



SOUTH CAROLINA  
HOUSE OF REPRESENTATIVES  
GOVERNMENT EFFICIENCY &  
LEGISLATIVE OVERSIGHT COMMITTEE

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Law Enforcement, Criminal and Civil Justice  
Subcommittee

Chairman Chris Wooten

The Honorable William H. Bailey

The Honorable Kambrell H. Garvin

The Honorable Leon Douglas "Doug" Gilliam

The Honorable Jefferey E. "Jeff" Johnson

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**A G E N D A**

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Wednesday, January 28, 2026

10:30 a.m.

Room 427 – Blatt Building

- I. Approval of Minutes
- II. Discussion of the Study of the South Carolina Law Enforcement Division
  - Continuation of Oversight Review of SLED's Forensic Services Laboratory
- III. Adjournment



**SOUTH CAROLINA  
HOUSE OF REPRESENTATIVES  
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LEGISLATIVE OVERSIGHT COMMITTEE**

Chair Jeffrey E. "Jeff" Johnson

Lucas Atkinson  
William H. Bailey  
Phillip Bowers  
Gary S. Brewer Jr.  
Kambrell H. Garvin  
Leon Douglas "Doug" Gilliam

Lewis Carter  
Research Director

Charlie LaRosa  
Research Analyst

Wendell K. Jones  
Kathy Landing  
John R. McCravy III  
Annie E. McDaniel  
Timothy A. "Tim" McGinnis  
Travis A. Moore

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Scott Montgomery  
Michael Rivers  
Richard B. "Blake" Sanders  
Marvin "Mark" Smith  
Robert Williams  
Paul B. Wickensimer

Roland Franklin  
Legal Counsel

Riley McCullough  
Research Analyst

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## MEETING MINUTES

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Wednesday, November 5, 2025  
10:30 a.m.  
Room 516 – Blatt Building

### Archived Video Available

- I. Pursuant to House Legislative Oversight Committee Rule 6.7, South Carolina ETV was allowed access for streaming the meeting. You may access an archived video of this meeting by visiting the South Carolina General Assembly's website (<http://www.scstatehouse.gov>) and clicking on Committee Postings and Reports, then under House Standing Committees click on Legislative Oversight. Then, click on Video Archives for a listing of archived videos for the Committee.

### Attendance

The Law Enforcement and Criminal and Civil Justice Subcommittee meeting was called to order by Chair Chris Wooten on Wednesday, November 5, 2025, in Room 516 of the Blatt Building. Representative Kambrell H. Garvin and Representative Leon D. "Doug" Gilliam were present for all or a portion of the meeting. Representative Jeffrey E. "Jeff" Johnson and Representative William H. Bailey were not present.

## Minutes

- I. House Rule 4.5 requires standing committees to prepare and make available to the public the minutes of committee meetings, but the minutes do not have to be verbatim accounts of meetings.

## Approval of Minutes

- I. Representative Gilliam made a motion to approve the meeting minutes from prior meeting. A roll call vote was held, and the motion passed.

Rep. Garvin's motion to approve meeting minutes.	Yea	Nay	Not Voting
Rep. Wooten	✓		
Rep. Johnson			✓
Rep. Garvin	✓		
Rep. Gilliam	✓		
Rep. Bailey			✓

## Discussion of the South Carolina Law Enforcement Division

- I. Prior to beginning today's testimony, Chair Wooten asks if there are any SLED agency representatives who may address the subcommittee today or at future meetings who have not been placed under oath. Lieutenant Stephanie Stanley, Quality Manager, Evidence Control; Lieutenant Suzann F. Cromer, Forensic Firearms and Toolmarks; and Lieutenant Rhonda Fields, DNA Database Department; and Captain Samuel C. Reighley, Jr., SLED Forensic Services Division were all sworn.
- II. Captain Emily B. Reinhart begins her presentation to the subcommittee and discusses the following topics:
  1. Overview of Forensic Administration.
- III. Lieutenant Stephanie Stanley begins her presentation to the subcommittee and discusses the following topics:
  1. Evidence Control.
- Throughout her presentation to the subcommittee, Members ask Lieutenant Stanley questions and she responds.
- IV. Lieutenant Suzann F. Cromer begins her presentation to the subcommittee and discusses the following topics:

1. Forensic Firearms and Toolmarks.

Throughout her presentation to the subcommittee, Members ask Lieutenant Cromer questions and she responds.

V. Lieutenant Rhonda Fields begins her presentation to the subcommittee and discusses the following topics:

1. DNA Database Department.

Throughout her presentation to the subcommittee, Members ask Lieutenant Fields questions and she responds.

VI. Lieutenant Donna Money begins her presentation to the subcommittee and discusses the following topics:

1. DNA Casework Department.

Throughout her presentation to the subcommittee, Members ask Lieutenant Money questions and she responds.

VII. Following Lieutenant Money's presentation, the following presenters were sworn: Lieutenant Robertt Sears and Lieutenant Jeffrey A. Crooks.

VIII. Lieutenant Robert Sears begins his presentation to the subcommittee and discusses the following topics:

1. Forensic Technology.

IX. Throughout his presentation to the subcommittee, Members ask Lieutenant Sears questions and he responds.

X. Lieutenant Jeffrey A. Crooks begins his presentation to the subcommittee and discusses the following topics:

1. Latent Prints Department.

Throughout his presentation to the subcommittee, Members ask Lieutenant Crooks questions and he responds

## **Adjournment**

I. There being no further business, the meeting is adjourned.

# STATE LAW ENFORCEMENT DIVISION (SLED)



## ABOUT

On May 14, 1935, the General Assembly created the South Carolina Law Enforcement Division to enforce the state liquor law, assist any law enforcement officer in the detection of crime, along with the enforcement of the state's criminal laws. Funding was provided for 21 new officers to the existing three members of the State Constabulary.

## MISSION

The primary mission of SLED is to provide quality manpower and technical assistance to all law enforcement agencies in South Carolina to ensure that every citizen in the State of South Carolina is afforded an equal level of law enforcement service. SLED is also tasked with protecting and preserving the safety, integrity, and security of South Carolina's citizens and all statewide public resources, infrastructure, and data. SLED also conducts timely, thorough, and professional criminal investigations on behalf of the State of South Carolina along with many other statutory roles and responsibilities.

## VISION

SLED seeks to be the premier law enforcement agency in the State of South Carolina so as to ensure every citizen in South Carolina is provided an equal level of law enforcement services.

## SUCCESES

- ❖ Experienced staff with a wide range of talents capable of handling a variety of tasks and projects.
- ❖ Collaboration and coordination with regional and federal counterparts to provide the highest quality of service.
- ❖ Personnel's dedication, ability and involvement in the law enforcement profession as subject matter experts in their own individual areas of expertise.
- ❖ Commitment to maintaining accreditation to ensure law enforcement partners have access to the best forensic analysis possible.

## DEPARTMENTS

- ❖ Alcohol, Narcotics & Vice Services
- ❖ Criminal Justice Information Services
- ❖ South Carolina Information and Intelligence Center
- ❖ Counterterrorism
- ❖ Forensic Services
- ❖ Homeland Security
- ❖ Investigative Services
- ❖ Regulatory Services

## EMPLOYEES

**758**

Authorized FTEs

## FUNDING

**\$148,137,395**

Total Funds

## CHALLENGES

- ❖ Personnel turnover
- ❖ Succession planning issues
- ❖ Reliance on others and outside factors causing a delay in case progress.
- ❖ High volume of plant material testing cases has caused a time delay in receiving results.
- ❖ Continued use of an outdated case management system.

# SLED FORENSIC SERVICES



**Lieutenant (Lt.) Courtney Adams, M.S.  
South Carolina Computer Crimes Center (SC3C)**

# COMPUTER CRIMES - SUPERVISION

**Lt. Courtney Adams, M.S.**



- Education
  - BS Homeland Security-Columbia Southern University (2021)
  - MS Homeland Security Management-Columbia Southern University (2025)
- Work History
  - Columbia Police Department (2015-2017)
  - Easley Police Department (2017-2018)
  - Bureau of Protective Services (2018-2022)
  - SLED (2022-Present)
    - Computer Crimes (2022-2025) - Agent
    - Promoted to Lieutenant in Computer Crimes 2025

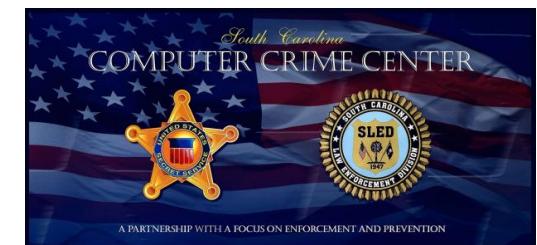


# COMPUTER CRIMES – SUPERVISION, CONTINUED . . .



**Lt. Courtney Adams**

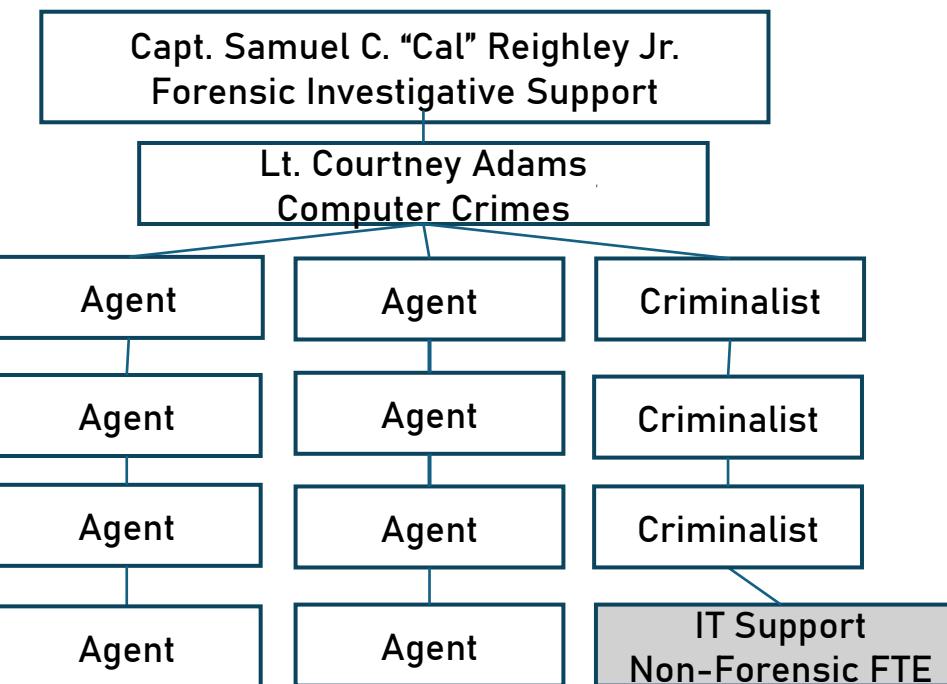
- **Military Career:**
  - United States Army Reserves-345<sup>th</sup> Military Intelligence BN (2018-2023)
- **Task forces:**
  - USSS Cyber Fraud Task Force
  - SC Internet Crimes Against Children



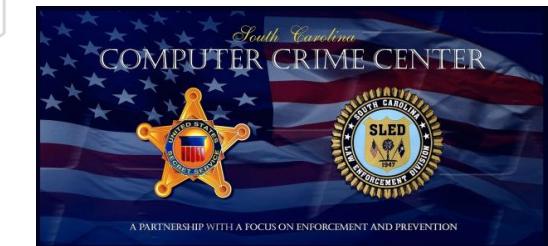
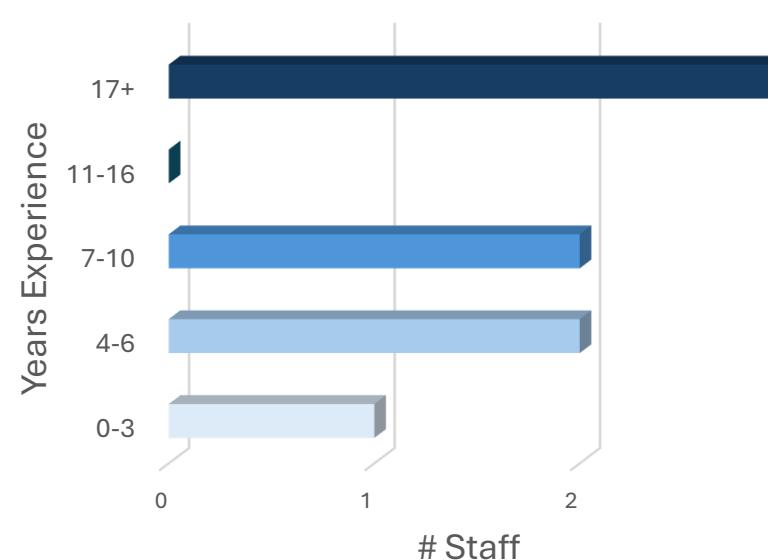


# COMPUTER CRIMES - ORGANIZATION

- 12 Full-Time Employees (FTEs)
  - (9) Class I Law Enforcement Officers
  - (3) Class III Criminalists
- 1 Information Technology Support (Non-Forensic Staff)



Computer Crimes Staff - Years Experience



# COMPUTER CRIMES - HISTORY



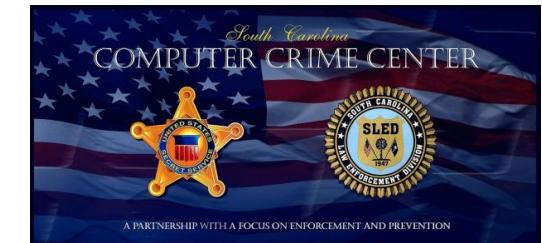
- In 2002, a federal grant was awarded for the start of the Computer Crime Center.
- In 2015, SC3C transition from Investigative Services to Forensic Services to begin the accreditation process.
- In 2019, SC3C received accreditation through the ANSI National Accreditation Board (ANAB).



# COMPUTER CRIMES - HISTORY



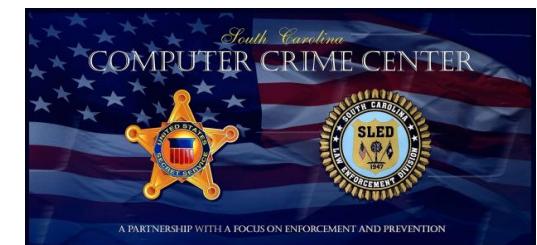
- SC3C was 1 of 88 computer forensic laboratories in the world to achieve this accreditation from ANAB in 2019.
- Agents are on call 24 hours a day 7 days a week.
- Agents hold various certifications in cell phone forensics, vehicle forensics, computer forensics, and video enhancements.



# COMPUTER CRIMES - SERVICES



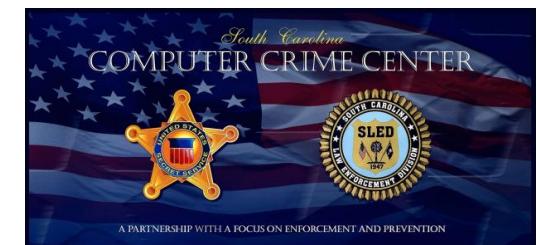
- Encompasses the preservation, processing, and analysis of evidence in an analog or digital format.
- Provides expertise to local, state, and federal law enforcement agencies in the scientific examination, repair (if possible), analysis and/or evaluation of electronically stored information contained on a wide variety of data storage devices.



