

Chemistry

Forensic Biology

Physical Evidence

Toxicology

Forensic Training

Quality Assurance

Research

DIVISION OF TECHNICAL SERVICES UPDATE

Alka B. Lohmann, Director of Technical Services
Presented to the Scientific Advisory Committee
April 21, 2026





CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

**Virginia Department of Forensic Science
Crime Laboratory System**

Fulfills the requirements of

ISO/IEC 17025:2017

Accreditation Requirements for Forensic Testing and Calibration (2023)

FBI Quality Assurance Standards for Forensic DNA Testing Laboratories:2025

FBI Quality Assurance Standards for DNA Databasing Laboratories:2025

In the field of

Forensic Testing & Calibration

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scopes of accreditation can be verified at www.anab.org.

Pamela L. Sale
Pamela L. Sale, Vice President, Forensics



Expiry Date: 31 January 2030
Certificate Numbers:
FT-0051
FT-0052
FT-0053
FT-0054
FC-0004



Accreditation

- Accreditation renewed
- Certificates and Scopes are available on the DFS website: <https://www.dfs.virginia.gov/about-dfs/accreditation/accreditation-documentation/>
- Current cycle expires January 31, 2030
- Location Evaluation (remote) for new Central Laboratory will occur the week of May 11

Forensic Training



- 116th FSA Session graduated November 14, 2025
- 117th FSA Session began April 13, 2026
 - Graduation – June 12
- 7 Short Courses since October 2025
 - ALS, BLUESTAR & Impression Evidence
 - Crime Scene Sketching
 - Special Techniques for Advanced Photographers
 - Impression Evidence
 - Basic Crime Scene Photography
 - Basic Crime Scene Investigation

Forensic Training



- Two short courses taught in new facility





DFS Representatives on OSAC

- Footwear & Tire Subcommittee
 - Cory Bartoe
- Human Forensic Biology Subcommittee
 - Susan Greenspoon, Ph.D.
- Ignitable Liquids, Explosives, & Gunshot Residue Subcommittee
 - Brenda Christy
- Seized Drugs Subcommittee
 - Rebecca Wagner, Ph.D. - Subcommittee Chair
 - Thomas Simpson
- Video/Imaging Technology & Analysis Subcommittee
 - Patricia Mullaney - Subcommittee Vice Chair



Chemistry Research Staffing

- 8 Full-time Forensic Laboratory Specialists (FLSs) VI
 - 3 General Fund (1 in response to legislative changes)
 - 2 Overdose Data to Action in States (OD2A-S) funding with OCME
 - 2 NIJ research grant funding
- 1 Full-time FLS III (OD2A-S)



Chemistry Research Projects

Controlled Substances

- Validation of multipoint calibration curves for the quantitative analysis of methamphetamine, cocaine, and heroin
- Evaluation of the use of high resolution mass spectrometry for the screening seized drugs

Toxicology

- Headspace ethanol analysis
- Analytical workflow for the analysis of psychedelics
- Miscellaneous basic drug extraction removal of methylene chloride, addition of compounds, carryover mitigation
- Evaluation of base screen extractions using GC-MS
- Cannabinoids SLE column pre-wash evaluation
- Quantitative analysis of mitragynine and metabolites
- Evaluation of a circulating bath for sample preparation for the quantitative analysis of amphetamines
- Quantitative analysis of antipsychotics using LC-MS/MS
- Presumptive identification of nitazenes using qTOF (implementation phase)

Chemistry Program Update

Robyn Weimer

Chemistry Program Manager



Trainee Update – Trace Evidence

Central Laboratory:

- One (1) trainee in Primer Residue, expected completion Q2 of 2026
- One (1) trainee in Glass, expected completion Q3 of 2026
- One (1) trainee in Explosives, expected completion Q3 of 2026
- One (1) position in recruit



Case Impact

Deadly hit-and-run crashes reaching record highs



New research shows an alarming trend on our streets. Fatal hit and run crashes, reaching a record high with walkers and bikers most likely to be the victims.

