

**FORENSIC SCIENTIST (FIREARMS & TOOLMARK ANALYST)**  
**CS-401-09**

**INTRODUCTION**

This position is located in the Department of Forensic Sciences (DFS). The mission of the DFS is to provide high-quality, timely, accurate, and reliable forensic science services using best practices and best available technology, focusing on unbiased science and transparency to enhance public safety and health.

The position is responsible for performing examinations of physical evidence submitted to the Firearms Examination Unit related to firearms and tool mark identification.

**MAJOR DUTIES**

Utilize experience or training to identify, analyze firearms and associated materials, compare, and interpret evidence in criminal investigations. The types of crimes include person crimes, such as homicides, sexual assaults, and robberies, as well as property crimes. Receive comprehensive training in firearms examination. The types of cases that might be encountered in the laboratory could include, but are not limited to the following:

- Ballistics (bullets, cartridges, casings)
- Identification of types of weaponry/triggers/barrel/mechanics of the weapon, etc.
- Identification of ammunitions
- Analysis of tool marks
- Restoration of serial numbers
- Test-firing of weapons in the lab
- Analysis of powder residue/burns/patterns
- Determining the caliber weapon
- Determining the trigger pull weight of a weapon
- Reconstruction of projectile evidence
- Reconstruction of a shooting scene of crimes

Analyze a limited range of firearms, evidence, utilizing, unlimited variety of techniques and processes; observes and demonstrates proficiency in the technical examinations and equipment essential to perform casework; demonstrates proficiency in interpretation of results obtained from technical examinations performed, and learns how to prepare detailed notes and comprehensive written notes regarding examinations.

Utilize verbal and written instructions to perform various techniques to identify, preserve, handle and receipt of evidence; the importance of evidence control; to document and maintain chain of custody and preserve the integrity of evidence examined; and the analysis and presentation of conclusions from examinations of firearms, spent and unspent ammunition, etc.

Instructed how to perform examinations on substrates such as clothing or bedding to determine the presence of residues or powder patterns, muzzle to target distance determinations, restoration of obliterated serial numbers, and long range trajectory

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evaluations; how to respond to crime scenes when necessary to assist with documentation of evidence, projectile trajectory determination, and reconstruction and diagramming of shooting events; how to testify in court as an expert witness in connection to the evidence analyzed ;study new techniques and procedures in scientific analysis, collection, and processing; participate in a structured training program demonstrate continuous effort to improve operations; and to work cooperatively and jointly to provide quality customer service.

Research and analyze data to perform mathematical and statistical computations to complete scientific examinations.

Works with supervisor and team leader and other personnel to ensure accreditation standards are met.

Examine simple firearms related evidence, utilizing a limited variety of methods; learns to identify, preserve, analyze, interpret, and present conclusions of firearms, projectiles, spent and unspent cartridges testing and comparison of evidence with known and documented reference data sets and how to advise on the collection of evidence in criminal cases, including those involving deaths, especially when homicide is suspected, and other violent crimes; evaluate risk concerns and identify hazards in the laboratory.

Demonstrate active learning through collaboration with senior staff to analyze and interpret evidence and to develop information necessary to meet the objectives of forensic investigations.

Under instructions and guidance the incumbent learns how to effectively report findings and conduct forensic examinations using validated tools and techniques; and prepare tools and equipment and ensure appropriate use/operation; and maintains license agreements and updates.

Research technical journals, textbooks and forensic science manuals to determine best methods of performing analytical tests; develop and perform validation methods for new techniques and instrumentation.

Learn to provide expert witness testimony in legal proceedings.

Learn to apply procedures that pertain to the quality control, quality assurance, proficiency testing and safety programs.

Demonstrate the ability to communicate effectively both orally and in writing and maintain effective working relationships.

Conduct a limited range of analyses; work effectively under pressure; provide technology advisory services to other agencies and department staff to enhance forensic investigations.

Operate, trouble shoot and perform minor repairs and preventive maintenance on equipment.

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Determine the effectiveness of current analytical methods and recognize new methods for performing firearms examinations.