# COMPUTER CRIMES- SERVICES



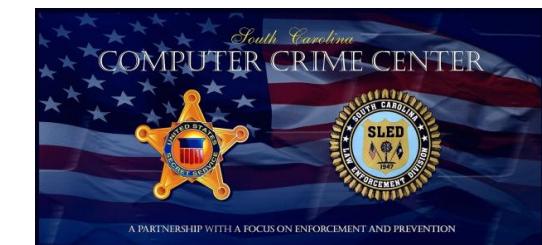
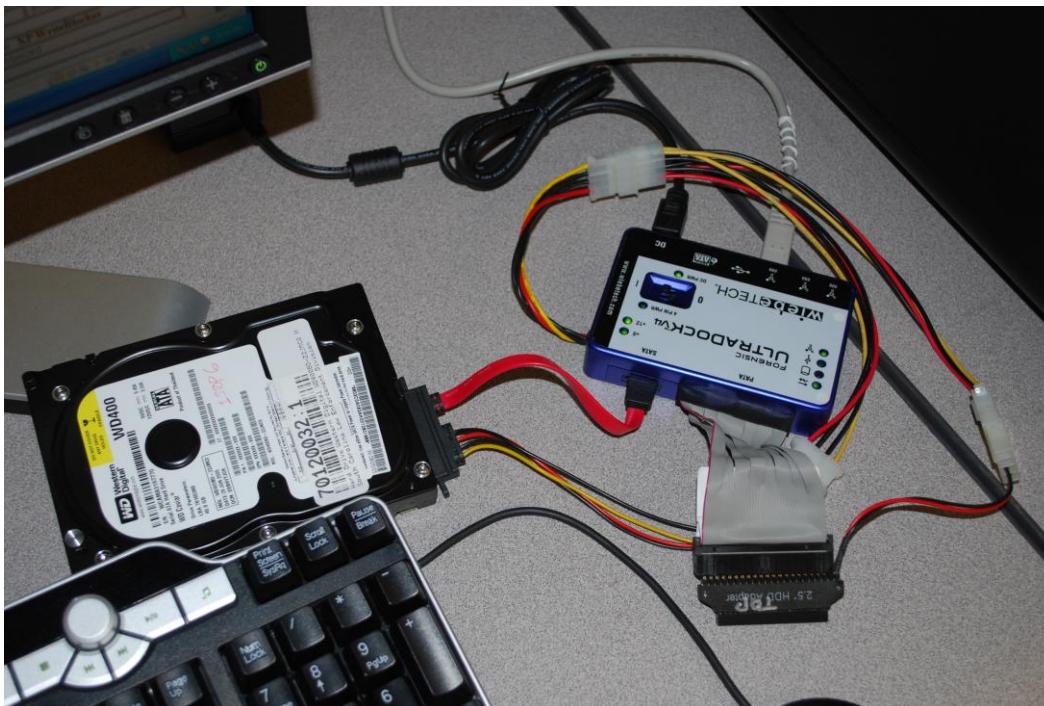
- ❖ Agents are trained in different digital forensics areas:
  - ✓ Computer forensics
  - ✓ Mobile forensics
  - ✓ Vehicle forensics
  - ✓ Network intrusions
  - ✓ Drone forensics
  - ✓ Video and audio enhancements
  - ✓ Crypto currency tracing
  - ✓ Skimmer forensics



# COMPUTER CRIMES – COMPUTER FORENSICS



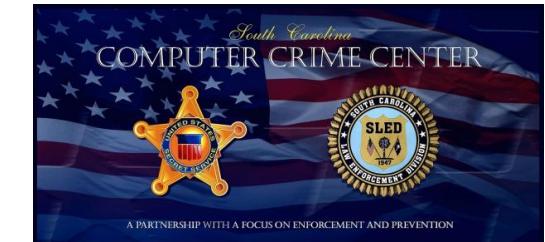
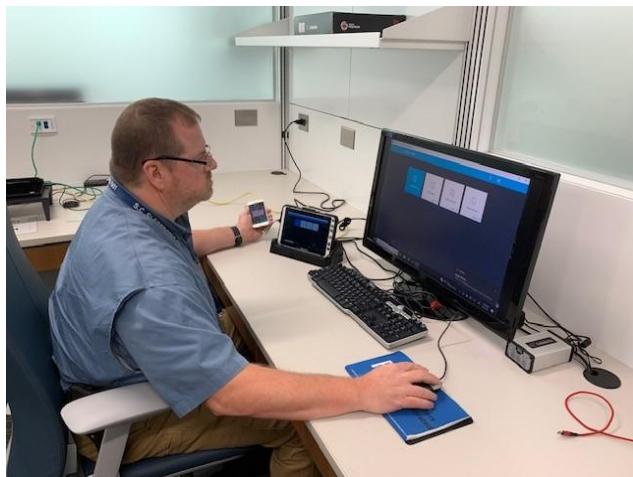
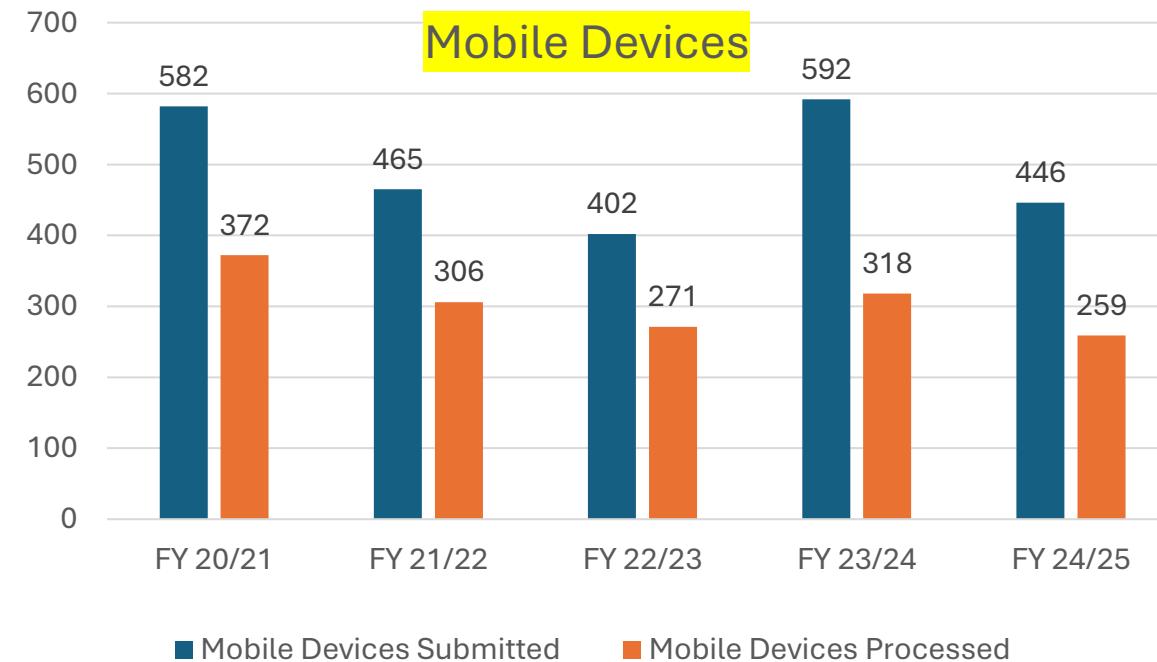
- Processes and examines items such as computer towers, internal hard drives, external hard drives, laptops, Thumb drives, and SD memory cards



# COMPUTER CRIMES – MOBILE DEVICES



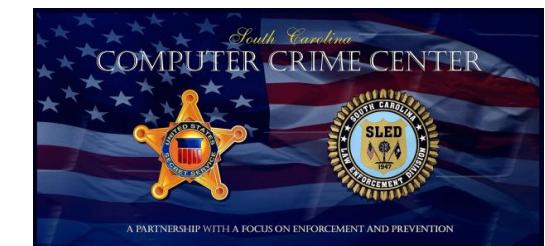
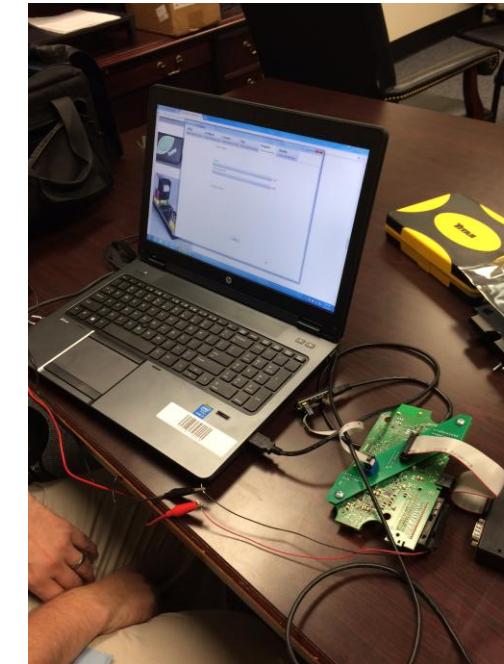
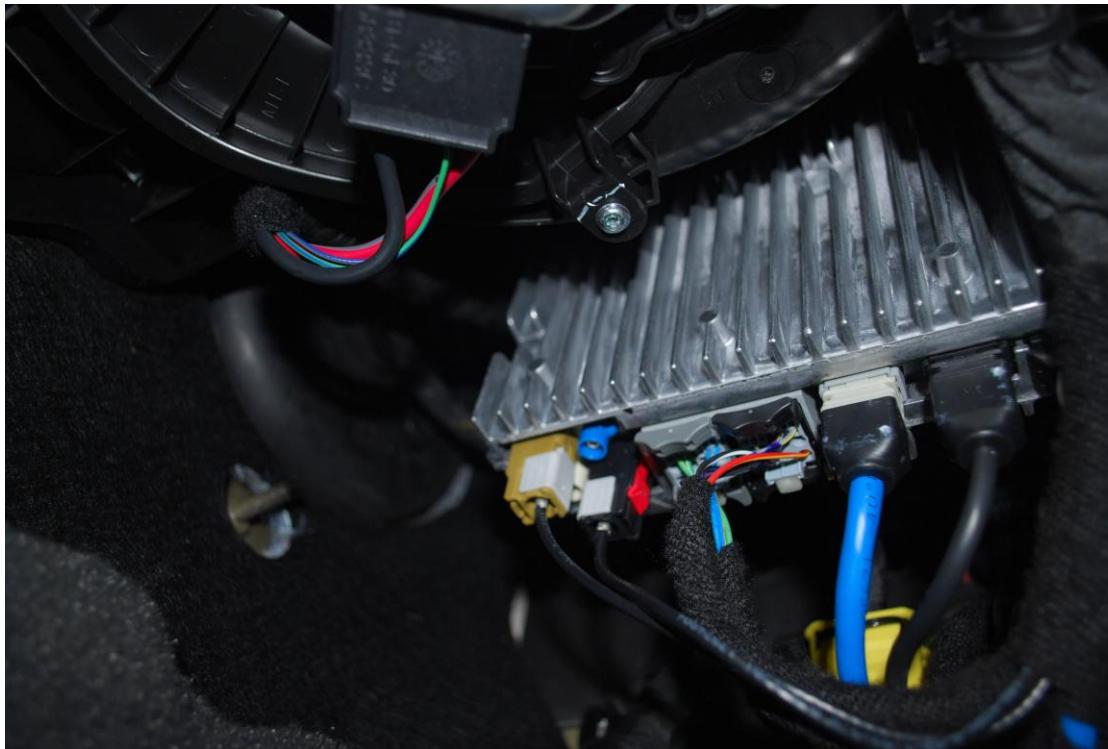
- SC3C extracts data from mobile devices submitted



# COMPUTER CRIMES – VEHICLE FORENSICS



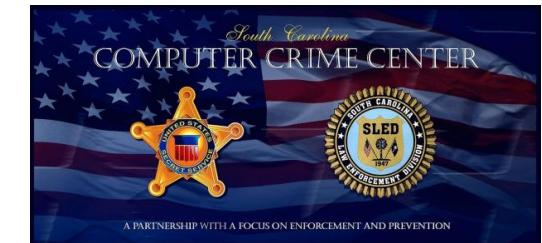
- Process and examine vehicle infotainment centers



# COMPUTER CRIMES – DRONE AND SKIMMER FORENSICS



- Processes and examines drones along with skimmers from gas pumps or point of sale devices





# COMPUTER CRIMES – CRYPTO CURRENCY

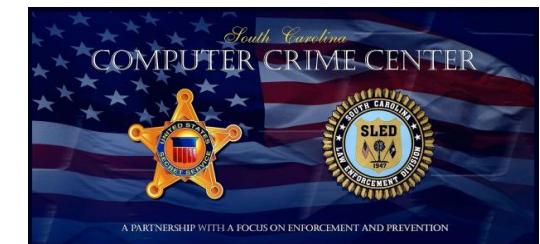
- In 2023, the ability to trace crypto currency was added as a service
- Since 2023, Computer Crimes has traced over \$1,000,000 in crypto currency for local law enforcement
- In 2024, Computer Crimes worked with the USSS Cyber Fraud Task Force to seize approximately \$80,000 in Bitcoin related to a cyber fraud from West Columbia



# COMPUTER CRIMES – NETWORK INTRUSION/AUDIO VIDEO



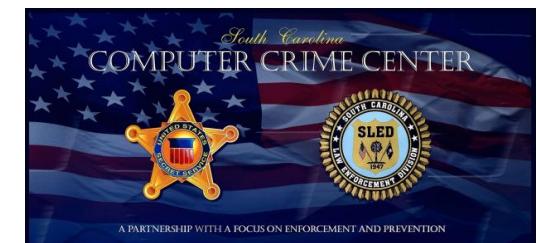
- **Network Intrusions**
  - Respond to ransomware attacks and business email compromises for evidence collection
  - Work with US Secret Service and FBI for the investigation
- **Audio and Video Enhancements**
  - Processes and examines audio/video files to enhance for investigative purposes



# COMPUTER CRIMES – TRAINING/CERTIFICATION



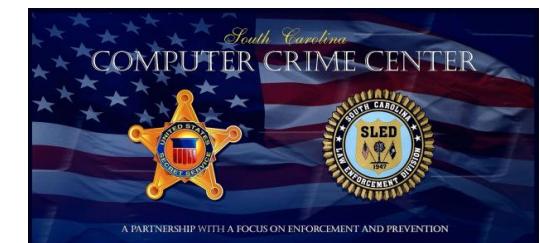
- **Basic Training**
  - All agents are trained in basic computer and mobile forensics (Training approximately 6.5 months, 9+ classes)
- **Agents receive additional training in various areas**
  - Six (6) agents trained in network forensics (12 week class)
  - Three (3) agents trained in audio/video enhancements (5 week class)
  - Three (3) agents trained in vehicle forensics (2 week class)
  - Two (2) agents trained in crypto currency tracing (4 week class)
  - One (1) agent trained in drone forensics (2 week class)
  - One (1) agent trained in skimmer forensics (1 week class)



# COMPUTER CRIMES – TRAINING/CERTIFICATION

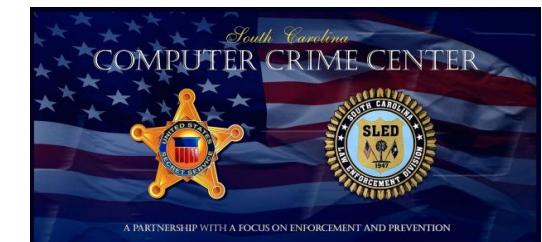


- Seven (7) agents hold mobile device forensics certifications from organizations such as Cellebrite, International Association of Computer Investigative Specialists (IACIS), and EC-Council
- Three (3) agents hold computer forensics certifications from organizations such as Magnet Forensics and Forensic Toolkit
- Three (3) agents hold video enhancement certifications from AXON



# COMPUTER CRIMES - RECOGNITION

- In 2018 and 2023, an Agent was recognized by the US Secret Service as a top 50 Computer Examiner in the nation
- In 2020, an Agent worked with INTERPOL to locate a teenager in SC attempting to harm themselves online
  - The Agent located the address of the teenager and got medical help to save the teenager





# COMPUTER CRIMES – CASES OF INTEREST

- In 2023, Agents worked with the Hampton County School District to recover \$490,000 from a Business Email Compromise investigation
- Agents have performed examinations and testified in numerous high-profile cases:
  - Dylan Roof
  - Michael Slager
  - Samantha Josephson
  - Alex Murdaugh



# COMPUTER CRIMES - PRESENTATIONS



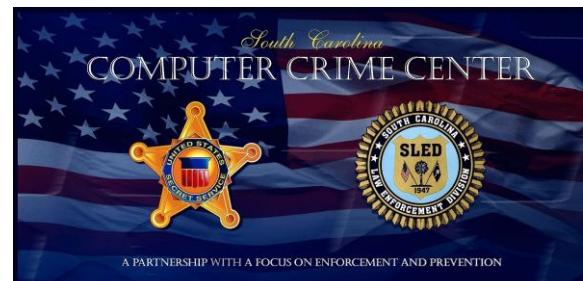
- University of South Carolina School of Law on Cybersecurity and Digital Forensics (2021)
- US Attorney's Gatlinburg Law Enforcement Conference on Collecting and Preserving Digital Evidence (2023)
- National Cyber Crime Conference hosted by the Massachusetts Attorney General's Office (2024)
- New Jersey Homicide Investigator's Association 29<sup>th</sup> Annual NJHIA Advanced Homicide Investigator's Conference (2024)
- Served on Richland School District Two and Anderson Institute of Technology Advisory Committees for Digital Forensics and Cyber Security