By [Madison McNamee](#)

Published: Mar. 12, 2026 at 6:33 PM EDT

<https://www.12onyourside.com/2026/03/12/deadly-hit-and-run-crashes-reaching-record-highs/>

- Increase in PDQ cases
- Cases require use of database to provide investigative lead information re: suspect vehicle
 - Make
 - Model
 - Year
 - Color
- Hit-and-run fatalities are given priority



Trace Evidence Subcommittee

- Reviewed verification of Micro X-ray Fluorescence (μ -XRF) Spectrometry for the Forensic Comparison of Glass
 - Verified to conform with ASTM E2926-17 and E2926-25e1 *Standard Test Method for Forensic Comparison of Glass Using Micro X-ray Fluorescence Spectrometry*
 - Incorporation into SOP will require some logistical considerations, following trainee completion and pending further work based on the recommendations





Trainee Update – Controlled Substances

Central Laboratory:

- One (1) trainee expected to complete training July 2026
- One (1) position in recruit

Western Laboratory:

- One (1) position in recruit

Northern Laboratory:

- One (1) trainee completed training: January 2026
- Two (2) positions in recruit

Eastern Laboratory:

- One (1) trainee expected to complete training October 2026



Training – Controlled Substances

- Current Trends in Seized Drug Analysis
 - Online, free symposium hosted by CFSRE
 - January 26 – 30, 2026
 - Global Trends (Day 1), SWGDRUG (Day 2), Clandestine Labs (Day 3), Artificial Intelligence (AI) and Machine Learning (ML) (Day 4) and Novel Techniques (Day 5)
- Statewide Section Meeting week of October 19, 2026
 - Content to be determined

Board of Pharmacy Expedited Scheduling



- DFS recommended seven (7) compounds in July 2025. These compounds became scheduled on March 11, 2026. "Fentanyl-related substances", determined based on structural modifications, were also scheduled by the Board of Pharmacy on this date to conform to federal action.
- Report wording when a compound within a defined structural modification is present, but not specifically listed:

0.254 ± 0.011 gram of powder, found to contain [*Compound*]. This compound was placed into Schedule I of the Drug Control Act as a “fentanyl-related substance” pursuant to a Board of Pharmacy Regulation.

Board of Pharmacy Expedited Scheduling



DFS recommended two (2) compounds in October 2025. The compounds were considered at the Board's December 10th meeting and are pending final approval.

Depressant Properties:

- Methylclonazepam
- Ethylbromazolam

Board of Pharmacy Expedited Scheduling



DFS recommended six (6) compounds in April 2026. The compounds have yet to be considered by the Board, but they will be considered following the public hearing at the upcoming June 16th meeting.

Synthetic Opioids:

- O-desmethyltramadol
- Chlorphine
- Cychlorphine

Hallucinogenic Properties:

- 4-acetoxy-MET
- 4-bromo-alpha-PVP
- 3-methyl PCP



Controlled Substances Subcommittee

Reviewed Quantitative Analysis using a Multipoint Calibration Curve validation

Reviewed Meth Quantitation by UV-Vis Validation

- Verifying DEA Method 503



In Progress in DX

Shifting to become more electronic

- Electronic worksheet in place of paper general drug worksheet
- Electronic logs for resources and instruments
- Instrumental data to pdf

Pre-check Macro – testing phase

- Word-based macro to evaluate reports prior to technical review

Mobile instrument evaluation to start soon

Forensic Evidence Program Update

Ellen Spain

Forensic Evidence Program Manager

Evidence Relocation



- Chain of custody documentation in Forensic Advantage (FA)
 - Sealed evidence is scanned into a batch
 - Batch Reports (manifests) are created for inventory
 - Evidence is secured in crates or job boxes
 - Evidence is transferred in FA during the move process

