

**FORENSIC SCIENTIST (FIREARMS & TOOLMARK ANALYST)**  
**CS-401-12**

**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**

Identifies, analyzes, compares, and interprets evidence in criminal investigations. The types of crimes include person crimes, such as homicides, sexual assaults, and robberies, as well as property crimes. 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 ammunition
- 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

Performs 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 evaluations.

Responds to crime scenes when necessary to assist with documentation of evidence, projectile trajectory determination, and reconstruction and diagramming of shooting events.

Enters data into the National Integrated Ballistics Information Network (NIBIN).

Testifies in court as an expert witness in connection to the evidence analyzed; studies new techniques and procedures in scientific analysis, collection, and processing; participates in a structured training program; demonstrates continuous effort to improve operations, decrease turnaround times, streamline work processes, and work cooperatively and jointly to provide quality seamless customer service.

Researches and analyzes data to perform mathematical and statistical computations to complete scientific examinations.

Works with the team leader and/or supervisor and occasionally with the Deputy Director of Quality Assurance and other management personnel to ensure accreditation standards are met.

Examines complex firearms related evidence, utilizing a wide variety of methods; identifies, preserves, analyses, interprets, and presents conclusions of firearms, projectiles, spent and unspent cartridges testing and comparison of evidence and known and documented reference data sets. Advises on the collection of evidence in criminal cases, including those involving deaths, especially when homicide is suspected, and other violent crimes; evaluates risks concerning or identifying hazards in the laboratory.

Works collaboratively with investigators and other members of the justice system to analyze and interpret evidence, and other information to develop information necessary to meet the objectives of the forensic investigation.

Effectively reports findings and conducts advanced and highly specialized forensic examinations using validated tools and techniques.

Conducts a wide variety of complex and difficult analyses; works effectively under pressure; provides technology advisory services to other agencies and department staff to enhance forensic investigations.

Operates, troubleshoots and performs minor repairs and preventive maintenance on equipment.

Identifies new and/or revises methods for performing firearms examinations or determine the effectiveness of current analytical methods.

Follows evidence control procedures to maintain chain-of-evidence integrity and ensure evidence is locked securely in a designate location before and after analysis. Develops examination plans to effectively and efficiently meet the scope of the questions at hand in the investigation addressing inculpatory and exculpatory evidence.

Exercises discretion and sound judgment to determine proper courses of action and assesses and evaluates a variety of situations, problems, conditions or questions.

Utilizes computer software to analyze results of tests in order to perform tests and keep up-to-date on current studies, pamphlets, journals, and books for use in devising new methods and tests. Devises charts, graphs, and tables as aids to conduct tests; evaluates laboratory test results in the area of concern; prepares technical reports on findings and project results.

May be required to review other examiners' data and reports using technical, document and/or administrative review protocols.

Prepares evidence for presentation in court; meet with attorneys, investigators or other law enforcement personnel regarding the interpretation of examinations conducted.

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

Performs other related duties as assigned.



### KNOWLEDGE REQUIRED BY THE POSITION

Advanced knowledge of the principles of chemistry, physics, biology, physiology, and mathematics/statistics as they relate to forensic science and to analytical laboratory work.

Advanced knowledge of and skill in applying Firearms and Toolmark analysis principles, techniques, methods, theories, concepts, practices, and standards; and ability to apply Federal, state and local laws, codes and regulations pertaining to forensic science and data management.

Skill and ability that is sufficient to establish and monitor quality control in the firearms and toolmark unit as well as knowledge of the principles, techniques, and instruments to determine quality control measures needed to control samples, to respond to proficiency testing programs and to establish and maintain copious record keeping systems.

Advanced knowledge of forensic laboratory accreditation, standards, and guidelines; and of the tools necessary to evaluate the evidence and the ability to assist with developing new standards and with identifying training needs and resource requirements for the organization.

Thorough knowledge of, and skill in applying analytical and evaluative methods and techniques to conduct in-depth research of operational/program issues; to review and analyze complex reports; to develop necessary plans; and to prepare clear, in-depth reports of studies and recommendations.

Research skills, interpretation, and application of a broad range of qualitative and quantitative data using a variety of methods are required.

Thorough knowledge of quality assurance and quality improvement methods and techniques; and knowledge of accreditation standards and quality processing methods that are crucial as well as beneficial to the quality assurance program.