# COMPUTER CRIMES – TASK FORCES



- **Task Force Affiliations:**

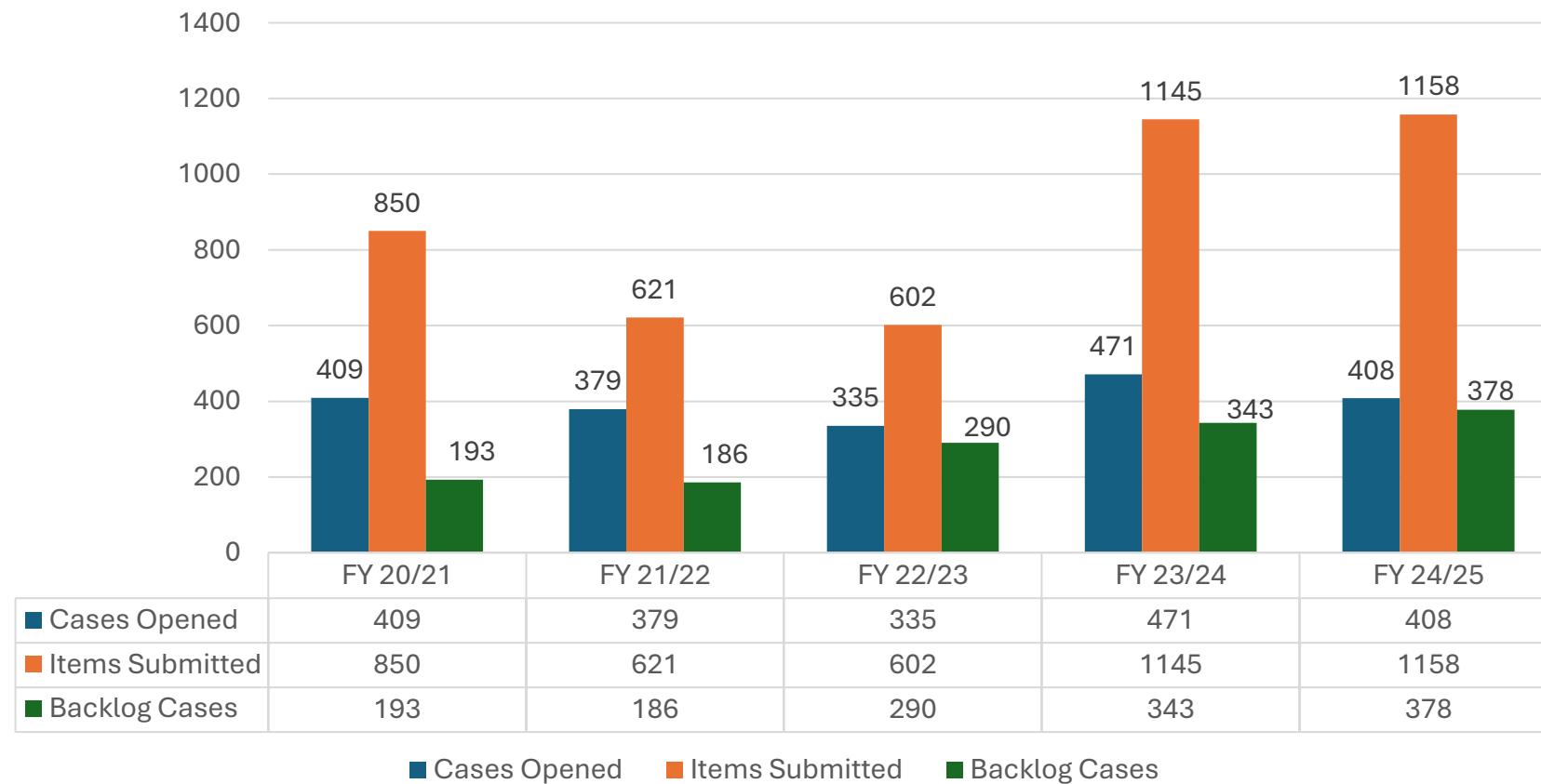
- South Carolina Cyber Fraud Task Force (US Secret Service)
- South Carolina Internet Crimes Against Children Task Force (SC Attorney General's Office)



# COMPUTER CRIMES - METRICS



## Statistics



# COMPUTER CRIMES – METRICS



- **One (1) terabyte (TB) equals:**
  - ✓ 250,000 photos
  - ✓ 250 movies or 500 hours of HD videos
  - ✓ 6.5 million documents (pdfs or presentations)
  - ✓ 83.3 million pages
- **From 2020-2025 an average of 117.59 TB of data was processed each year.**
  - ✓ 29.40 million photos
  - ✓ 58,795 hours of HD videos
  - ✓ 9.79 billion pages



# QUESTIONS?



# SLED FORENSIC SERVICES



**Lt. Todd Schenk**  
**South Carolina Crime Scene Investigations**

# CRIME SCENE - SUPERVISION



**Lt. Todd Schenk, Supervisor**

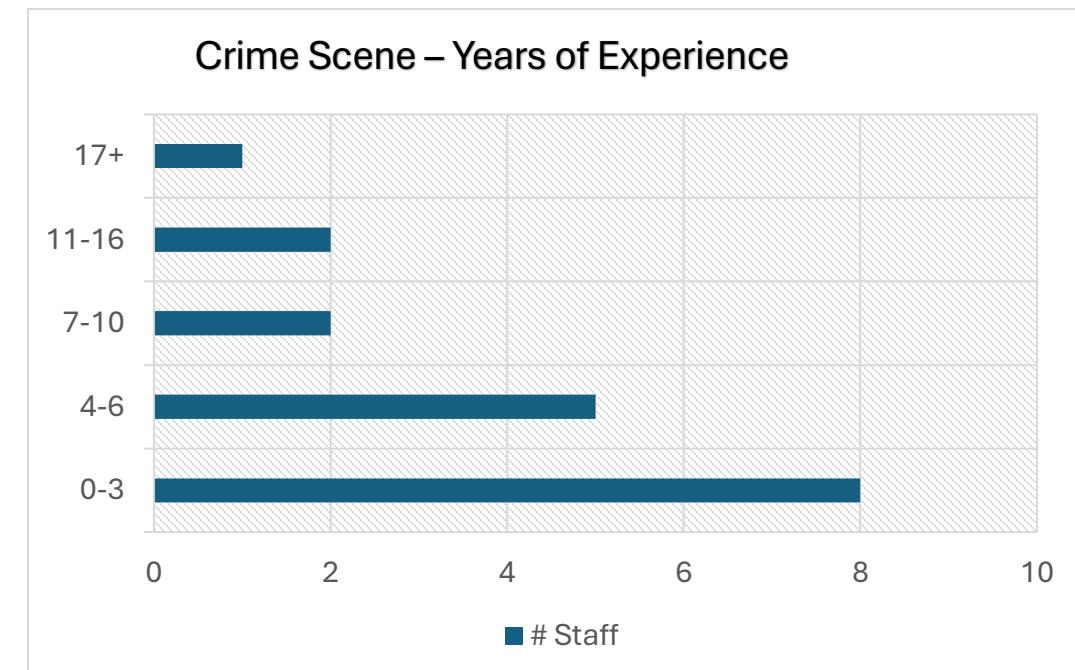
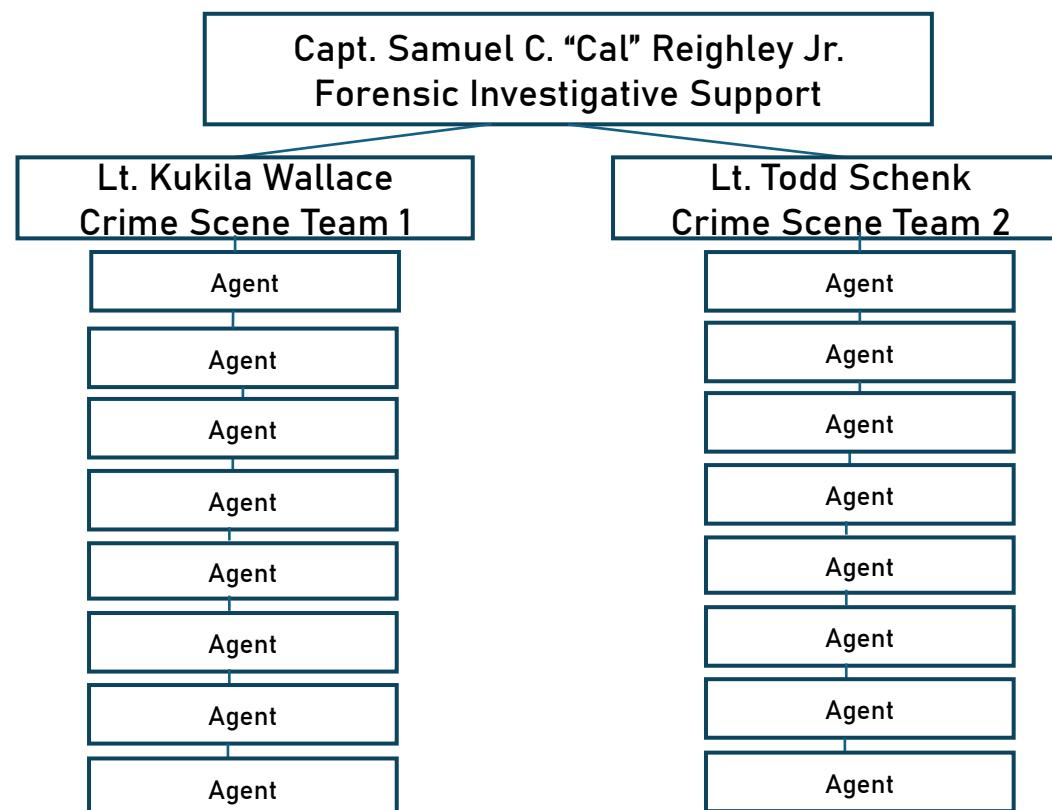
- Education
  - BS Business Administration-The Citadel
- Work History
  - SLED (2013-Present)
    - Special Agent-Crime Scene (2013-2021)
    - Promoted to Lieutenant in Crime Scene (2021-Present)



# CRIME SCENE - ORGANIZATION



- 18 Full-Time Employees (FTEs) - Class 1 Law Enforcement



# CRIME SCENE - SERVICES



- The SLED Crime Scene Department is responsible for aiding local, state, and federal law enforcement agencies in the investigation of crime scenes and providing assistance in Bloodstain Pattern Analysis/Crime Scene Reconstruction, and Advanced Digital Photography.



# CRIME SCENE - SERVICES



- SLED Crime Scene Agents are Class I Law Enforcement Certified and respond to crime scene requests 24 hours a day, **7 days a week**. Crime Scene Agents respond to scenes such as:
  - Officer-Involved Shootings
  - Homicides
  - Suicides
  - Child Fatalities
  - Large-scale property crimes
  - Deaths In-Custody
- While on scene, Crime Scene Agents investigate and document the crime scene as well as locate, collect, and process evidence related to the case. In addition, Agents are trained to perform job functions in Advance Digital Photography, and Bloodstain Pattern Analysis/Crime Scene Reconstruction (BPA/CSR).



# CRIME SCENE - SERVICES



- While on scene, Crime Scene Agents investigate and document the crime scene as well as locate, collect, and process evidence related to the case. In addition, Agents are trained to perform job functions in Advance Digital Photography, and Bloodstain Pattern Analysis/Crime Scene Reconstruction (BPA/CSR).

## SLED investigating police shooting off Dorchester Road in North Charleston

BY KAILEY COTA KCOTAPPOSTANDCOURIER.COM  
FEB 4, 2024 UPDATED: 15 MIN AGO



A law enforcement officer walks down Bailey Drive with a camera to take pictures of the scene of an officer-involved shooting on Sunday, Feb. 4, 2024, in North Charleston.



6 WJBF  
Federal agents involved in deadly shooting in Aiken, SLED investigating | WJBF  
Images may be subject to copyright. Learn More



# CRIME SCENE - TRAINING

- Agents are trained in Scene Investigations:
  - Photography
  - Crime Scene Sketching
  - Evidence Collection/Preservation
  - Shooting Incident Documentation
  - 3D Modeling with Laser Scanner
  - Drone Photography
  - Alternate Light Source Photography
  - Expert Courtroom Testimony
  - Documentation of Bloodstain Patterns



# CRIME SCENE - TRAINING



- Scene Investigations training consists of seven training blocks
- The typical training duration for Crime Scene Agents is approximately one year.
- Training incorporates agents' education and experience.
- The training blocks are completed in conjunction with responding to calls for service with a competent agent to apply learned principles in the field.





# CRIME SCENE – NEW RESOURCES

- **Special Programs**
  - 2024: Implementation of the Unmanned Aircraft System (Drone)
    - All agents have passed the FAA Part F107 test or is preparing to complete the test
    - Implementation of NIST testing to demonstrate continuous drone compliance



# CRIME SCENE – NEW RESOURCES



## Drone Image of SLED Forensic Services Laboratory

- Flight time >30 minutes



# CRIME SCENE – NEW RESOURCES



- Crime-Lite Auto
  - 2023: Implementation of two Crime-Lite Autos
    - Multispectral cameras that aid Crime Scene Investigators in the searching and documenting of evidence not visible without enhancement.



# CRIME SCENE – NEW RESOURCES



- The addition of the new SLED Forensic Services Laboratory has provided the following:
  - Two vehicle bays that are used to process vehicles on-site.
  - Adequate space for training, casework, evidence submission, and storage.
  - A mock crime scene room to conduct training, proficiency and competency testing.



# CRIME SCENE - RECOGNITION



- In 2022, the Crime Scene Unit received the SLED Chief's Unit Citation Award. The unit was nominated by all four SLED Investigative Region Captains in recognition for the units' exceptional service to the regional investigative units.
- The unit has received many Letters of Commendation from local, state, and federal agencies for their professionalism and contributions to investigations the unit has assisted with.