11/20/2025 11:05:16 AM	Submitted by Officer Barden, E. T. from Powhatan Co S O / P O Box 133, Powhatan. Received by Mertz, Kaitlin E. at Central Laboratory - Security. Delivery Method: Hand to Hand Transfer.
11/20/2025 11:05:16 AM	Placed in Storage at Security Administrative Storage - F1 by Mertz, Kaitlin E. at Central Laboratory - Security
	Removed from Storage by Cummins, Amanda at Central Laboratory - Security.
4/6/2026 2:16:53 PM	Comments: Relocation Day
	Transfer Reason: Relocate to New Central Laboratory
	Transferred Out by Cummins, Amanda.
4/6/2026 2:16:53 PM	Comments: Relocation Day
	Transfer Reason: Relocate to New Central Laboratory
	Transferred In to Calliste, Kadisha.
4/6/2026 4:07:17 PM	Comments: Relocation Complete
	Transfer Reason: Relocate to New Central Laboratory
	Placed in Storage at Security Administrative Storage - DNA Bulk by Calliste, Kadisha at Central Laboratory - Security
4/6/2026 4:07:17 PM	Comments: Relocation Complete
	Transfer Reason: Relocate to New Central Laboratory



Evidence Receiving - Staffing

- In recruit:
 - 1 in Central 1 (start date April 27)
 - 1 in Northern
- In training:
 - 1 in Eastern
- Forensic Evidence Specialist (FES) II
 - 1 staff member in Western currently working towards meeting the requirements for a FES II (career development)
- Forensic Evidence Specialist II Senior
 - 1 staff member in Central recently met the requirements for a FES II Senior (career development)



Evidence Receiving

- Engaging with agency submitters to increase understanding of submission guidelines and policies - 15 agencies have participated to date
- Hosting the International Association for Property and Evidence, Inc. (IAPE), Evidence Management Training course on September 23-25, 2026, at the Central Laboratory
- Actively engaging with the Metro Richmond and Central Virginia Evidence Management groups
- Conducted Evidence Submission training for thirty (30) investigators with the Department of Corrections (DOC)



Evidence Receiving

- Several staff members attended the webinar "Revolutionizing Forensic Evidence Integrity". The session focused on improving chain of custody and accountability
- Trace Evidence – Fracture Match updated in the Evidence Handling and Laboratory Capabilities Guide (EHG)
- Implementing a new Pass-Through Locker system for internal staff
- Moved over 3,600 items of evidence to new lab (April 6-8)



Forensic Biology Program

Elizabeth Ballard

Forensic Biology Program Manager



Central Lab Relocation Update

- **DNA Data Bank**
 - Samples are unpacked
 - Validations starting this week
 - 1,781 new samples for the month of April have been accessioned at the new lab
- **Nuclear Casework**
 - Validations are underway – expected to be complete this week
- **Mitochondrial DNA Casework**
 - Decontamination of the lab was completed last week
 - Validations starting this week
- **CODIS**
 - Server is up and running – supporting the regional labs
 - Central Lab stations are offline due to continued contractor activity in the server room

Examiner/Biologist Staffing Update – Forensic Biology



Central Laboratory:

- Data Bank – fully staffed
 - 1 on extended medical leave
- DTS
 - 1 Researcher in recruit
 - Asst. PM in recruit
- Casework
 - 4 in training
 - 2 in recruit

Western Laboratory:

- 3 in training

Eastern Laboratory:

- 1 in training

Northern Laboratory:

- 1 in training
- 2 in recruit



Staff Internal Training Projects

- Relationship Stats Training – ongoing
 - 1 Central, 2 Eastern
- STRmix training for 35 (September and October) - ongoing
 - Additional training scheduled for May 2026



Validation Update

- New Robotics Biomek i5
 - Validation continues
- New Sample Puncher for Data Bank
 - Validation complete
 - SAC Subcommittee - April 2026
- New Thermal Cyclers (VertiPro and Proflex)
 - Validation continues for Proflex
 - VertiPro validation in review
 - SAC Subcommittee - April 2026



Outsourcing Backlogged Cases

- Contract awarded and continues
- Approximately 600 property crime, possession, robbery cases sent to contract lab
- Private laboratory has issued reports on all but approximately 15
- DFS has requested 2nd round of testing on approximately 15 cases
- Ownership reviews and CODIS uploads by DFS continue

