

Department of Forensic Sciences FY2016

Agency Department of Forensic Sciences

Mission The mission of the Department of Forensic Sciences (DFS) is to produce high quality, timely, accurate, and reliable forensic science with the use of the best available technology and practices, unbiased science, and transparency with the overall goal of enhancing public health and safety.

Summary of Services DFS provides independent analysis of evidence and samples submitted by agencies within the District of Columbia and its federal neighbors. The Forensic Science Laboratory Division analyzes evidence submitted from criminal cases, including DNA, fingerprints, firearms, materials, and digital evidence. The DFS also provides expert witness testimony in defense of their analytical reports in the District's courts of law. The Public Health Laboratory Division provides diagnostic and analytical testing for biological pathogens and chemical agents from clinical, environmental, or food sources and provides emergency response testing. The Crime Scene Sciences Division provides the collection, analysis, processing, and preservation of evidence found at crime scenes in the District. The DFS Directorate supports the work of the entire agency through strategic direction, training, quality assurance, research, recruitment and hiring of personnel, information technology, data management, fleet management, procurement, and other administrative support services. The Scientific Advisory Board provides guidance by providing peer review to ensure that scientifically valid protocols are developed, followed, and updated.

2016 Objectives

FY16 Objectives

| Objective Number | Objective Description |
|--|---|
| Crime Scene Sciences (1 Objective) | |
| 1 | Improve crime scene services to District residents and stakeholders. |
| Directorate Operations & Agency Management (3 Objectives) | |
| 1 | Achieve and Maintain Accreditation under the International Organization for Standardization ISO 17025. |
| 2 | Provide professional workplace environment for employees. |
| 3 | Implementation of a laboratory information management system (LIMS) to provide seamless accountability and tracking of evidence from receipt-to-return, for all DFS services. |
| Forensic Sciences Laboratory Division (2 Objectives) | |
| 1 | Improve forensic laboratory services to stakeholders. |
| 2 | Develop new forensic services to improve scientific information for public safety. |
| Public Health Laboratory (2 Objectives) | |
| 1 | : Improve the effectiveness and efficiency of public health laboratory services. |
| 2 | Shift operational aspects to conform to agency-wide systems. |

2016 Key Performance Indicators

| Measure | Division | Frequency of Reporting | FY 2013 | FY 2014 | FY 2015 | FY 2015 Target | FY 2016 Target |
|--|----------|------------------------|---------|---------|---------|----------------|----------------|
| 1 - : Improve the effectiveness and efficiency of public health laboratory services. (3 Measures) | | | | | | | |

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|--|-----------|--------|--------|--------|-------|
| PHL Successful Competency Tests | Quarterly | 100 | 100 | 100 | 100 |
| Number of Clinical Tests | Quarterly | 16,829 | 38,691 | 16,829 | 38691 |
| Sample Analyzed within Unit specific Turnaround Time | Quarterly | 95 | 95 | 95 | 95 |
| 1 - Achieve and Maintain Accreditation under the International Organization for Standardization ISO 17025. (3 Measures) | | | | | |
| DFS Complaint Tracking | Quarterly | | 100 | 100 | 100 |
| DFS Quality Action Reports | Quarterly | 43 | 51 | 21 | |
| DFS Preventive Action Reports | Quarterly | 8 | 9 | 3 | |
| 1 - Improve crime scene services to District residents and stakeholders. (3 Measures) | | | | | |
| Response time (minutes) | Quarterly | | 60 | 60 | 60 |
| Turnaround Time (days) | Quarterly | | | | |
| Reports per FTE | Quarterly | | | | |
| 1 - Improve forensic laboratory services to stakeholders. (19 Measures) | | | | | |
| *Turnaround time for DNA (change in calculation due to LIMS implementation) | Quarterly | 91 | | 68 | 50 |
| *Average Turnaround time for fingerprints (change in calculation due to LIMS implementation) | Quarterly | 136 | 74 | 40 | 30 |
| *Average Turnaround time Firearms (change in calculation due to LIMS implementation) | Quarterly | 168 | 60 | 60 | 55 |
| Average Turnaround time for NIBIN verification | Quarterly | | | | 2 |
| *Average Turnaround time for test fires (change in calculation due to LIMS implementation) | Quarterly | 5.6 | 1 | 1 | 1 |
| Average turnaround time of materials analysis | Quarterly | | | | |
| Reports per FTE Digital Evidence | Quarterly | | | | |
| Reports per FTE DNA | Quarterly | 132 | | 120 | 140 |
| Reports per FTE Fingerprints | Quarterly | 106 | 130 | 130 | 180 |
| Reports per FTE Firearms | Quarterly | 118 | 75 | 50 | 150 |
| Reports per FTE NIBIN | Quarterly | | | | 800 |
| Reports per FTE Test Fires | Quarterly | 453 | 265 | 760 | 800 |
| Reports per FTE Materials Analysis | Quarterly | | | | |
| Average samples per FTE Digital Evidence | Quarterly | | | 1,000 | |
| Average samples per FTE DNA | Quarterly | 442 | | 500 | |
| Average samples per FTE Fingerprints | Quarterly | 1,098 | | 1,750 | |
| Average samples per FTE Firearms | Quarterly | 100 | | 105 | |