# CRIME SCENE – CASES OF INTEREST



- Agents have assisted with investigating and providing testimony in many high-profile cases:
  - Dylan Roof
  - Michael Slager
  - Samantha Josephson
  - Naveah Adams
  - Faye Swetlik
  - Alex Murdaugh



# CRIME SCENE – CASE WORK



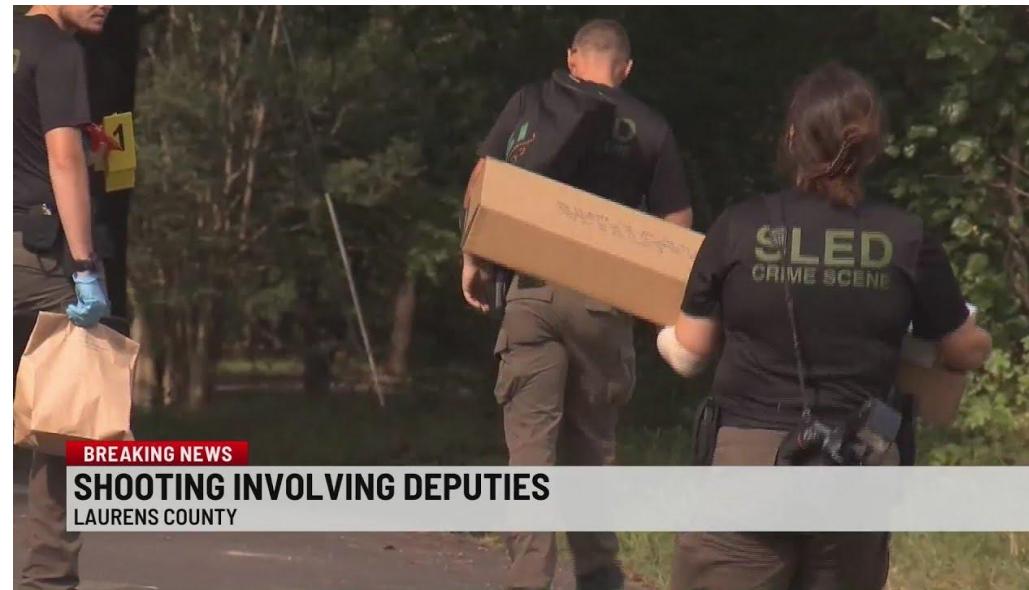
- Agents have assisted with investigating many line of duty deaths in the last four years:
  - Officer Matthew Hare
  - Deputy Austin Derek Aldridge
  - Officer Roy Barr
  - Lt. John Stewart
  - Sergeant William Jumper
  - Officer Jacob Hancher
  - Corporal Andrew John Gillette
  - Officer Jackson Winkeler
  - Deputy Devin Mason



# CRIME SCENE – UNIT GROWTH

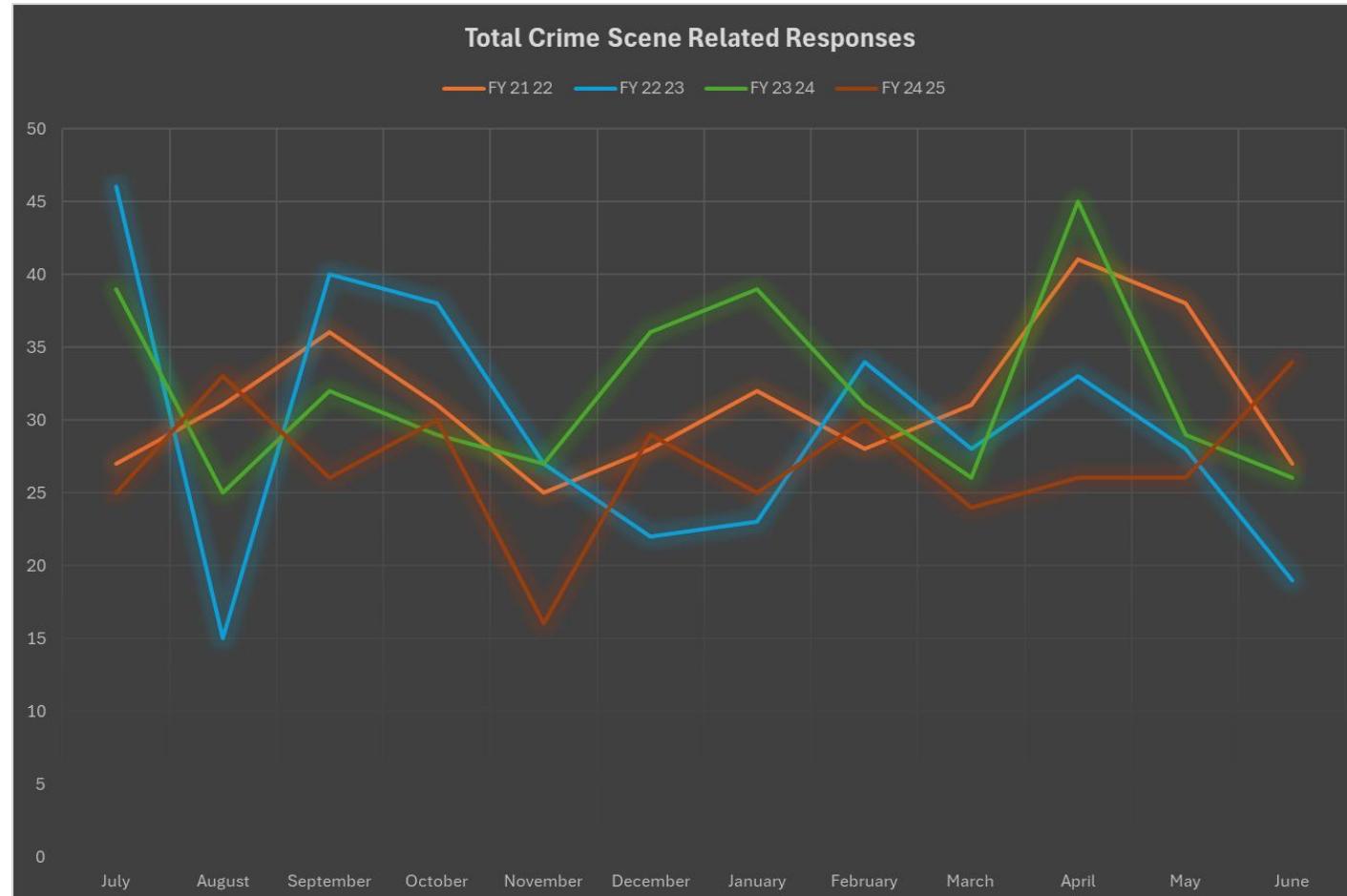


- The Crime Scene Unit was given four new full-time positions in 2021. These new positions have allowed the unit to train more agents to be available for calls for service. The addition of these agents will allow for better distribution of the caseload; providing a faster turn around time for the criminal justice system.

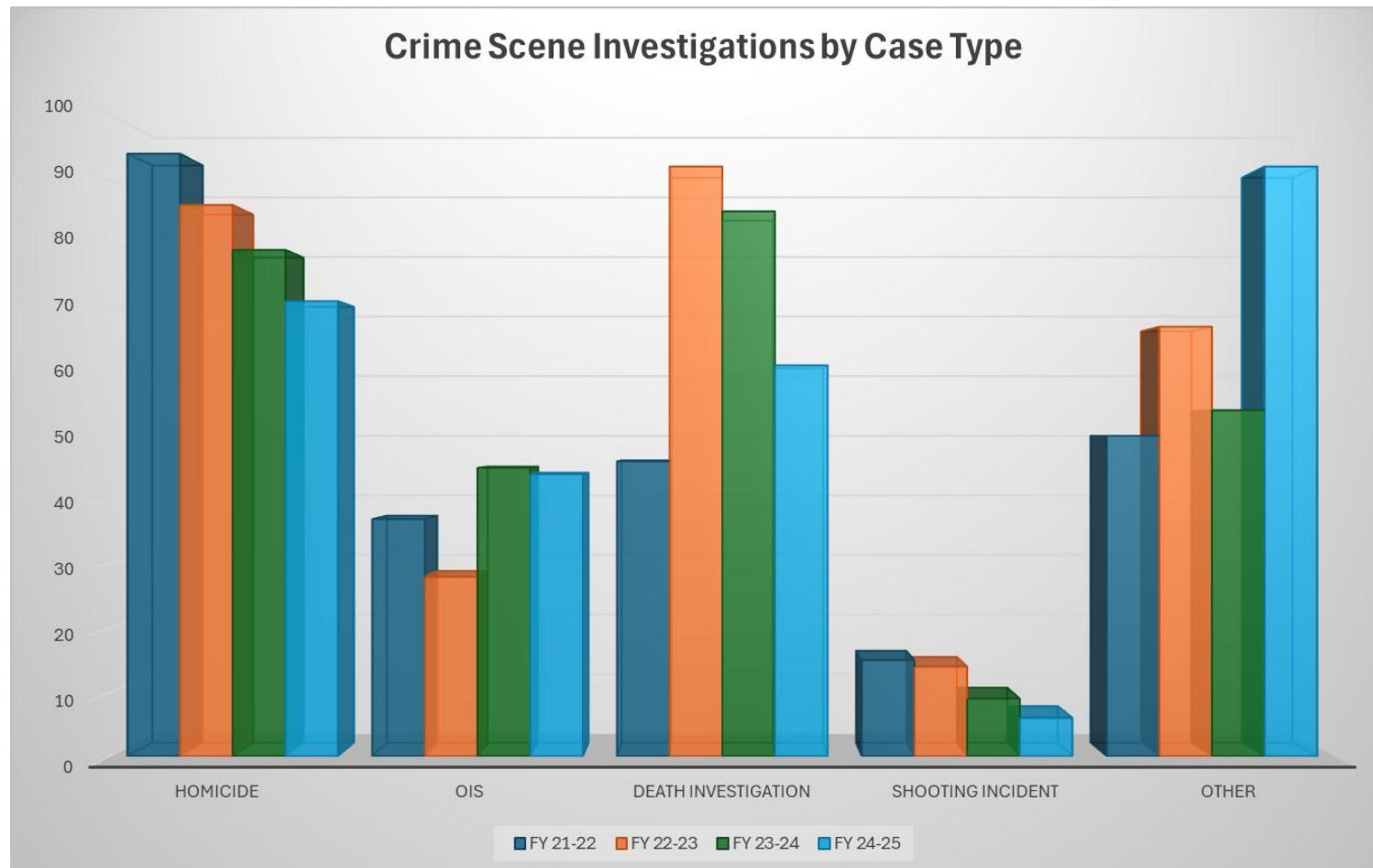


# CRIME SCENE – METRICS

**Total Crime Scene Related Responses**  
(Includes Initial Call-out, Follow-up, Turn Arounds, and Autopsy Responses)



# CRIME SCENE - METRICS



- Death Investigation includes Suicides, Natural, Unknown, Child Fatalities
- Other includes Burglary, Assault, Missing Persons, Attempted Murder, Vehicle Processing, Etc.



# QUESTIONS?



# FORENSIC OPERATIONS

## Summary of Units

Captain Wendy C. Bell, Ph.D.  
SLED Forensic Services Division



# SLED FORENSIC SERVICES

**Capt. Wendy C. Bell, Ph.D.**



## Education:

Ph.D. in Analytical Chemistry, University of South Carolina, August 1993- December 2001

Bachelor of Science, Furman University, August 1989-June 1993

## Work History: 27 Year SLED Career

Captain, Forensic Operations, SLED – March 2013 – present

Lieutenant, Toxicology Department, SLED – October 2010-March 2013

Lieutenant, Drug Analysis Department, SLED – April 2007-July 2011

Technical Leader/Team Leader, Toxicology Department, SLED – February 2002-April 2007

Forensic Scientist, Toxicology Department, SLED – February 1998 – February 2002

## Committees

National Alliance for Model State Drug Laws

SC Governor's Opioid Emergency Response Task Force

The Blunt Truth Marijuana Task Force

SC Legislature Medical Marijuana Committee

SC Vulnerable Adult Fatality Review Committee

University of South Carolina, Department of Chemistry and Biochemistry, Industrial Review Board

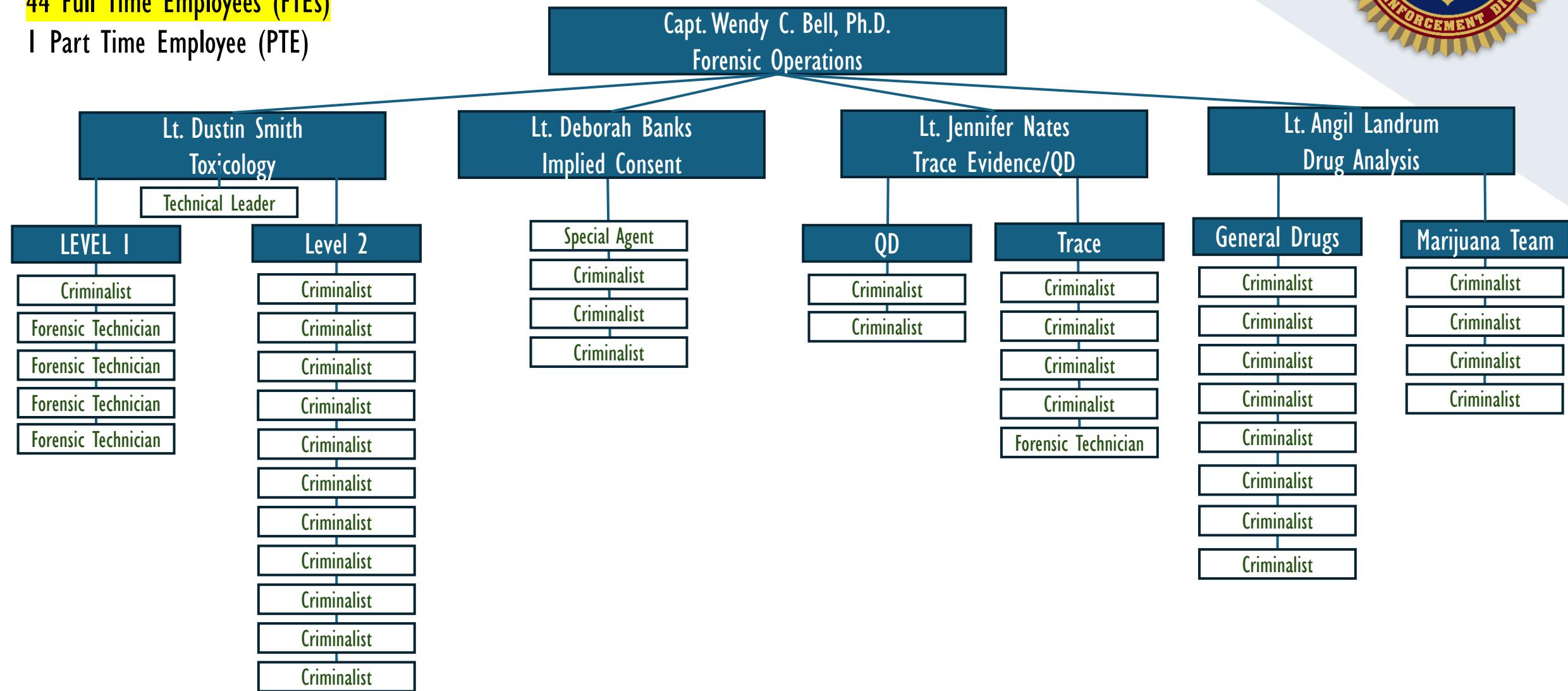


# FORENSIC OPERATIONS- ORGANIZATION



44 Full Time Employees (FTEs)

## I Part Time Employee (PTE)



# TOXICOLOGY



## Staffing:

Criminalists:	14
Technicians:	4

## Department Metrics FY 2024-25:

Assignments Received	Assignments Completed	Department Backlog at end of FY24-25
4036	4273	53

## Services and Capabilities:

- Responsible for the analysis of biological fluids and tissues for the presence or absence of alcohol, drugs, and poisons.
- The department primarily handles postmortem and driving under the influence (DUI) investigations. In addition, the department also handles criminal sexual conduct cases, moonshine cases, investigations into potential poisonings and provides emergency analytical services in life-or-death situations. Rapid preliminary analysis is provided in cases involving child fatalities or officer involved shootings.
- Additionally, toxicologists interpret their findings in respect to impairment or toxicity of the compounds detected.

# TOXICOLOGY



## Achievements/Process Improvements:

- Department maintains **low backlog and fast turnaround time**, among top 25% of all full-service Forensic Toxicology labs in the country per FORESIGHT report.
- The Liquid Chromatograph/Quadrupole Time of Flight Mass Spectrometer (LC-QTOF) validated and in use in blood drug screening. The instrument is reducing analysis time by eliminating the need for preliminary drug screens and unknown GCMS/LCMSMS screening.

## Challenges Faced:

- The continued development of novel psychoactive substances continues to be a challenge. New drugs are continuously being introduced to the market and require for constant method development to allow for proper identification and interpretation.
- The department was tasked with developing and validating a method for verifying potency and stability of Pentobarbital supplies for the SC Department of Corrections.
- Loss of key staff, particularly Technician level turnover, has required analysts to spend significantly more time on tasks that were previously handled by other staff.



# TRACE EVIDENCE/QD



## Staffing:

Criminalists:	7
Technicians:	1

## Department Metrics FY 2024-25:

	Assignments Received	Assignments Completed	Department Backlog at end of FY24-25
TRACE	562	632	106
QD	75	77	12

## Services and Capabilities:

- The Trace Evidence Department performs explosives analysis, fiber analysis, fire debris analysis, glass analysis, gunshot primer residue (GSR) analysis, paint analysis, and general physical and chemical analysis on a variety of trace evidence.
- The Questioned Documents Department conducts scientific examinations on evidence requiring a determination of authorship and authenticity.