Statewide Forensic Biology Continuing Education Meeting



2026 Potomac Regional Symposium on Forensic DNA Analysis



Staunton, VA - November 4-6, 2026



Developments with Rapid DNA

- Rapid DNA instruments are in place in two LE agencies: Virginia State Police and Fairfax PD
 - They each have a different instrument type (ANDE and Thermo Fisher)
- DFS will be purchasing an instrument to validate/test the limitations and develop policy to support law enforcement
 - Initially DFS will be working with VSP and their instrument type
 - Eventually DFS intends to purchase a second instrument type to support other agencies as well



Developments with NGS for mtDNA

- DFS is in the process of procuring a Next-Generation Sequencing (NGS) System
 - Whole mitochondrial DNA genome sequencing

Physical Evidence Program Update

Samantha M. Glass

Physical Evidence Program Manager

Latent Prints & Impressions Staffing



- In recruit: Northern – 2 examiner trainee positions, in-person interviews set for early April
- Newest examiner in Central completed training in October 2025
- In training: 1 in Western for Latent Prints, completion expected mid-2026

Latent Prints & Impressions Continuing Education



- The Impressions examiners have found limited opportunities for continuing training and may target attendance at the IAI Annual Educational Conference again as their Section Meeting. (This year is St. Louis, MO, in August.)
- The Latent Prints Section has formed a working group to explore training options. The section will also continue with virtual teach-backs from attendees of recent conferences.

Firearms & Toolmarks Staffing



- In recruit:
 - 2 in Central (Examiner trainees)
 - 2 in Eastern (FS NIBIN, in background)
 - 1 in Northern (FS NIBIN)
- In training:
 - 1 in Central (Examiner)
 - 3 in Eastern (Examiners)

*1 Examiner in Central completed training in January 2026

Firearms & Toolmarks Continuing Education



- Section Meeting was held at the DFS Northern Laboratory in October 2025
 - It included a DiSC assessment debrief, a full day Armorer's Course, updates from the AFTE Conference, and discussions of current topics in the field
- Annual AFTE Conference to be held in Baltimore in late May. Virtual teach-backs from attendees planned.



Firearms & Toolmarks

National Integrated Ballistic Information Network (NIBIN)

As of April 2, 2026, there have been 85 new NIBIN potential associations:

- Western - 12
- Northern - 9
- Eastern - 20
- Central – 44

2 hits have been confirmed thus far this year.

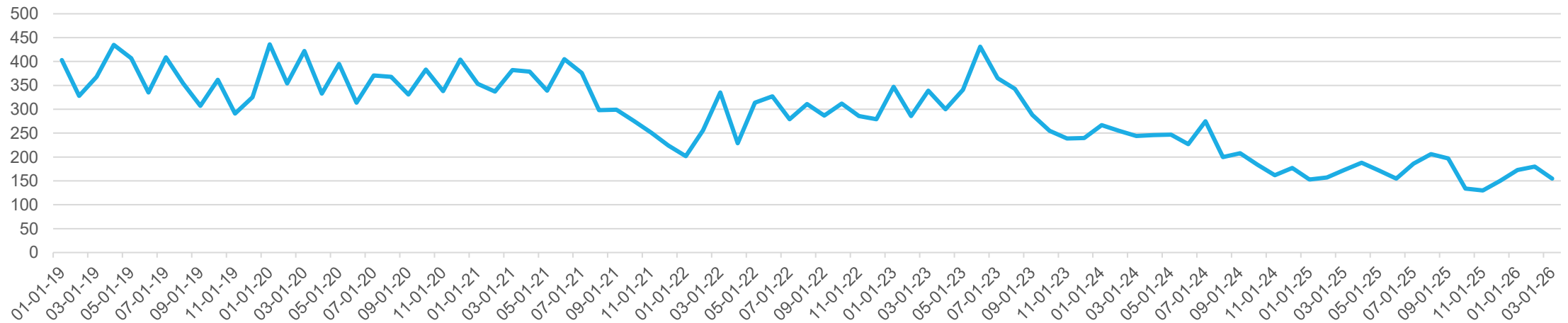
3,956 since this system was received in April 2002.