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| Average samples per FTE Test Fires | | Quarterly | | 1,518 | | 1,530 | |
| Turnaround Time Digital Evidence | | Quarterly | | | | | |
| 2 - Provide professional workplace environment for employees. (2 Measures) | | | | | | | |
| Participation in Medical Surveillance Program | | Quarterly | | 62 | 69 | 50 | 75 |
| Number Hours of Professional Development | | Quarterly | | | 648.5 | 190 | 400 |

2016 Workload Measures

| Measure | Frequency of Reporting | FY 2013 | FY 2014 | FY 2015 |
|---------------------------------------|------------------------|---------|---------|---------|
| Workload Measure (23 Measures) | | | | |
| Digital Evidence Cases Submitted | Annually | | | |
| DNA Cases Submitted | Annually | 655 | 261 | 686 |
| Fingerprint Cases Submitted | Annually | 3,218 | 1,252 | 2,221 |
| Firearms Cases Submitted | Annually | 1,137 | 297 | 1,727 |
| Test fires case submissions | Annually | 1,775 | 828 | 1,137 |
| Materials Analysis Cases Submitted | Annually | 0 | 0 | 0 |
| DNA Database Entries | Annually | 74 | 48 | 128 |
| Fingerprints Database Entries | Annually | 215 | 325 | 1,098 |
| Firearms Database Entries | Annually | 138 | 1,205 | 2,076 |
| DNA Database hits | Annually | 60 | 110 | 121 |
| Fingerprints Database hits | Annually | 97 | 122 | 576 |
| Firearms Database hits | Annually | 16 | 60 | 49 |
| PHL Samples Submitted | Annually | 2,775 | 4,177 | 2,573 |
| Total PHL Tests conducted | Annually | 2,887 | 3,593 | 38,691 |
| Immunology/Virology Tests | Annually | 1,524 | 844 | 1,657 |
| Clinical Chemistry Tests | Annually | 0 | 1 | 0 |
| Microbiology Tests | Annually | 711 | 1,423 | 684 |
| Molecular Biology Tests | Annually | 652 | 1,325 | 1,547 |
| CSS Scenes Processed | Annually | 0 | 215 | 1,444 |
| CSS Items Processed | Annually | 0 | 1,016 | 2,095 |
| CSS Autopsies Processed | Annually | 0 | 185 | 294 |
| CSS Vehicles Processed | Annually | 0 | 117 | 559 |
| DFS Requests for Information (FOIA) | Annually | 1 | 3 | 8 |

2016 Initiatives

| Objective Number | Objective Title | Initiative Number | Initiative Title | Initiative Description |
|---|-----------------|-------------------|------------------|------------------------|
| Crime Scene Sciences - 1 (2 Initiatives) | | | | |