# TRACE EVIDENCE/QD

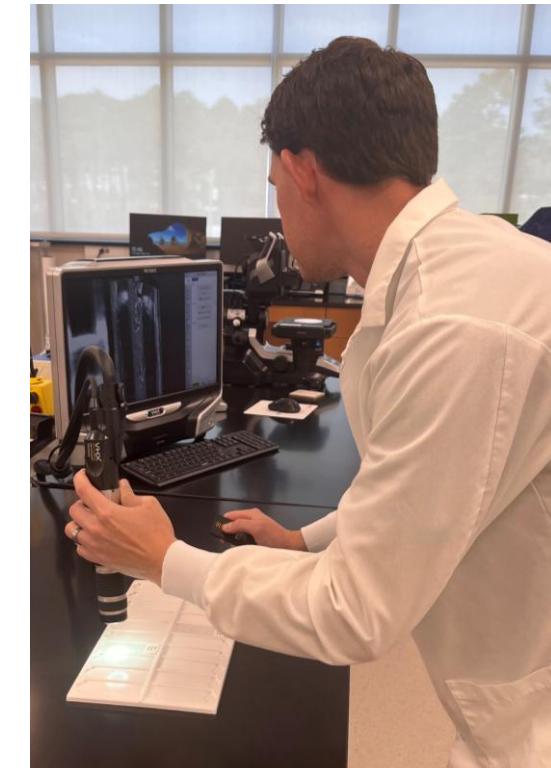


## Achievements/Process Improvements:

- The Trace Evidence department has been able to reduce the GSR backlog significantly due to an evaluation of how Gun Shot Primer Residue (GSR) is analyzed. This included: an evaluation of the software used for analysis, an evaluation of the GSR process itself, and an evaluation of the personal performing GSR analysis.
- Changes made after this evaluation, coupled with the GSR customer notice that was issued in 2022 limiting the acceptance of victim GSR kits, has reduced the GSR backlog from 3828 kits in June of 2021 to 106 GSR kits at the end of FY 2024-25.
- The department is now analyzing current cases with the future goal of completing GSR cases within 60 days of submission.

## Challenges Faced:

- Upcoming future risks are the retirement of a Senior Questioned Documents (QD) Examiner in 2025 leaving the department with one analyst. The Department has communicated with the US Secret Service to share reviews after September 2025. The Trace Department is being trained to take on ink and indented impression analysis. The Trace department is also at risk for several senior analysts retiring in the next several years. This will handicap the department as the training program is at least 6 years long.



# DRUG ANALYSIS



## Staffing:

Criminalists:	13
Technicians:	0

## Department Metrics FY 2024-25:

Assignments Received	Assignments Completed	Department Backlog at end of FY24-25
14,570	19,942	16,455

## Services and Capabilities:

- The Drug Analysis Department is responsible for the analysis of evidentiary items to establish the presence, identity and quantity of controlled substances.
- Chemical spot tests, published reference materials, and/or microscopic analyses may be used as indicative or screening tests. Confirmatory testing is performed by Gas Chromatograph/Mass Spectrometer (GC/MS) and Fourier Transform Infrared Spectrometer (FTIR).
- The Drug Analysis Department conducts quantitative analysis of tetrahydrocannabinol (THC) in plant material and THC products to distinguish between marijuana and industrial hemp and the legality of the product.

# DRUG ANALYSIS



## Achievements/Process Improvements:

- During FY 2024-25 the department hired and trained an analyst for one vacancy and for several months, the department operated at full staff. During this time, great progress at backlog reduction. Two analysts resigned in 2025, and the department is in the process of filling those positions.
- The department eliminated the waitlist for large boxed submissions by focus on completing these cases and assigning a dedicated analyst for large plant material submissions.

## Challenges Faced:

- Edibles containing Tetrahydrocannabinol (THC) isomers/analog (store seizures) continue to create additional requests for the laboratory. The laboratory also received multiple expedited testing requests for these substances so that law enforcement can seize illegal retail products.
- The changing drug trends cause the department to constantly stay abreast of ordering standards for these novel substances. Some substances are so new to the market that reliable standards are not readily available.



# IMPLIED CONSENT



## Staffing:

Criminalists:	4
Agents:	1

## Department Metrics FY 2024-25:

DataMaster DMT On-Site Inspections	DataMaster DMT Linearity Verifications	DataMaster DMT Total Attempted Tests
959	231	21,388

## Services and Capabilities:

- Promulgate policies and procedures related to the Implied Consent program relating to the breath alcohol testing and video recording devices at breath testing sites.
- Inspect, maintain, and repair of breath alcohol testing equipment and videotaping systems
- Responsible for selection & certification of breath alcohol testing equipment and breath testing sites.

# IMPLIED CONSENT

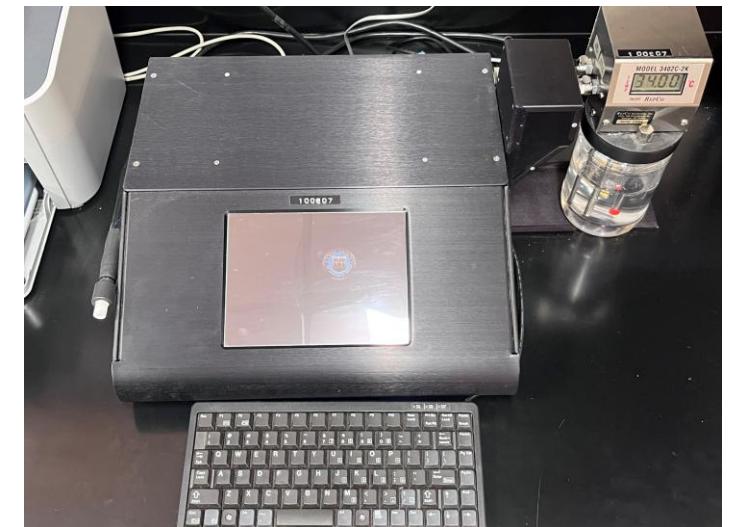


## Achievements/Process Improvements:

- During 2023-24, both state programs for which Implied Consent has regulatory responsibility began an upgrade for 149 systems at 104 breath testing sites throughout the state of South Carolina.
- Video equipment upgrades are complete in breath testing rooms state-wide as of the end of FY 24-25. The total cost for these systems plus a five-year maintenance agreement is \$3,350,000. Video systems are upgraded every five years.
- The legislature designated \$1.9 million to upgrade breath testing devices throughout the state and to replace 15-year-old instrumentation. The bid process for these instruments has been completed and replacement of the instruments will begin in Fall 2025.

## Challenges Faced:

- With two new staff members, a major focus of the department has been on training in routine maintenance and linearity verifications.



# SLED FORENSIC SERVICES

## IMPLIED CONSENT

2025 House Oversight Meeting



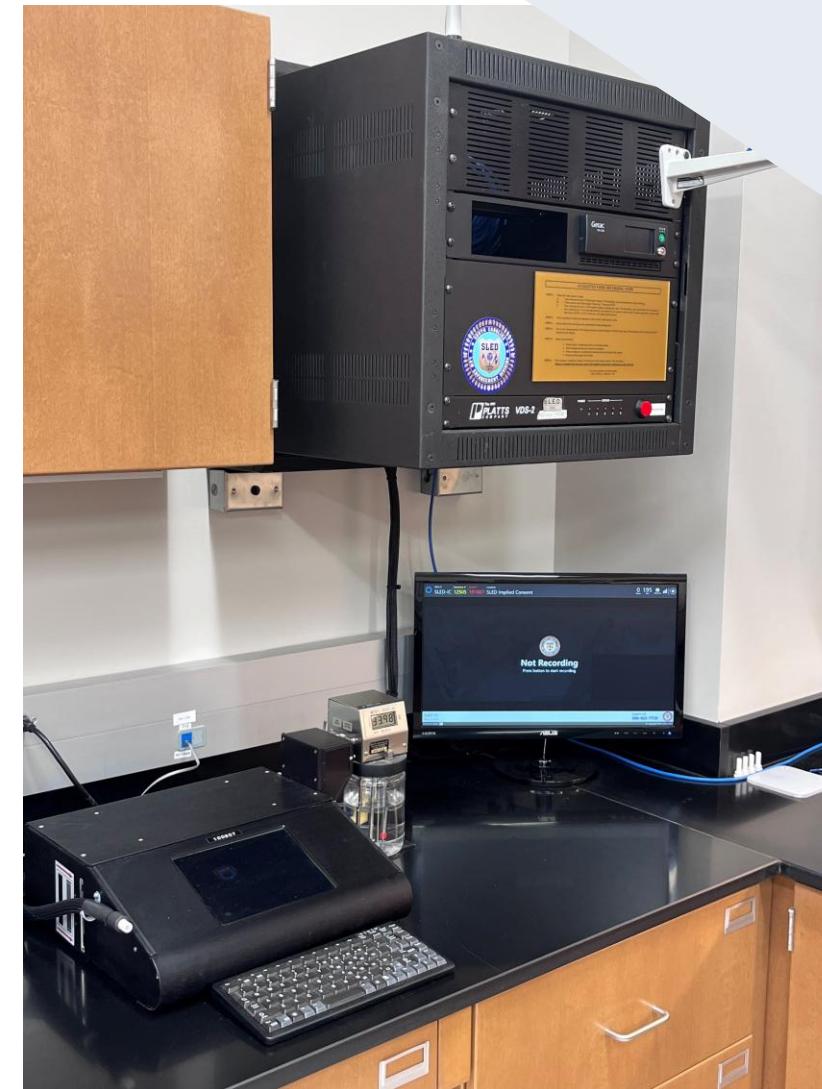
Lt. Randy Brown

SOUTH CAROLINA LAW ENFORCEMENT DIVISION

# IMPLIED CONSENT

## Purpose

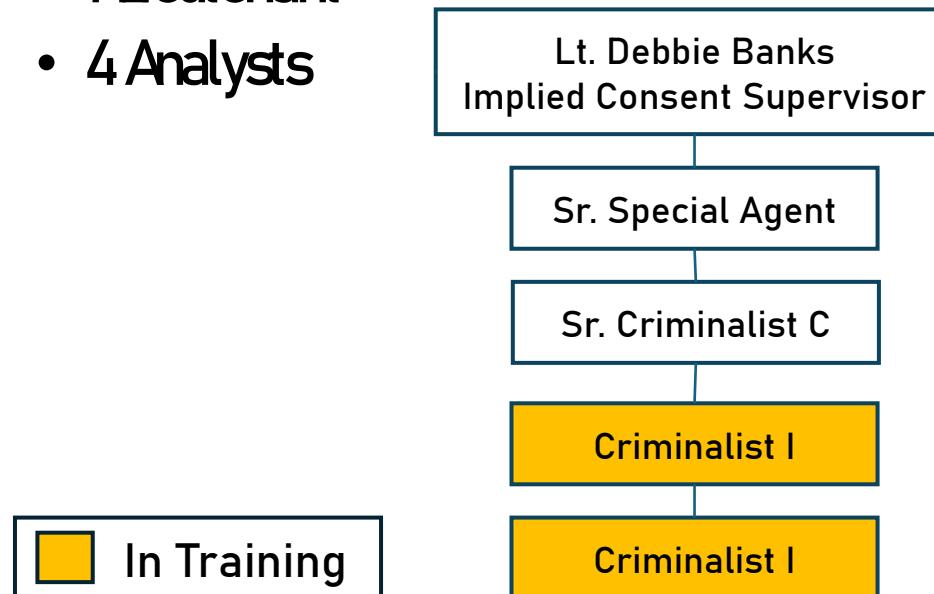
- The Implied Consent Department has regulatory authority over the state's breath-testing and video-recording programs.
- As such, SLED's Implied Consent department is neither on the enforcement or the prosecutorial side of DUI Cases. We are responsible for the instrumentation and storage of testing information.
- Members of the department cover all regions of the state for inspections, instrument repair and maintenance, breath testing supplies, and managing any issues arising in the BA room.



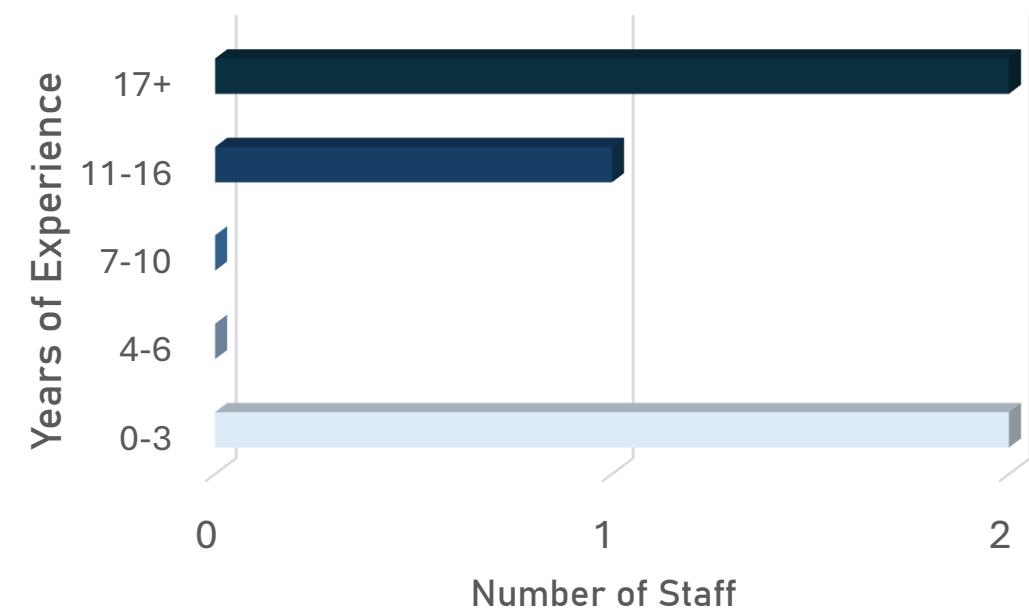
# IMPLIED CONSENT - Staff



- 5 Current Staff
  - 1 Lieutenant
  - 4 Analysts



Implied Consent Staff - Employee Experience



# IMPLIED CONSENT – Regulatory Function



## [List of Implied Consent Laws \(20\) and State Regulations Governing SLED's Implied Consent Department](#)

[State Regulations Article I, Section 73.](#) : These Regs are posted on SLED's Implied Consent website. These regs give SLED the authority and responsibility to regulate and maintain the state's breath testing and video recording programs.

### [S.C. Code of Laws](#) governing SLED's Implied Consent Department:

- Section 23-31-420, "Shooting under the influence" (SUI)
- Section 50-21-114, "Boating under the influence" (BUI)
- Section 55-1-100, "Operating or acting as flight crew member of aircraft while under influence of alcohol or drugs unlawful; penalties" (FUI)
- Section 56-1-10, "Definitions"
- Section 56-1-286, "Suspension of license or permit or denial of issuance of license or permit to persons under the age of twenty-one who drive motor vehicles with certain amount of alcohol concentration" (Zero Tolerance)
- Section 56-1-2120, "Driving with measurable amount of alcohol prohibited; possession of alcoholic beverage while operating a commercial motor vehicle" (CDL)
- Section 56-5-2930, "Unlawful to operate motor vehicle while under influence"
- Section 56-5-2933, "Driving with an unlawful alcohol concentration" (Per Se Law – DUAC)
- Section 56-5- 2934, "Right to compulsory process"
- Section 56-5-2935, "Right to jury trial"
- Section 56-5-2936, "Implementation of compulsory testimony requirement postponed; training of employees"
- Section 56-5-2940, "Penalty for violating Sec. 56-5-2930 and 56-5-2933; subsequent violations; fines placed in special restricted accounts"
- Section 56-5-2945, "Causing great bodily injury or death by operating vehicle while under influence of drugs or alcohol; penalty; "great bodily injury" defined; fines placed in special restricted account" (Felony DUI)
- Section 56-5-2946, "Submission to testing for alcohol or drugs for 56-5-2945" (Submission to testing for Felony DUI)
- Section 56-5-2949. Policies, procedures and regulations on the SLED internet web site.
- Section 56-5-2950, "Implied consent to testing for alcohol or drugs; procedures; inference of DUI"
- Section 56-5-2951, "Suspension of license for refusal to submit to testing or for certain level of alcohol concentration; temporary alcohol restricted license; administrative hearing; special restricted driver's license' automobile insurance increases"
- Section 56-2952, "Filing fee for administration hearing"
- Section 56-5-5953, "Incident site and breath site video recording; admissibility as evidence; purchase and maintenance of videotaping equipment"
- Section 56-5-2954, "Breath testing sites; records of problems with devices"

- **SLED Implied Consent is heavily structured through state laws (20) and one chapter of state regulations**

# IMPLIED CONSENT — Responsibilities



- Promulgate Policies/Procedures
- Inspect, maintain, and repair of breath alcohol testing equipment and videotaping systems
- Responsible for selection & certification of breath alcohol testing equipment and breath testing sites
- Assist and train individuals in proper use, maintenance, and policy/procedures of breath alcohol testing equipment and videotaping systems
- Provide presentations regarding breath alcohol testing and breath test video recording issues
- Serve as expert witness on issues related to breath alcohol testing and breath test video recording

# IMPLIED CONSENT — Services



- Routine Inspections are required every 12 weeks
- The Department takes a proactive approach and plans inspections every 9 weeks
- Consequently, every breath testing site is visited and inspected a minimum of 5 times per year.
- Additionally, SLED performs Verification of Linearity on every instrument a minimum of 1 time per year.
- OVER 900 Inspections, Maintenance and repair calls for breath testing devices and video recording equipment are made per year by the 5 members of the Implied Consent Department.