New Local Agencies with NIBIN

- In 2026:
 - HSI (Homeland Security) Forensic Laboratory
 - Radford Police Department
- 22 sites in Virginia, 23 including the FBI Lab

FS NIBIN Exam Submission



Firearms & Toolmarks Emerging Technology



- Quantum 3D technologies for virtual comparison microscopy have been purchased for 2 of the laboratories

- Northern was installed in February
- Central is now installed

**Training for Northern occurred the week of March 17. All Northern Firearms examiners and an assistant from another section were trained during this session. Validation planning has begun.



Western Firearms Review

- Firearms comparisons were halted in April 2025
- Firearms comparisons are not on the Scope of Accreditation for the Western Laboratory
- Corrective Action resulting from proficiency test
- Case reviews by external provider are ongoing
- Giglio notices, with appropriate case lists, have been issued

Digital & Multimedia Evidence Staffing Update



- Fully Staffed (Examiners), 2 newest examiners are continuing their sub-discipline training:
 - 1-Computer Device Examination, expected to complete in late April
 - 1-Video/Image Examination, expected to complete in Q3 or Q4 2026
- As of January 28, 2026, the wage FLS position was filled



Digital & Multimedia Evidence

- Now have the capability to decrypt select implementations of BitLocker encryption on Windows computers.
- Gained new flash memory chip reading equipment, including the ability to parse data obtained from vehicle computer systems.
- Investigating new tools.

Toxicology Program Update

James W. Hutchings, Ph.D.

Toxicology Program Manager



Toxicology

- Methodology - In Development or Validation
 - Miscellaneous Base Drugs – addition of more targets, automation
 - Novel Psychoactive Substances – updating method target list
 - Blood Alcohol
 - Redevelopment and validation of all parameters
 - Hallucinogens – psilocybin, LSD, DMT
 - Nitazenes – in implementation



Central Toxicology Move

- All instruments installed and checked by manufacturers
- Verified for use in casework



Staffing

Vacancies

- Toxicology
 - Fully staffed

- Breath Alcohol
 - Fully staffed

Trainees

- Toxicology
 - C – 1 Forensic Toxicologist (FT), 1 FS, 1 FLS
 - W – 1 FT, 3 FS (1 to start in May)
 - E – 1 FS, 1 FLS
 - N – 1 FS

- Breath Alcohol
 - 1 FS



Grants

Applied for FY 2027: DMV Highway Safety Office Grants

- Approved by FSB on April 20, 2026
- Breath Alcohol - \$455,043 (including 25% state match)
 - To continue to offer licensing and training and to retain one Forensic Scientist
 - Maintain mobile access and electronic processes
- Toxicology - \$725,491 (including 25% state match)
 - Retain two FLS II (part time)
 - Retain/hire six FLS II/III