Follow evidence control procedures to maintain chain-of-evidence integrity and ensure evidence is locked securely in a designated location before and after analysis.

Under supervision, develop examination plans to effectively and efficiently meet the scope of the questions at hand in the investigation addressing exculpatory and exculpatory evidence.

Exercise discretion and sound judgment to determine proper course of action; evaluate a variety of situations, problems, conditions or questions.

Utilize computer software to analyze results of test in order to perform test and keep up-to-date on current studies, pamphlets, journals, and books for use in devising new methods and test.

Devise charts, graphs, and tables aids to conduct test; evaluate laboratory test results; prepare technical reports on findings and project results.

Review experienced examiners' data and reports to better understand the technical aspects, documentation and/or administrative protocols.

Prepare evidence for presentation in court; meet with laboratory personnel and the criminal justice community (e.g., law enforcement personnel, attorneys, investigators, etc.) regarding the interpretation of examinations conducted; and may be required to testify as a key witness in court.

Attend relevant seminars, lectures and other training and development activities.

Project a professional image while representing the Department; and exemplify the Department values, both on and off duty.

Perform other related duties as assigned.

**KNOWLEDGE REQUIRED FOR THE POSITION**

Knowledge of and skill and ability gained through work experience or training in applying theories, principles, concepts, methodology and practices of analytical chemistry, physical science, or biology or related field to the work that is sufficient to perform mathematical and statistical that relates to analytical laboratory work; and knowledge of and ability to apply Federal, state, and local laws, codes and regulations pertaining to forensic science; and training in how to apply evidence collection and preservation procedures.

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Knowledge of or experience in quality assurance procedures and accreditation standards; proper procedures and standard laboratory rules and safety precautions regarding chemicals, toxins and biohazards; and evidence collection and preservation procedures.

Experience or classroom training related to forensic investigations. Knowledge of equipment and supplies used in a forensic laboratory including specialized scientific equipment, instrumentation and software; and with current developments, literature and other sources of information related to the assignment; and the ability to modify analytical methods, to solve problems or respond to technical issues in regards to subject matter analysis.

Experience with or the ability to apply theoretical and analytical principles of natural and physical sciences, including organic, inorganic, biochemistry, physical chemistry, and other applicable fields; apply operational methods and techniques of the forensic laboratory, including laboratory testing procedures.

Knowledge of evidence collection and preservation, chain of custody rules/laws and safety practices and procedures as they apply to analyses in the laboratory; and knowledge of or training related to the rules of evidence and the methods used in presenting evidence in court; and policies and procedures for maintaining and handling evidence and the chain-of-evidence integrity.

Experience or ability to work extensively with chemicals and biohazards in a safe manner; and the ability to perform a variety of scientific costs and analyses; and ability to recognize anomalies, prepare hypotheses, and take appropriate action; prepare and maintain accurate records/data and prepare clear and concise reports and memorandum.

Ability to testify effectively in court as a key witness in legal proceedings as required.

Ability to work safely without presenting a threat to self or others is essential.

Knowledge of and/or experience in design, construction, and operation of firearms and various types of ammunition used in various weapons, and the manufacturing processes of tools as they relate to tool mark examination.

**SUPERVISORY CONTROLS**

Works under the guidance of the Forensic Scientist Supervisor (Firearms Examination Unit), who makes assignments by defining objectives, setting priorities and deadlines and assists with new and unusual techniques that do not have clear precedents or instructions. Also, receives technical guidance and assistance from the Lead Forensic Scientist (Firearms Toolmark Analyst). The incumbent carries out the assignments; consults supervisor of problems or deviations in accordance with instructions, policies or previous training/experience.

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The work is reviewed for conformance to guidelines, instructions, conformity to department policy and requirements.

**GUIDELINES**

Guidelines include policies and procedures of DPS, including but not limited to the standard operating procedures developed by the Firearms Examination Unit through the validation of analytical procedures; governing laws and regulations of the District and Federal government, testing regulations manuals, quality assurance and accreditation standards, and scientific literature, precedent cases, technical references, forensic techniques and literature, catalogs and handbooks, internal protocols, Mayor's Orders, instructions, etc.