# IMPLIED CONSENT – Test Metrics



	2018	2019	2020	2021	2022	2023	2024
<b>Total Attempted Tests</b>	21701	21832	18628	19895	19152	20104	21388
<b>Driving Under the Influence (DUI)</b>	19791	20155	17093	18238	17707	18461	19583
<b>Felony Driving Under the Influence (FDUI)</b>	33	30	44	29	25	30	24
<b>Zero Tolerance</b>	40	68	61	72	80	68	85
<b>Boating Under the Influence</b>	78	100	79	136	104	119	148
<b>Felony Boating Under the Influence</b>	2	8	2	1	4	4	3
<b>Commercial Driving Under the Influence (CDL)</b>	5	3	5	5	5	3	8
<b>Shooting Under the Influence</b>	30	28	19	11	26	20	18
<b>Flying Under the Influence</b>	1	0	0	0	0	1	0
<b>Non-DUI</b>	1712	1440	1325	1403	1201	1398	1519

# IMPLIED CONSENT – Courtroom



In the Courtroom –

The Implied Consent department's sole interest in any under the influence case coming before the court is:

- 1.) Whether or not a good/complete breath test, scientifically valid and procedurally correct, was provided.
- 2.) Whether the Datamaster Operator followed SLED Policy and Procedure while administering the breath test.



# IMPLIED CONSENT - Upgrades



- During 2024-25, both state programs for which Implied Consent has regulatory responsibility began an upgrade for 149 systems at 104 breath testing sites throughout the state of SC:
  - 1.) Upgrade of breath testing room video equipment
  - 2.) Replacement of aging breath testing instrumentation
- **Video equipment upgrades are complete in breath testing rooms.**
  - The total cost for these systems plus a 5 year maintenance agreement is \$3,350,000. Video systems are upgraded every 5 years
- **The legislature granted \$1.9 million+ to purchase 155 breath testing devices to replace existing 15-year-old instrumentation.**
  - The bid/procurement process for these instruments has been completed. The replacement of these instruments will begin in 2025 and will take approximately one year to complete.
  - Training for law enforcement on the new instruments will be conducted through the SC Criminal Justice Academy

# CONCLUSION & QUESTIONS



House Oversight Committee - 2025

# SLED FORENSIC SERVICES

## TRACE EVIDENCE - QD

2025 House Oversight Meeting



Lt. Jennifer Nates, Trace Evidence

# SLED FORENSIC SERVICES



## **Lt. Jennifer Nates**

### Education:

Bachelor of Science in Chemistry, California University of Pennsylvania 1993-1997

### Work History: 28 Year SLED Career

Lieutenant, Trace Evidence Department and Questioned Documents, SLED – October 2010 – present

Technical Leader, Trace Evidence Department, SLED – October 2004 – October 2010

Forensic Scientist, Trace Evidence Department, SLED – November 1998 – October 2004

Forensic Scientist, Drug Analysis Department, SLED – September 1997 – November 1998

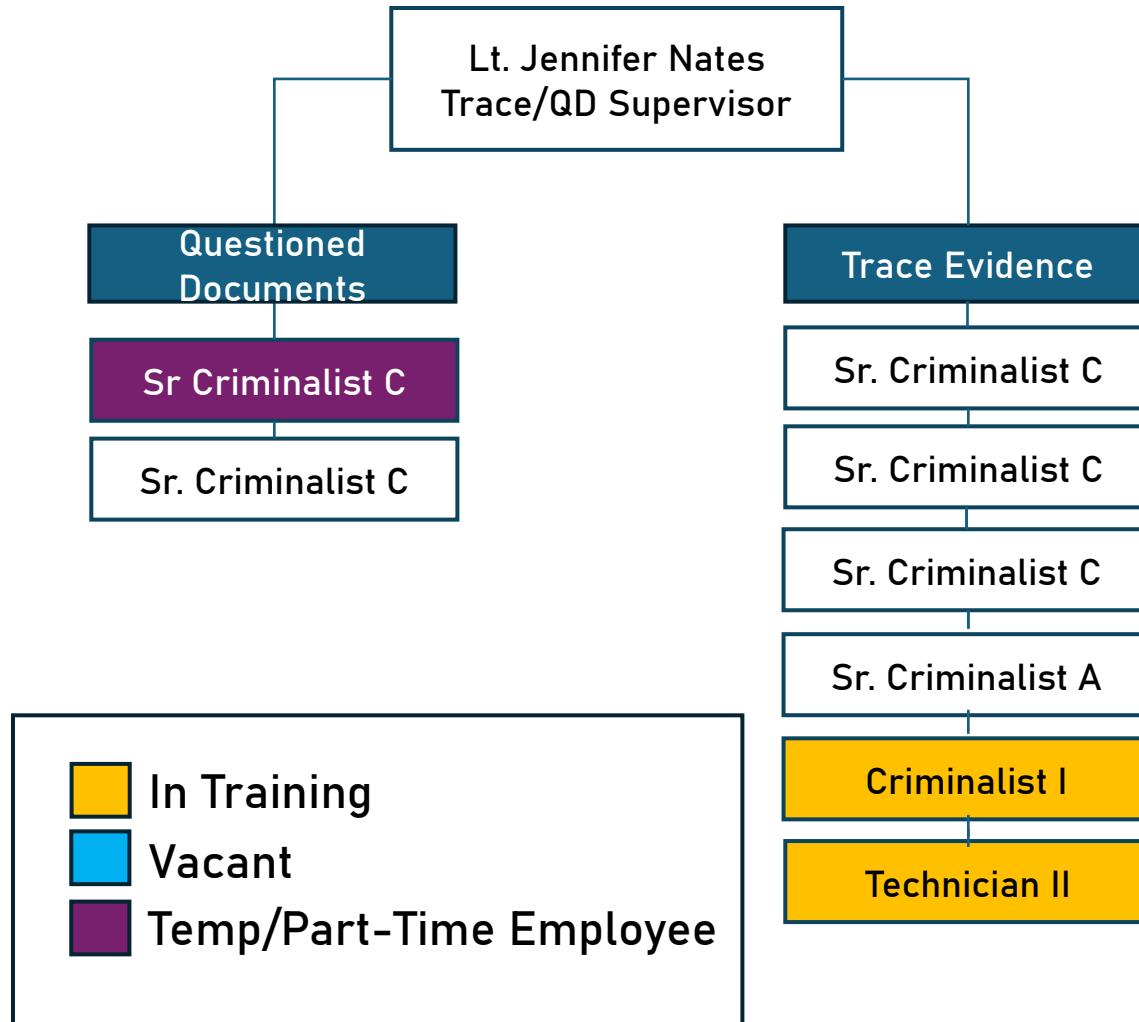
### Professional Organization:

American Society of Trace Evidence Examiners

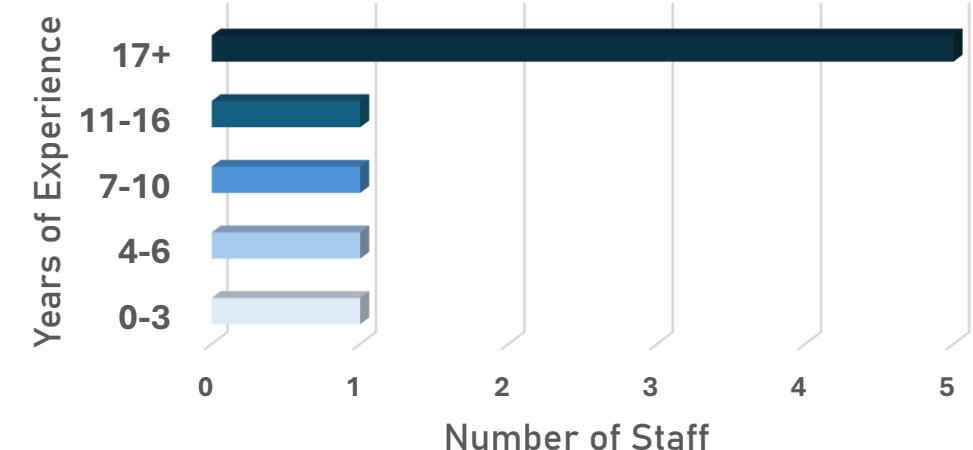




# TRACE EVIDENCE/QD- STAFFING



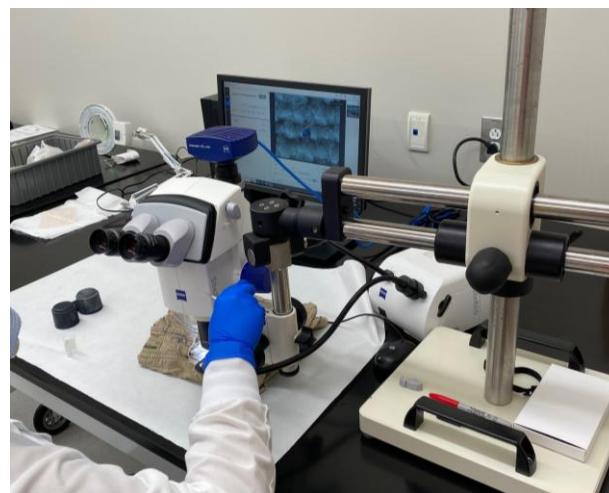
Trace Evidence/Questioned Documents  
Staff - Employee Experience



# TRACE - SERVICES

- Trace Evidence is truly a multi-disciplined department:

- Explosives
- Fiber
- Fire Debris
- Glass
- Gunshot Primer Residue (GSR)
- Paint
- Physical Fit
- Pressure Sensitive Tape/Duct Tape
- Bank Dye
- Pepper Spray
- Chlorinated Bleach



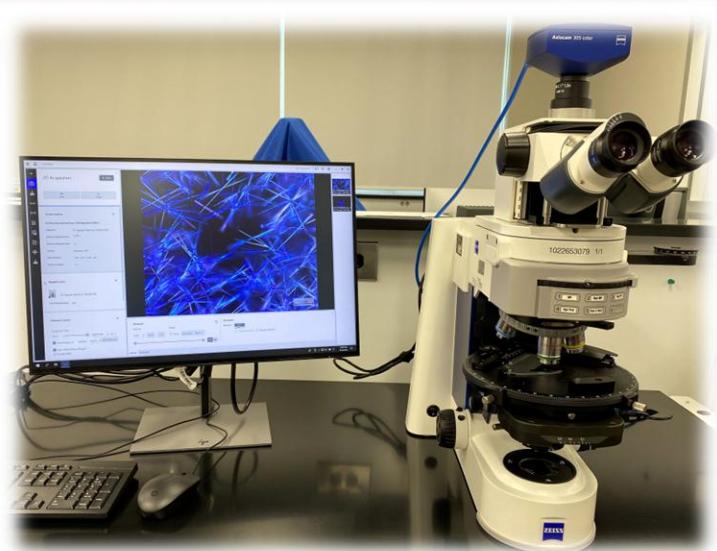
# TRACE - EXPLOSIVES ANALYSIS



- Analyze disrupted improvised explosive devices, energetic powders, and debris for low explosives and/or components of low explosives.



# TRACE - EXPLOSIVES ANALYSIS



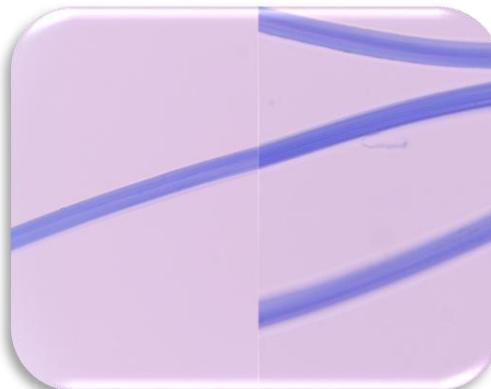
- **Instrumentation:**

- Stereomicroscope
- Polarized Light Microscope (PLM)
- Fourier Transform Infrared Spectrometer (FTIR)
  - ATR
  - Microscope
- Scanning Electron Microscope with Energy Dispersive X-Ray Detector (SEM/EDX)
- Gas Chromatograph with Mass Spectrometer

# TRACE - FIBER ANALYSIS



- Fiber evidence includes unknown fibers found by the investigating agency, tape lifts with possible unknown fibers, or other evidence to be searched for unknown fibers (windshields, bumpers, bullets, etc.).
- Any unknown fiber is then compared to a known source of fibers.



# TRACE - FIBER ANALYSIS

- **Instrumentation:**
  - Stereomicroscope
    - Fluorescence
  - Comparison Polarized Light Microscope (PLM) with Fluorescence
  - Fourier Transform Infrared Spectrometer (FTIR)
    - Microscope
  - Microspectrophotometer (MSP)



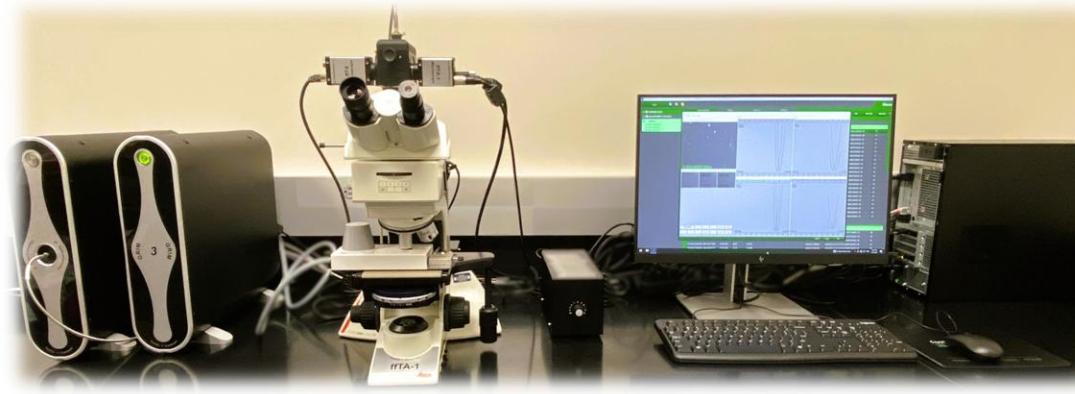
# TRACE - FIRE DEBRIS ANALYSIS



- Fire Debris evidence is any evidence that requires an analysis to determine if an ignitable liquid is present.
- Typical types of evidence include debris from fire scenes and possible ignitable liquid containers.
- An ignitable liquid can be classified based upon its boiling point and type of petroleum product, i.e. petroleum distillate, aromatic, etc. Gasoline can also be identified.
  - Examples of possible ignitable liquids are provided to the investigating agency based upon the classification.
- A Gas Chromatograph with Mass Spectrometer is used to analyze this type of evidence.