RFID in Toxicology

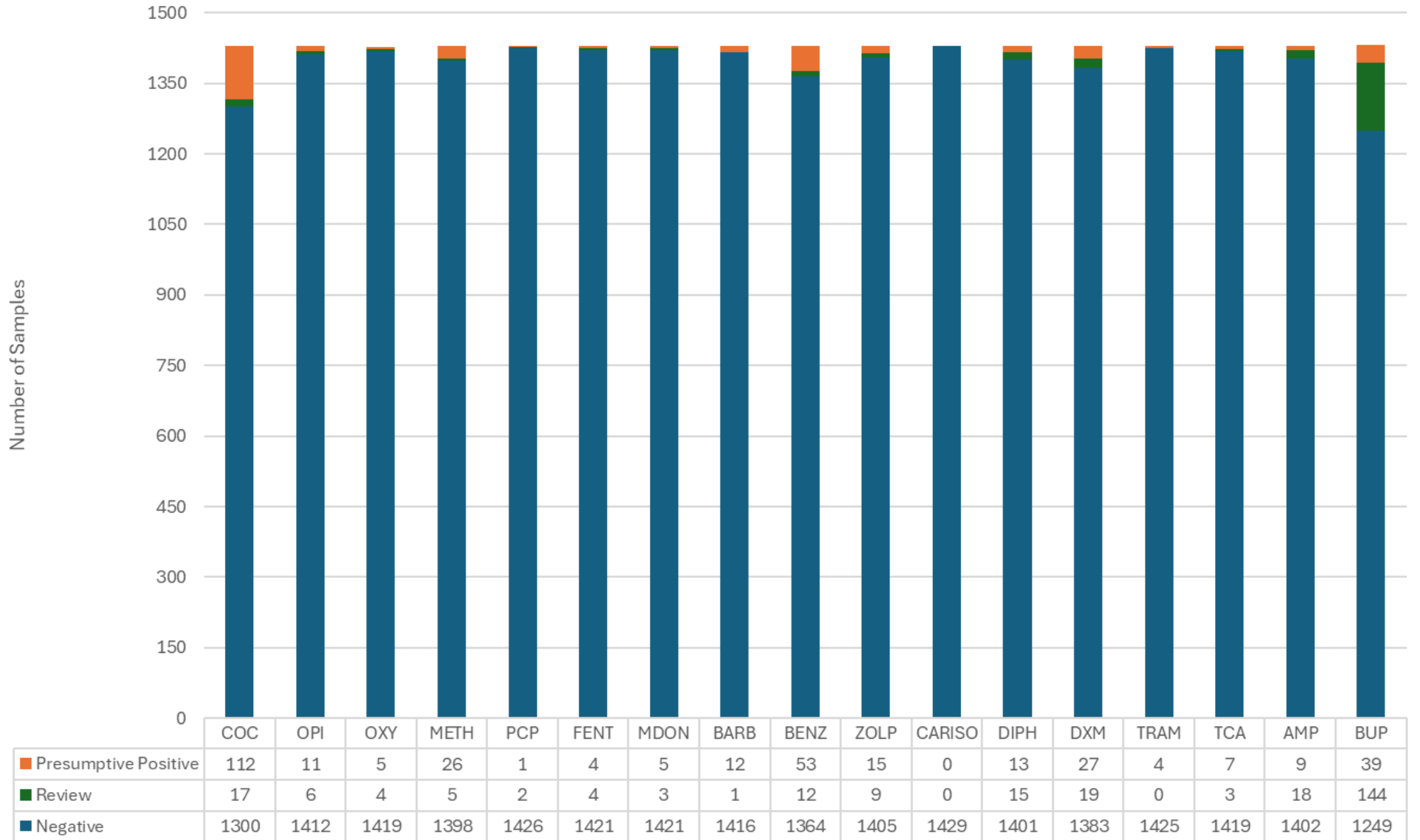
- Utilizing HealthRFID products to track custody within Toxicology
 - Pilot project in Norfolk
- Hardware procured and in place in Norfolk
- Development of software in process