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| 1 | Improve crime scene services to District residents and stakeholders. | 1.1 | Increase the level of DFS scene response. | The Crime Scene Sciences (CSS) division of DFS will acquire a 3-Dimensional laser scanning device for detailed documentation of major crime scenes. Upon acquisition of the instrument, CSS staff will undergo training for the use and data production provided by the instrument. This instrumentation will provide high resolution, 3-dimensional depictions of major crime scene environments for better investigations, documentation, and court presentations. Experienced CSS will begin to respond to homicides in the District, thereby responding to all crimes against persons. |
| 1 | Improve crime scene services to District residents and stakeholders. | 1.2 | Hire additional Crime Scene Sciences forensic scientists and Central Evidence specialists and deploy CSSU forensic scientists to crime scenes. | CSS Division will hire additional Crime Scene Sciences forensic scientists and Central Evidence specialists pending Council approval of additional funding and approval of legislation to hire retired police officers through the Mayor's FY2016 Supplemental Budget Request. Once approved, the hiring plan will begin in Q1 with filling the CSS Division Director position and continue through the Q3 of FY16. Training will begin in Q2 and will take up to 6 months. |

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Directorate Operations & Agency Management - 1 (3 Initiatives)

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| 1 | Achieve and Maintain Accreditation under the International Organization for Standardization ISO 17025[i]. | 1.1 | Restore and Maintain Full Operational and Accreditation status of the DFS Forensic Science Laboratory (FSL) division. | Timely completion of the Independent Review Corrective Action Response Plan to restore full operational status of the FSL Forensic Biology Unit and maintain FSL accreditation in accordance with the ISO 17025 standard. |
| 1 | Achieve and Maintain Accreditation under the International Organization for Standardization ISO 17025[i]. | 1.2 | Enhance ISO 17025 Auditor Training frequency to maintain qualified personnel in the DFS Internal Auditor program. | Provide ISO 17025 Auditor training from an ISO 17025 accrediting body for DFS members to increase employee accreditation awareness and to maintain an adequate number of qualified DFS personnel to participate in the annual DFS Internal Auditor program. |
| 1 | Achieve and Maintain Accreditation under the International Organization for Standardization ISO 17025[i]. | 1.3 | Develop and Implement an automated DFS Complaint/Inquiry Reporting System. | In accordance with ISO 17025 Section 4.13, an automated feedback system will accommodate transparent accountability and reporting of inquiries and complaints via tracking and analysis to improve the management system, testing suitability and customer service. |

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Directorate Operations & Agency Management - 2 (4 Initiatives)

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| 2 | Provide professional workplace environment for employees. | 2.1 | Provide training curriculum to DFS employees to ensure professional development. | In FY16, DFS will continue to offer beginning and master classes on communication, scientific writing, and management of science to develop employee skill sets and foster a positive work environment. DFS technical trainings such as serial number restoration, armorer's courses, exclusions and sufficiency, and mock trials will also occur. In addition, the Forensic Biology Unit will continue to be trained on mixture interpretation and scientists will be tested on new methodologies concerning interpretation of mixed profiles by November 2015. |
| 2 | Provide professional workplace environment for employees. | 2.2 | Improve and expand agency-wide communication (internal) and increase communication to the public (external). | Create appropriate tools to enhance communication within the agency. Assemble monthly all staff meetings, execute a bi-weekly agency newsletter and review options to purchase an intranet. Increase our public web presence by creating additional social media avenues. |
| 2 | Provide professional workplace environment for employees. | 2.3 | Increase medical surveillance services to include vicarious stress, trauma training and counseling. | Incorporate a stress, trauma training and response program into our medical surveillance program for employees. The current medical surveillance program offered to employees is OSHA compliance driven. It entails testing laboratory employees for bloodborne pathogen exposure, annual respiratory protection program, BSL3 Select Agent and Toxin testing and compliance, chemical exposure testing and other medical services as dictated by laboratory exposure. Addition of vicarious stress, trauma training and counseling would benefit our entire organization to train and handle situations which may evolve from their forensic laboratory positions. DCHR does not offer programs specific to these types of vicarious stress exposures. The program would entail training, counseling, debriefing for specific incidents, and providing necessary literature for employees. |
| 2 | Provide professional workplace environment for employees. | 2.4 | Develop the DFS Guiding Principles of Professional Responsibility. | Guiding Principles of professional responsibilities are designed to promote integrity among employees, and to increase public confidence in the quality of laboratory services, whether or not the laboratory is accredited by any accrediting body. DFS will modify the ASCLD/LAB guiding principles document (approved February 7, 2013 by the ASCLD/LAB Board) and issue as DFS doctrine. |

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Directorate Operations & Agency Management - 3 (1 Initiative)