# TRACE - GLASS ANALYSIS



- Glass evidence includes unknown glass found by the investigating agency or other evidence to be searched for unknown pieces of glass (clothing, debris, etc.).
- An unknown piece of glass is then compared to a known source of glass.
- **Instrumentation:**
  - Stereomicroscope
  - Scanning Electron Microscope with Energy Dispersive X-Ray Detector (SEM/EDX)
  - Glass Refractive Index Measurement System (GRIM)

# TRACE - GUNSHOT PRIMER RESIDUE (P-GSR) ANALYSIS

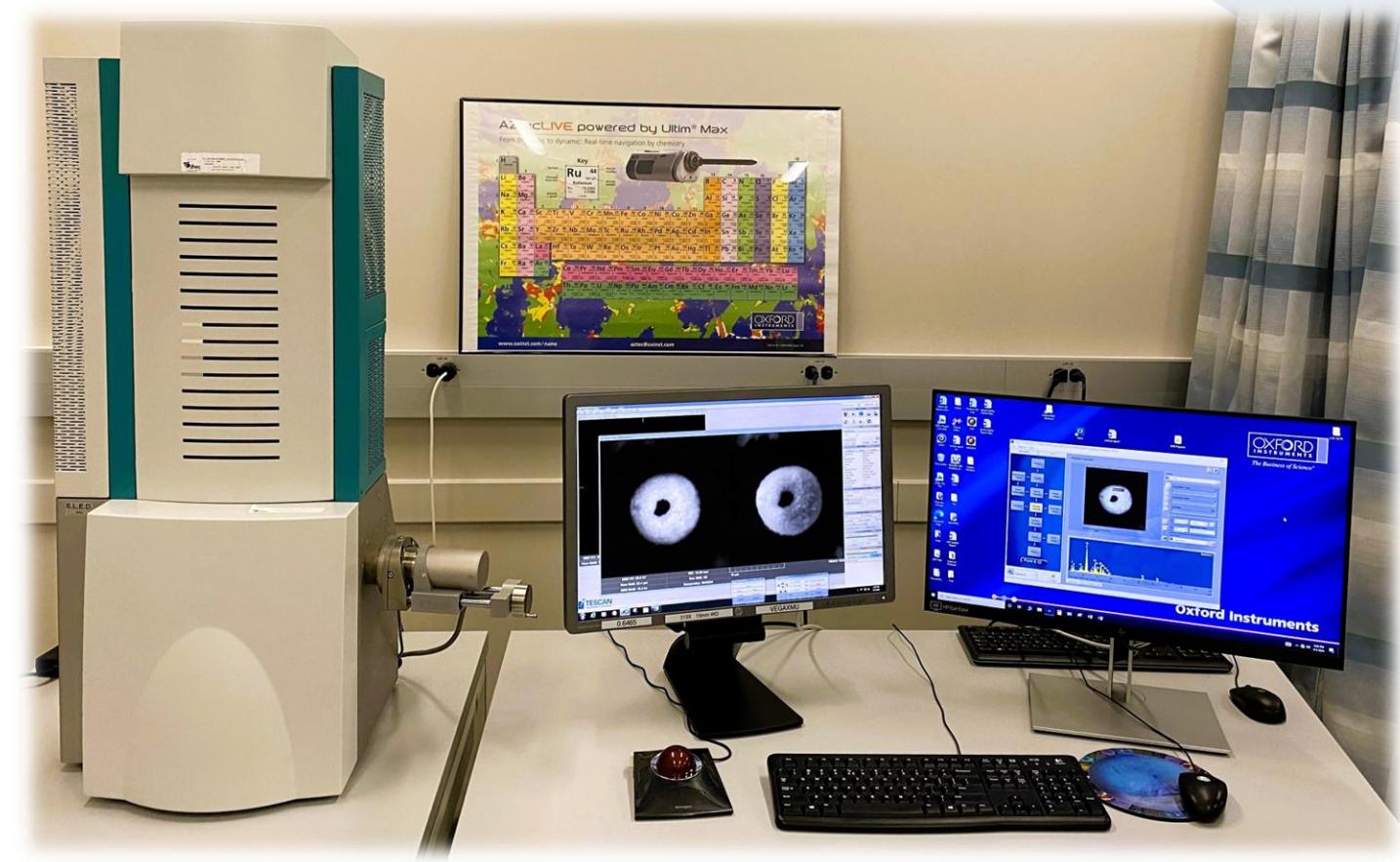
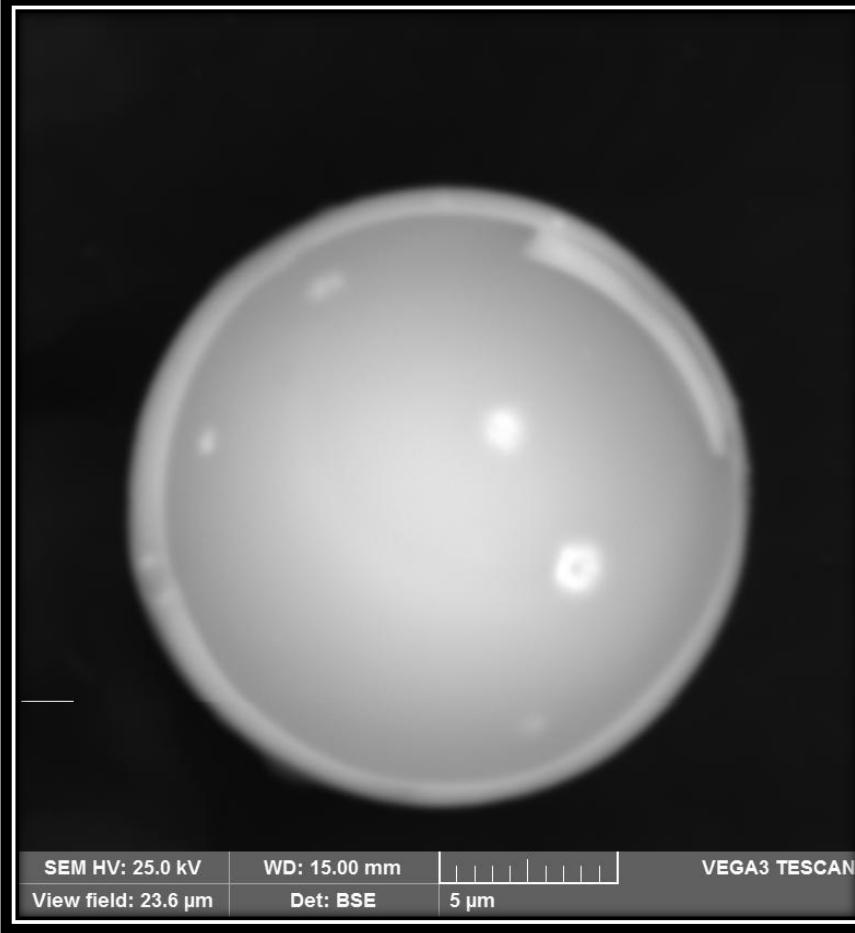


- Gunshot Primer Residue evidence includes GSR kits and items of evidence that requires processing for P-GSR.
- Gunshot primer residue can be deposited on a person or object in the vicinity to the discharge of a firearm, including the shooter, bystanders, and victims.
- Particles characteristic of P-GSR are microscopic, molten particles that contain the elements lead, barium, and antimony.
  - On average, the width of a human hair would fit 100 of these particles.

# SCANNING ELECTRON MICROSCOPE WITH ENERGY DISPERITIVE X-RAY DETECTOR



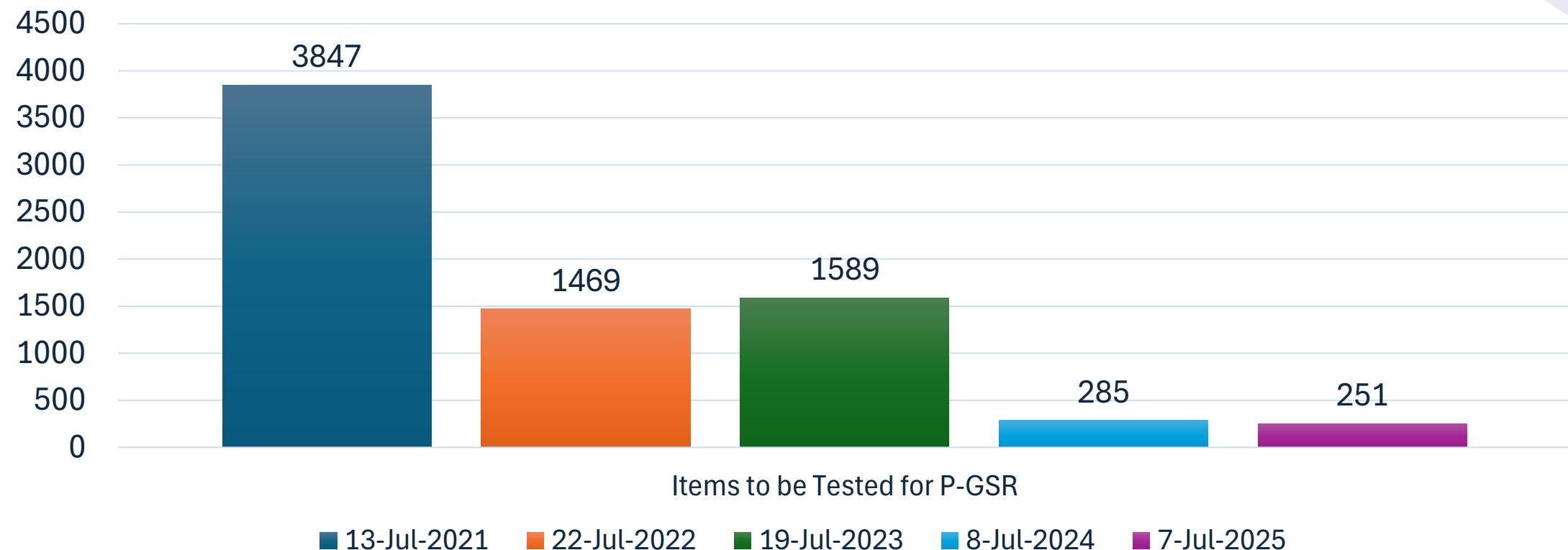
## Gunshot Primer Residue



# TRACE - INCREASING PRODUCTIVITY



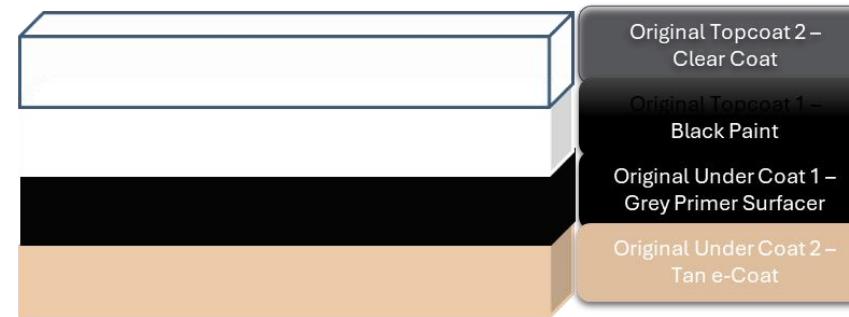
## Reduction in Backlog of P-GSR Evidence



# TRACE - PAINT ANALYSIS



- Paint evidence is encountered in a variety of crimes, including hit and runs and burglaries.
- **Types of Paint Encountered:**
  - Vehicular
  - Bicycle
  - Architectural
  - Spray Paint
- **Paint evidence includes unknown paint found by the investigating agency or other evidence to be searched for unknown paint chips (clothing, vehicle parts, tools, etc.).**
- Any unknown paint is then compared to a known source of paint.
- For “hit and run” investigations, any unknown paint can be analyzed for color, make, model, and year information.

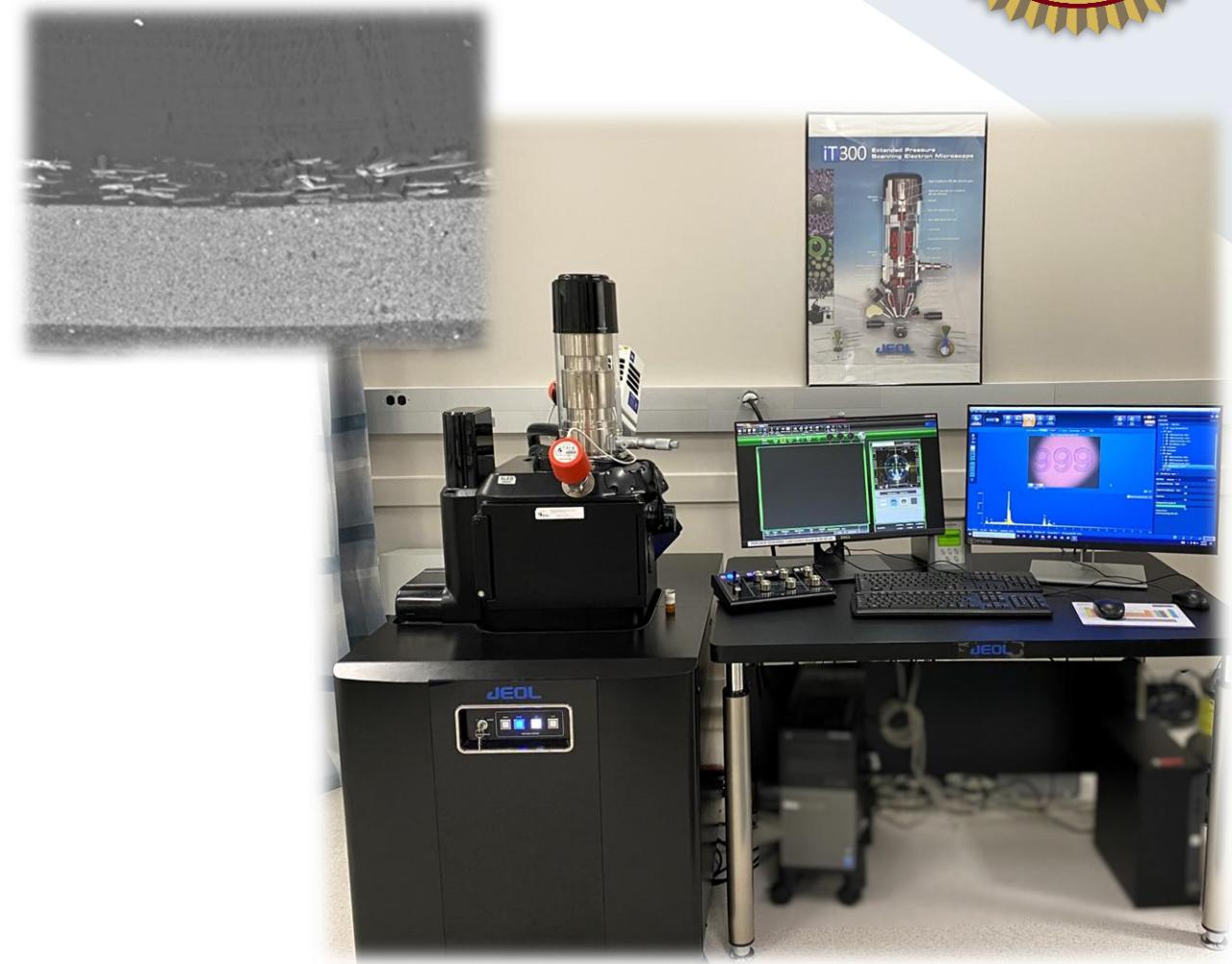


# TRACE - PAINT ANALYSIS



## Instrumentation:

- Stereomicroscope
  - Fluorescence
- Polarized Light Microscope (PLM) / Comparison Polarized Light Microscope (PLM) with Fluorescence
- Fourier Transform Infrared Spectrometer (FTIR)
  - Microscope
- Scanning Electron Microscope with Energy Dispersive X-Ray Detector (SEM/EDX)
- Microspectrophotometer

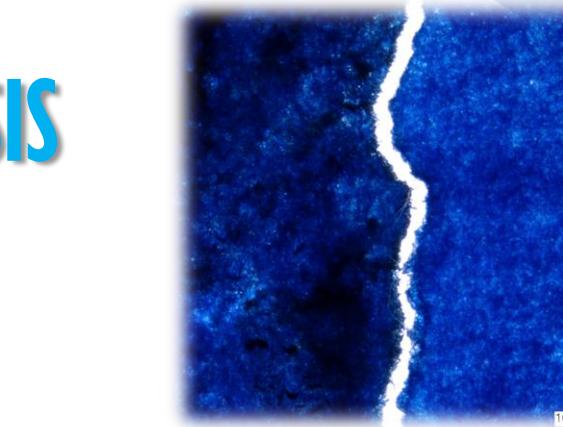


# TRACE - PHYSICAL FIT ANALYSIS

- The purpose of a Physical Fit Analysis is to match an unknown item with a known item using the fractured, torn, or separated edges/sides.