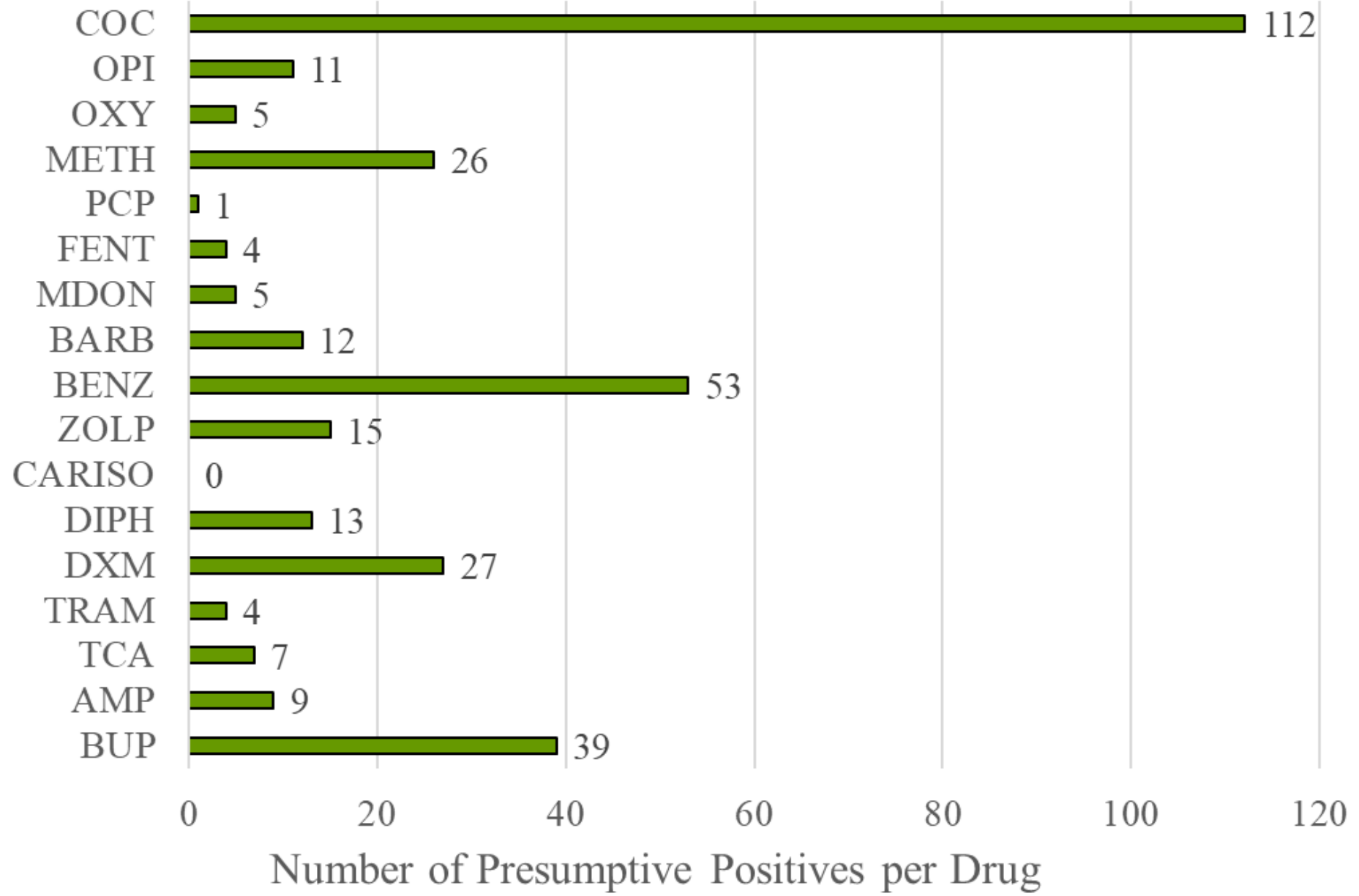


DUI Drug Screening Report to DMV

- Required by 2024 Appropriation language
- Immunoassay drug screening DUI/DUID samples with blood alcohol concentrations at or above 0.100 %w/v and have been screened for marijuana-related compounds
- 1,429 deidentified samples received between August 2024 and April 2025
- Deidentified and tested after eligible for destruction