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| 3 | Implementation of a laboratory information management system (LIMS) to provide seamless accountability and tracking of evidence from receipt-to-return, for all DFS services. | 3.1 | Set up an operations support team. | LIMS will require a team of "Super Users" to manage the evolution of the system to provide updates to the system and develop further features and functions as the units move to entering results into LIMS. Super Users represent all four divisions of DFS and the various units within each division. The Super Users will meet once per month to discuss workflow efficiency, draft standard operating procedures, and take any corrective actions. Each quarter the IT department will conduct stress and security tests of the infrastructure and provide an analysis report of the LIMS operational capabilities. By the end of the FY16 fiscal year the LIMS system will be the standard operational platform for evidence analysis in DFS. |
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| Forensic Sciences Laboratory Division - 1 (3 Initiatives) | | | | |
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| 1 | Improve forensic laboratory services to stakeholders. | 1.1 | Increase the Firearms Examination Unit's capacity to support the Metropolitan Police Department by purchasing a second national intelligence workstation. | The Firearms Examination Unit (FEU) will complete training for the recently recruited trainee technicians and examiners who can then undertake casework increasing the output of the unit. The FEU will increase the provision of timely National Integrated Ballistic Information Network (NIBIN) results to DFS stakeholders through the purchase of a second MATCHPOINT image comparison system. Implementation of FEU specific worksheets and reporting processes in the Laboratory Information Management System (LIMS) will improve the ability of FEU to provide real time, actionable intelligence reporting to D.C. Metropolitan Police Department. |
| 1 | Improve forensic laboratory services to stakeholders. | 1.2 | Adopt a Laboratory Information Management System (LIMS) in the Latent Fingerprint Unit to improve work flow productivity. | The Latent Fingerprint Unit (LFU) will continue to develop and implement work flow improvements through the implementation of the Laboratory Information Management System (LIMS) and electronic work flow. Electronic worksheets specifically designed for LFU will improve records of examinations, data entry and reporting processes and ensure data integrity. This will reduce the amount of paperwork generated in the examination process resulting in an increase in productivity, reduce the potential for error and reduce turnaround time for reporting. Additional experienced staff is being recruited to increase the through put of the LFU which will improve responsiveness. |

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| 1 | Improve forensic laboratory services to stakeholders. | 1.3 | Recommence DNA casework in the Forensic Biology Unit. | <p>DNA casework in the Forensic Biology Unit was suspended following the identification of an issue concerning the interpretation of DNA results in samples that contain DNA from more than person. Following the suspension of DNA casework, the entire staff of the FBU commenced an intensive, full time, six month long training program that is being conducted by a range of national and international experts in DNA mixture analysis. The training involves class instruction, practical exercises and homework assignments. Of particular importance, the analysis tool, STRMix, is considered to be the most advanced method for these calculations and will place the DFS Forensic Biology Unit at the forefront of DNA analysis and interpretation.</p> <p>Once training has been completed, the FBU will be fully operational and provide advanced DNA analysis services, including mixture analysis, to DFS stakeholders who can be confident in the quality of the results produced.</p> |
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| Forensic Sciences Laboratory Division - 2 (3 Initiatives) | | | | |
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| 2 | Develop new forensic services to improve scientific information for public safety. | 2.1 | Scope the introduction of next generation sequencing for DNA analysis. | <p>DFS will establish a working group to assess the feasibility and potential impact of next generation sequencing technologies for DNA analysis. In order to address the CODIS/NDIS requirement in 2017 of additional loci, DFS will explore the use of commercially available NGS platforms to analyze STR and SNP loci. The working group will produce a report detailing the requirements for implementing next generation sequencing.</p> |
| 2 | Develop new forensic services to improve scientific information for public safety. | 2.2 | Develop a prioritization and case acceptance process for evidence submitted to the FSL. | <p>DFS wants to ensure that its resources are directed to forensic examinations and testing that will produce the most effective results for its stakeholders and District residents. To assist with this, a case prioritization model will be developed that takes into account the severity of the offence, the likelihood of recurrence of further criminal activity, the probative value of the evidence gathered at crime scenes, the likelihood of obtaining results from forensic analysis among other factors. FSL will develop and implement a case prioritization and acceptance process that will be applied to all forensic casework submitted to each unit.</p> |