Ability to keep up-to-date of current literature and sources of information in the field of forensics for firearm and toolmark analytical methods, including but not limited to all forms of microscopy, chemical analysis of gunshot residue and lead, and the safe handling and function of all major firearms and with new analytical developments; and the ability to modify processes to resolve novel, obscure, or highly controversial problems that affect the analysis.

Advanced knowledge of evidence collection, preservation and chain of custody laws, rules, policies and procedures to ensure evidence integrity, and expertise of safety practices and procedures as they apply to analyses in the laboratory; and knowledge of the rules of evidence and methods used in presenting evidence in court.

Hands-on experience with forensic investigations of systems and comprehensive knowledge of equipment and supplies used in a forensic laboratory including specialized scientific equipment, instrumentation and software is required.

Ability to work well both independently and as part of a professional management team in a multi-cultural workplace and interpersonal skills is required to work effectively with a diverse staff, external agencies, and the public; and the ability to work safely without presenting a threat to self and others is essential.

Ability to modify or adapt standard processes and procedures, assess, select, and apply remedies suited to the assigned problem or situation; and assesses the environmental impact of various practices.

Excellent oral and written communications skills sufficient to prepare and present pertinent information and research involving complex workforce development policies and initiatives, and to effectively represent the agency at conferences, meetings and consultations with agency managers, employee groups, and special interest groups concerning program objectives and issues and public relations; and ability research complex forensic examinations.

Demonstrated skill and ability to use a PC and software packages (e.g., Microsoft Word, Excel, Access and Power Point, etc.) and software applicable to various reporting systems, particularly laboratory information management systems (LIMS), inventory control, and NIBIN software.

Ability to testify effectively in court as an expert witness in legal proceedings.

### SUPERVISORY CONTROLS

Works under the Forensic Scientist Supervisor (Firearms Examination Unit), who provides administrative direction in terms of techniques, desired results, changes in regulatory constraints and, or methods and procedures that may apply to complex situations. Determines the validity of test methods and results and recommends acceptance or rejection of evidence items. Consults with supervisor on unusual technical problems, best practices, and keeps the supervisor apprised of any controversial issues.

Completed assignments are reviewed for conformance to guidelines, deadlines, and expected results and adherence to requirements.

### GUIDELINES

Guidelines include policies and procedures of DFS, 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, Mayor's Orders, instructions, and the Deputy Mayor's policy and priorities. Incumbent exercises sound judgment in choosing, interpreting, or adapting available standards and guidelines to specific issues or subject. Many situations are not covered by the guidelines, and therefore, require interpretation and adaptation.

Sound judgment is exercised when selecting, interpreting, or adapting available standards and guidelines to specific work situations and/or cases, however, many situations are not covered by the guidelines, and therefore, requires extensive interpretation and adaptation or research.

### COMPLEXITY

Adaptability and flexibility is required in order to adhere to protocol is essential; develops and validates criteria for testing parameters with new methods and equipment as well as assisting with training team members to perform the same. Maintains quality control measures and prepares detailed documentation of test results. Provides appropriate knowledge in the application of procedures; and identifies problems and anticipates discrepancies in the results. The work



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

Decisions regarding what needs to be done include major areas of uncertainty in approach, methodology, or interpretation and evaluation processes that result from such elements as continuing changes in program, technological developments, unknown phenomena, or conflicting requirements.

#### SCOPE AND EFFECT

The work involves performing special assignment by isolating and defining unknown conditions, resolving critical problems, or developing new theories, technical adequacy, and effectiveness of submitted evidence. Conducts and 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 the tests; and identifying problems that may alter the materials; and ensures that all documentation is in the appropriate order for court cases and/or final discovery.

The result 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 its relevancy to each to assist with the appropriate closure. The results are also binding and affect judicial proceedings.

#### PERSONAL CONTACTS

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

#### PURPOSE OF CONTACTS

Contacts are for the purpose of influencing and motivating persons or groups in order to obtain the desired effect, such as gaining compliance with established policies and regulations by persuasion or exchanging and gathering information, ensuring the orderly flow of work as it pertains to maintaining the chain-of-custody of collected evidence, and storage, and to prepare detailed 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 at 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

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

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.

May be required to work weekends and holidays.

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

### 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 DPS.

The nature of the DPS 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.