Total Results per Tested Drug Screen







Toxicology Statistics

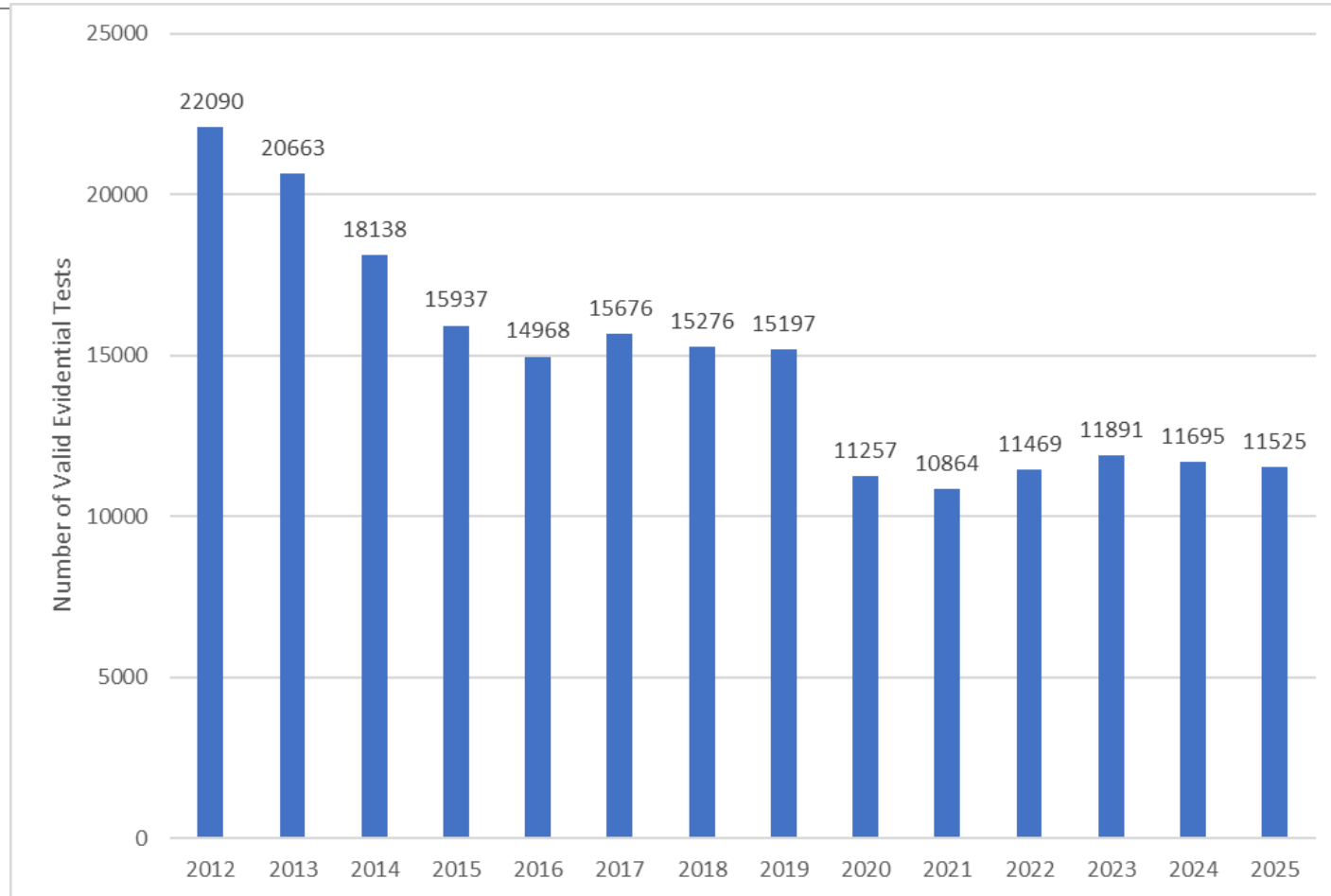
- Cases submitted by examination type

	2022	2023	2024	2025
OCME*	4,785	5,386	4,976	4,043
DUID	2,557	2,825	2,316	2,633
DUI	2,549	28	-	-
DUI+THC	-	2,584	2,326	2,673
Tox-Other	620	673	682	629

*Outsourcing of OCME cases



Breath Alcohol Statistics





Breath Alcohol Updates

- Draeger Alcotest 9510
 - Draeger, Inc.
 - Received first shipments of instruments and peripherals
- Training will be developed and provided to law enforcement, attorneys, and judges



Image from: <https://www.draeger.com/en-us/Products/Alcotest-9510>



Thank you!