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| 2 | Develop new forensic services to improve scientific information for public safety. | 2.3 | Scope the implementation of capabilities for Forensic Chemistry analysis. | DFS will establish a taskforce to examine all factors impacting the establishment of a Controlled Substances Unit primarily for the analysis of illicit drugs and the illegal sale and/or distribution of pharmaceuticals. The taskforce will produce a report detailing the needs, logistics, staffing, resources, security, legal issues and broad agency policies to provide guidance on the creation of a controlled substances unit. |
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Public Health Laboratory - 1 (2 Initiatives)

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| 1 | : Improve the effectiveness and efficiency of public health laboratory services. | 1.1 | Implement next-generation sequencing (NGS) technology into unknown organism identification in public health and forensic sciences. | NGS is the use of advanced molecular techniques to identify and characterize different pathogens to include bacteria, virus, and parasites. According to the information from American Public Health Association (APHL), current Pulse-Net Methods for foodborne pathogens surveillance will be replaced by whole genomic sequencing methods after 2017. In FY16, PHL will embrace the trend of development to perform sequencing and analysis through NGS. Potential outcomes from this initiative include increasing the number of referred isolates received from external stakeholders that will be analyzed and reported to a national database, improved characterization of unknown isolates and agents of outbreak, and outreach activities aimed to increase awareness of the PHL services. |
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| 1 | : Improve the effectiveness and efficiency of public health laboratory services. | 1.2 | Improve the effectiveness of PHL services by conducting outreach activities to customers and stakeholders that will lead to developing business plans and cost analysis needed to phase in new testing to increase capability. | PHL will develop business plans and cost analysis to identify increased costs for expanding testing capability. Completion of business plans and cost analysis will identify the additional funding required to provide expanded services to other District agencies, local and federal partners. Testing areas not currently provided that are being considered for analysis include: HIV, Tuberculosis, Hepatitis, Syphilis, and Gonorrhea testing; Foodborne disease testing from DC-restaurants; Nicotine, medicinal marijuana, and pharmaceutical drug components; Newborn screening testing; and Lead-based blood testing. |
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Public Health Laboratory - 2 (3 Initiatives)

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| 2 | Shift operational aspects to conform to agency-wide systems. | 2.1 | Obtain accreditation in ISO 17025. | <p>The Public Health Laboratory and Forensic Science Laboratory seek accreditation through two different processes; the PHL work conforms to its own profession's quality standards. PHL has identified common testing across divisions, simplifying paperwork and reporting, and aligning its practices to international quality standards (ISO 17025). During FY15, the PHL revised all standard operating procedures (SOPs) and laboratory operation procedures (LOM) to meet the ISO 17025 requirements. In addition, the PHL has successfully completed internal audits in preparation for the final phase of accreditation. PHL will complete an external assessment prior to initial audit to become certified.</p> |
| 2 | Shift operational aspects to conform to agency-wide systems. | 2.2 | Obtain recertification of CLIA license. | <p>The Public Health Laboratory has a Federal regulation that set Public Health Laboratory practice standards. The Clinical Laboratory Improvement Amendment (CLIA) regulates all laboratory testing performed on humans in the United States (CFR Part 493). Because PHL performs confirmation testing on human specimens for District hospitals and other health caregivers, this certification is required. The PHL is also a Tier 1 Division of Select Agents and Toxins (DSAT) laboratory. Any new accreditations PHL obtains must complement the guidelines set by these federal regulations. PHL will maintain all certifications to maintain a laboratory compliant with federal regulations and guidelines for handling select agents.</p> |
| 2 | Shift operational aspects to conform to agency-wide systems. | 2.3 | Utilize PHL LIMS database. | <p>The Public Health Laboratory currently utilizes a limited system for laboratory information management (LIMS) that only handles PHL's information. Other divisions with DFS will be implementing a LIMS system specific to their divisions. Phase one of PHL's LIMS has been completed and tested internally. PHL will move forward with phase two of implementation. Phase two implementation involves submitting laboratory reports to clients via the LIMS system, and instrument interface. Use of the LIMS system will allow for a reduction in turn-around-time (i.e. the amount of time that transpires from the moment a sample is received by the laboratory until that sample result is reported to a customer). LIMS-generated electronic reports would be delivered directly to the client either by a secure fax or through a web portal. The potential outcomes from this initiative would include reduction in turn-around-time for laboratory results, and improved tracking of samples.</p> |
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