The guidelines are usually applicable, however, the incumbent may be required to seek guidance/direction when applying them to specific work situations/cases that may or may not be covered.

Judgment is exercised when interpreting, or adapting unavailable standards and guidelines, as agency policies, regulations, precedents, and work directions for application. The incumbent is required to analyze results and recommends changes.

**COMPLEXITY**

The work involves assessing, evaluating, modifying and adapting various methods to satisfy requirements and to arrive at sound conclusions.

Based on work experience or training, decisions are made in regards to what needs to be done depends upon the analysis of the subject matter or issues involved in each assignment, and the chosen course of action may have to be selected from a variety of alternatives.

**SCOPE AND EFFECT**

Conducts scientific investigations, assists team members when required to perform analysis including collecting appropriate exhibits to prepare for examination/testing; and prepares documentation regarding findings and analysis that are instrumental in preparing results of tests; and identifying problems that may alter analytical results; and ensures that all documentation is in the appropriate order for court cases and/or final discovery.

The results of the work may affect other experts and/or the department's credibility, adequacy, accuracy and effectiveness of the field investigations, and laboratory tests; and ensures that data is relevant to the specific case. The results are also binding and affect judicial proceedings.

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**PERSONAL CONTACTS**

Contacts are with DFS employees, laboratory personnel, consultants, Federal and District regulatory agencies, law enforcement, investigators, and other stakeholders.

**PURPOSE OF CONTACTS**

Contacts are for the purpose of exchanging, coordinating or resolving operating problems by ensuring and maintaining the chain-of-custody of collected evidence, and storage, and to prepare appropriate reports.

**PHYSICAL DEMANDS**

Work is sedentary, however, some work requires periods of walking, standing, bending, stretching etc. Also, some work requires sufficient personal agility to possibly collect and process evidence in a variety of crime scenes. The incumbent will occasionally carry items weighing up to 50 pounds, such as bags and/or boxes of evidence, portable computers, peripherals, and other similar materials. Incumbent must possess sufficient manual dexterity to manipulate and operate laboratory equipment; must be able to visually distinguish color, shape, size, number and picture resolution quality; must be able to withstand exposure to disagreeable elements such as malodorous and/or decomposing samples/bodies, blood, bodily fluids, etc., that may pose a health risk.

**WORK ENVIRONMENT**

The work is performed in an office and laboratory. The office setting is when preparing documentation, and the laboratory setting is during the testing and analysis phase.

The incumbent may be exposed to hazardous materials, toxic substances, blood borne pathogens, and electric current and electrostatic discharge and is required to follow safe laboratory practices and wear protective clothing, including facial masks, safety glasses, gloves, ear protection, etc.

**OTHER SIGNIFICANT FACTS**

Required to successfully complete competency testing prior to beginning casework in a specialty discipline or sub-discipline; and successfully complete annual proficiency testing as required by accreditation standards.

The nature of the work in the Firearms Examination Unit requires the safe handling and processing of firearms within the unit and standard firearms safety processes must be constantly demonstrated and reinforced.

Must possess and maintain a valid operator driver's license.

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Bachelor's degree from an accredited college or university in biological sciences, agriculture, natural resource management, chemistry or related disciplines.

**SPECIAL REQUIREMENTS**

This position's duty station will be housed within the Consolidated Forensic Laboratory (CFL) which is a protection-sensitive facility. As such, incumbents of this position shall be subject to criminal background checks, background investigations, and mandatory drug and alcohol testing, as applicable. Due to the handling of primary evidence, the applicant will be required to submit a buccal swab for the purposes of the DNA Quality Control database for the DFS.

The nature of the DFS mission necessarily involves the potential risks associated with biological or chemical hazards, including morgue functions. Although contact with these functions is intended to be minimal, the risks are nevertheless possible; training to recognize, address, and mitigate these risks is required as is dealing with potentially personally difficult topics, such as crime, death, and disease.