surface rubs across a nonbloodied surface.

Tache Noire: If an individual dies in an arid environment and his or her eyes are open at the time of death, the exposed area of the eyeball (sclera) may develop a brownish-black line.

Taphonomy: The study of postmortem changes to the body. Examples include: normal decomposition; alteration and scattering by scavengers; and movement and modification by flowing water, freezing, or mummification.

Tardieu Spots: In some cases of advanced stages of lividity, the capillaries may burst and cause what appear to be small, pinpoint hemorrhages.

Terminal Ballistics: Deals with the resulting impact and interaction between the projectile and the target matter.

Terminal Velocity: An object falling through the air will increase its speed of descent until the force of air resistance that opposes the item is equal to the force of the downward gravitational pull.

Testimonial Evidence: Vocal statements most commonly made while the speaker is under oath, typically in response to questioning; also may be made by witnesses, victims, or suspects during the course of the investigation, while not under oath.

3R Rule: Radial fractures form a Right angle at the Reverse side to which force was applied.

Trace Evidence: Any evidence that is small in size, such as hairs, fibers, paint, glass, and soil, which would require microscopic analysis in order to identify it.

Trailers: Arrangement of a combustible or flammable material (solids, liquids, or combinations of both) to ensure a fire is carried from one location to another. A trailer is regularly placed from a point of exit to the area the arsonist wants to be the area of origin; also used to connect multiple plants within a structure.

Transfer Evidence: A type of evidence that is passed from one item to another, typically as a result of contact or action. Careful analysis of this evidence can associate the questioned evidence with a known source.

Transfer Stain: Generally indistinct stains that can be of virtually any size or shape. The shape of a transfer pattern may retain some of the physical characteristics of the object that created it. In this way, the shape of a transfer pattern suggests the object that created it through the recognizable patent image.

Transient Evidence: Physical evidence present at the crime scene that is either fragile or at great risk for loss, alteration, or destruction if not properly identified, documented, collected, and preserved as soon as possible.

Transitional Ballistics: Concerned with the period of time in which the projectile(s) transition from its movement through the firearm barrel to its flight through the air upon exit from the barrel.

Trier of Fact: A judge or magistrate in a trial by the court, or a jury of one's peers in a trial by jury, whose duty it is to weigh the evidence presented and determine guilt or innocence.

Underwater Search and Evidence

Response Team (USERT): First formed in 1982, four USERT teams of 12 members each (located in New York, Washington, Miami, and Los Angeles) are managed by the FBI in Quantico, Virginia. USERTs can perform surface and underwater crime scene investigations in a variety of wet environments nationwide; also provide guidance, advice, and training to the public service community.

Universal Precautions: These are typical good hygiene habits: handwashing and use of barriers and aseptic techniques, and appropriate handling of cutting or puncturing objects like needles, syringes, and razor blades (called sharps).

Values: Beliefs of an individual or group, for or against something in which they have some emotional investment; rules by which an individual makes decisions as to what is right or wrong.

Van Urk: Test for the presence of LSD.

Viscosity: Mutually attracted to one another; in this text, pertains to the properties of blood. The more viscous a fluid, the more slowly it flows; blood is approximately six times more viscous than water.

Vitreous Draw: A method of assisting with determination of the time of death in a postmortem investigation, in which a syringe is used to take a sample of ocular fluid (vitreous humor) from the eye to determine potassium levels.

Void Pattern: Created when blood is blown out of the nose, mouth, or wound as a result of air pressure and/or airflow; often displays numerous, relatively small stain sizes that may vary in shape. Also, the blank space against a surface inside of a spatter or smear (in a bloodstain) or char (in fire) where an object or person has been removed after the event occurred.

Voir Dire: Preliminary examination of a witness or juror to determine his or her competency to give or hear evidence.

Walk-Thru: Once the scene is secure, investigative personnel should conduct a preliminary scene survey.

Wipe: Occurs when a non-bloodied surface moves through or across a stationary one.

Zones of Possibility: Used to establish limits as to what is likely, what is possible, and what is possible based upon the evidence presented.