- **Types of Evidence Encountered:**

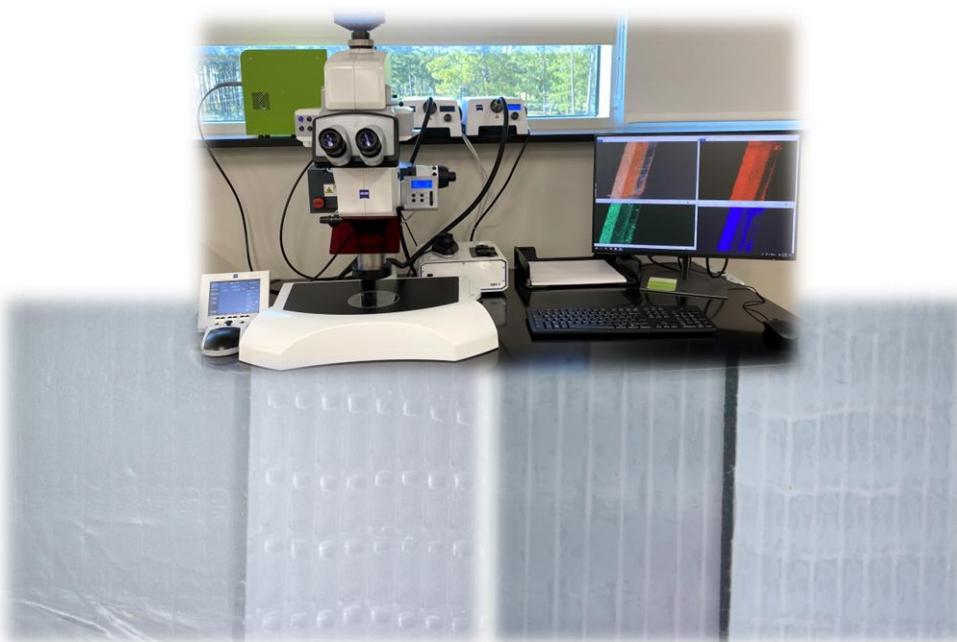
- Tape
- Trash Bags
- Cinder Blocks
- Fiber Board
- Speaker Wires
- Pipes
- Knives
- Firearm Trigger Guard



# TRACE - PRESSURE SENSITIVE TAPE - DUCT TAPE ANALYSIS



- Pieces of duct tape from an unknown source, such as a victim, can be compared to known sources of tape--i.e., roll of tape collected from suspect.
- Duct tape is a multi-dimensional analysis that requires the analysis of the polymer backing, the adhesive, and the fiber (cloth) backing.



- **Instrumentation:**

- Stereomicroscope with Fluorescence Capabilities
  - Overall construction of the tape – calendaring marks, width, thickness, scrim count, fluorescence of backing and/or adhesive
- FTIR with iTR Attachment
  - Backing and Adhesive
- FTIR with Microscope Attachment
  - Fiber Backing
- SEM-EDX
  - Adhesive
  - Cross-Sectional Examination
    - Duct tape can have up to three layers of backing materials
- Comparison Polarized Light Microscope with Fluorescence Capabilities
  - Fiber Comparisons
  - Cross-Sectional Comparisons

# TRACE - “OTHERS”



## Bank Dye Analysis

1-MAAQ is the chemical dye used in bank security device.

1-MAAQ is a bright red powder that is dispersed when the bank security device explodes.

Instrumentation:  
Gas Chromatograph with Mass Spectrometer



## Pepper Spray Analysis

The residue from a possible pepper spray or OC spray can be analyzed for the presence of capsaicin or other capsaicinoids.

Active ingredients in pepper spray and found naturally in peppers.

Instrumentation:  
Gas Chromatograph with Mass Spectrometer



## Chlorinated Bleach Analysis

Evidence from cleaning products can be analyzed for the presence of chlorinated bleach products.

Instrumentation:  
pH Measurement  
Solvent Testing  
SEM-EDX



# TRACE - FACTS

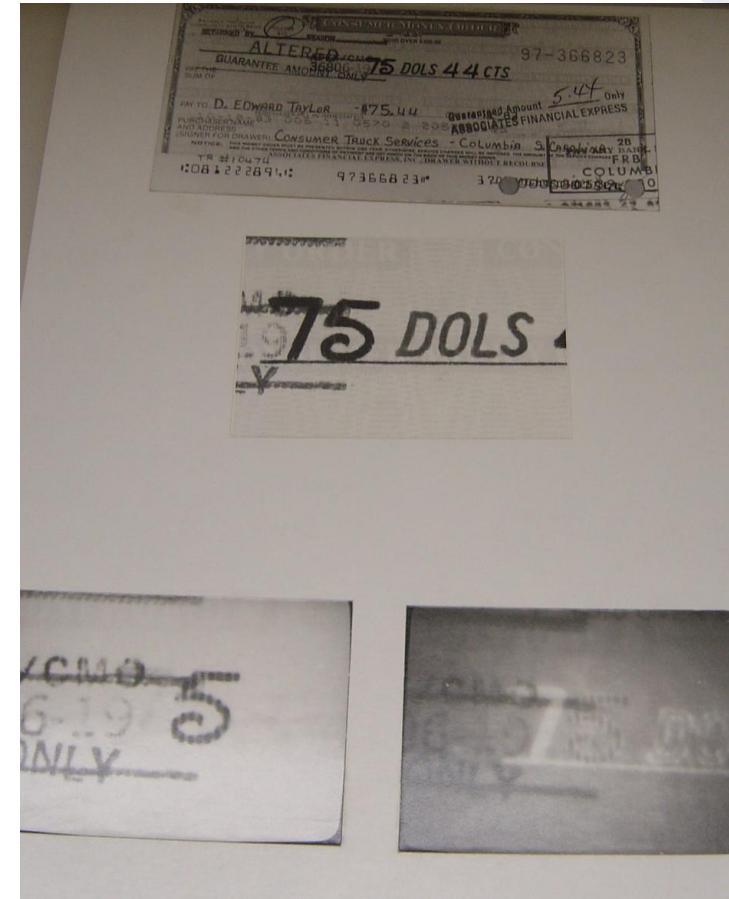


- Five Trace Evidence Analysts testified 32 times in 2024.
  - 18 testimonies so far in 2025
- The average turn-around time for Fire Debris Analysis is less than 15 days
- Trace Evidence completed 425 cases that involved P-GSR evidence in FY2024-2025
- Trace Evidence provided Hit and Run Investigations with 19 reports in FY2024-2025.
- It can take 8 to 10 years to fully train in Trace Evidence.

# QUESTIONED DOCUMENTS - QD

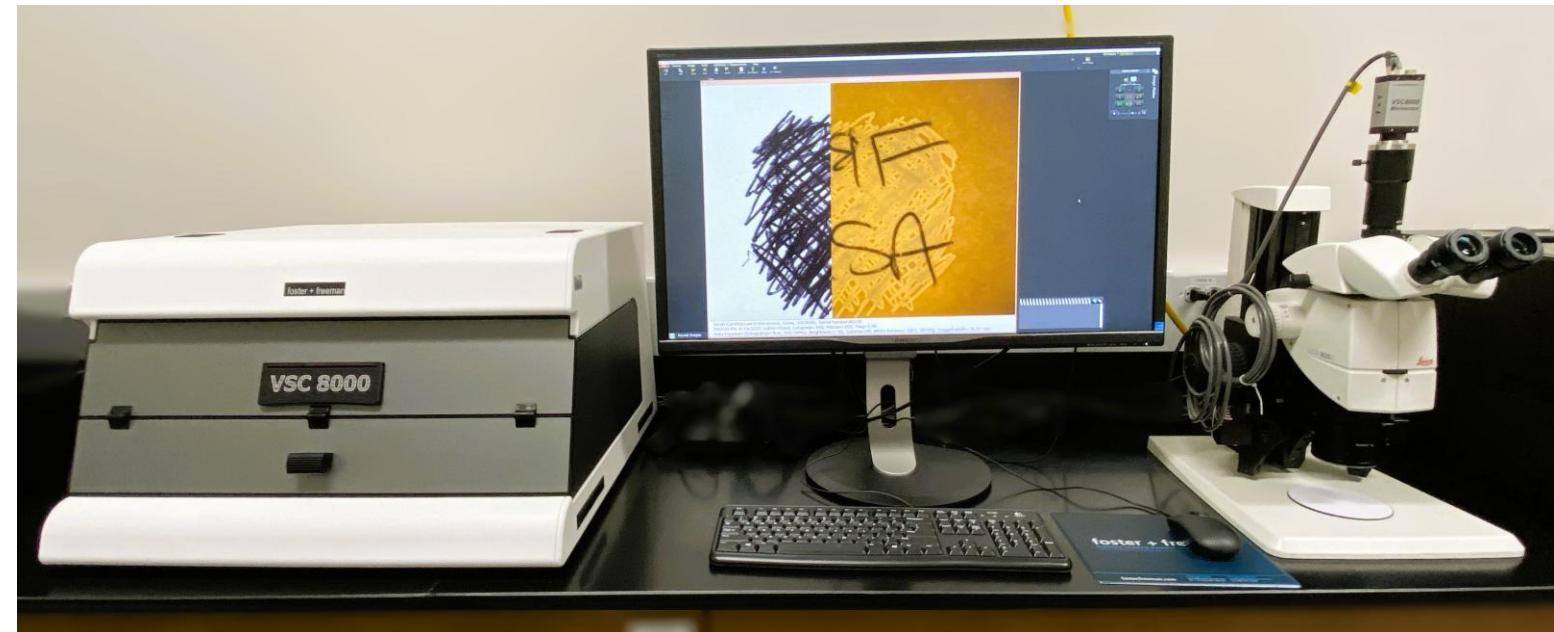


- Currently, one of the last states still offering full-service questioned documents analysis
- In process of coordinating technical reviews with US-Secret Service to maintain services after retirement of senior analyst.
- Will maintain certain services of this department through Trace Department after hand-writing experts have retired
  - Indented Impression Analysis
  - Ink Analysis



# QD - VIDEO SPECTRAL COMPARATOR

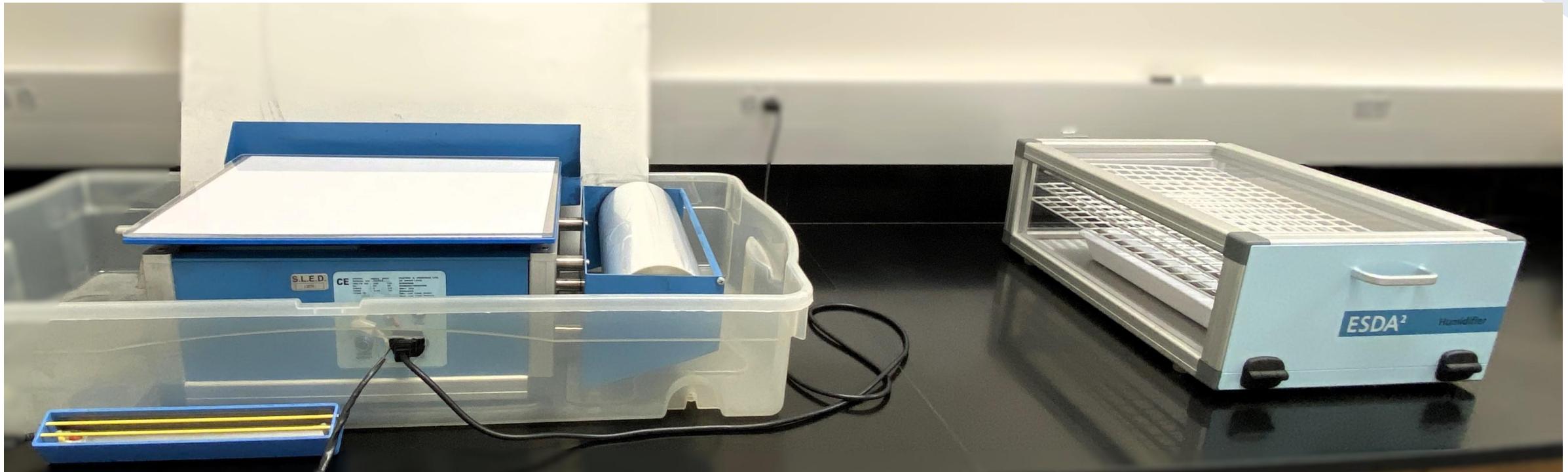
- Interaction between full spectrum of light (UV-visible-IR) and a sample
  - Ink Comparisons
  - Indented Impressions
  - Obliterations and Alterations



# QD - ELECTROSTATIC DETECTION APPARATUS



- Indented Impressions



House Oversight Committee - 2025

# CONCLUSION & QUESTIONS



# SLED FORENSIC SERVICES



## DRUG ANALYSIS

2025 House Oversight Meeting



Lt. Angil Landrum, Drug Analysis

SOUTH CAROLINA LAW ENFORCEMENT DIVISION

# SLED FORENSIC SERVICES

**Lt. Angil Landrum**



## Education:

Master of Science, The University of Georgia, 08/99-12/01  
Bachelor of Arts, Talladega College, 08/95-05/99

## Work History: 22 Year SLED Career

Lieutenant, Drug Analysis Department, SLED – July 2011 – present  
Team Leader, Drug Analysis Department, SLED – May 2010 – July 2011  
Forensic Scientist, Drug Analysis Department, SLED – November 2002 – May 2010  
Laboratory Technician, Bayer Corporation – February 2002 – October 2002  
Teaching Assistant, University of Georgia – August 1999-December 2001



## Professional Affiliations

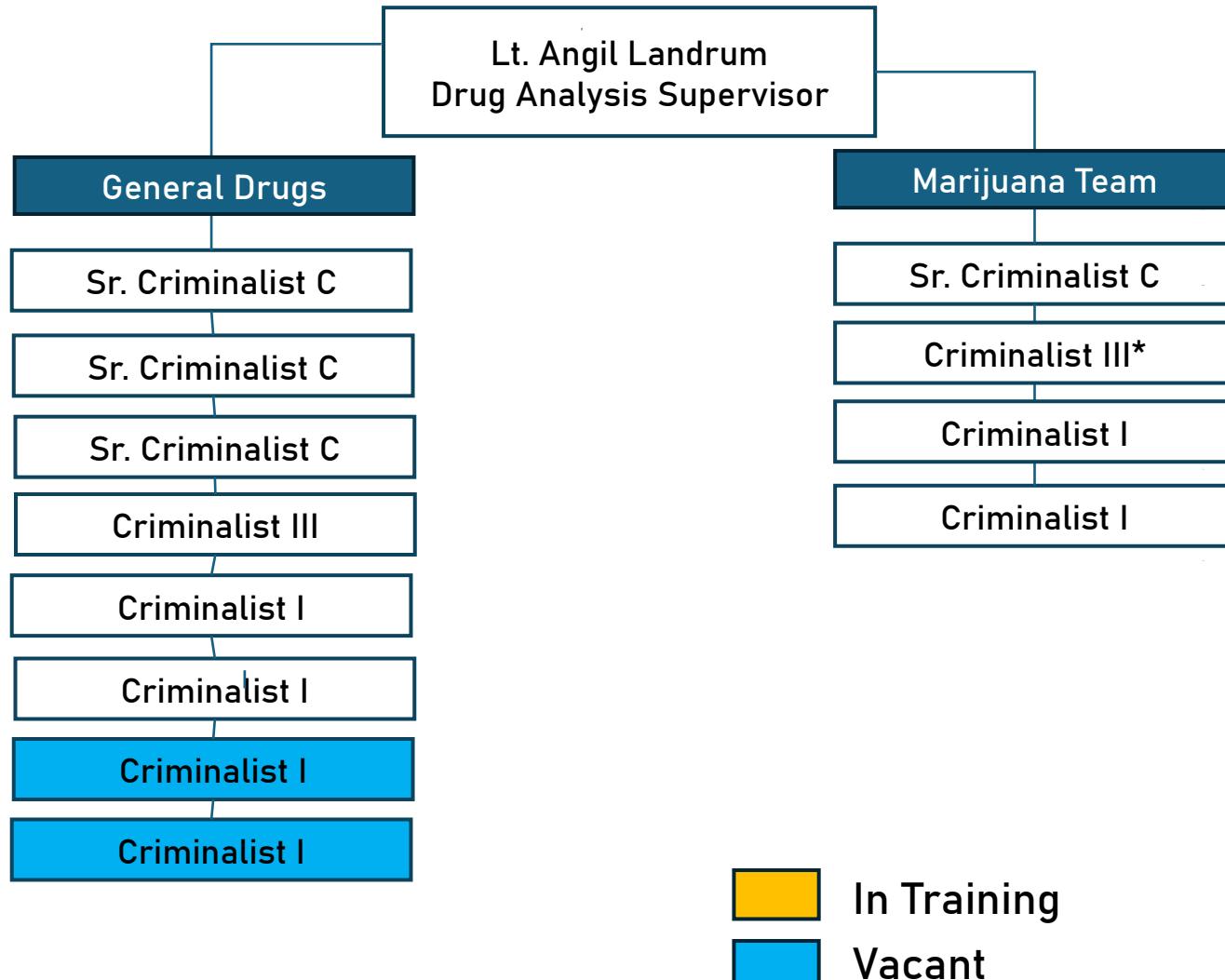
Southern Association of Forensic Scientists (SAFS)  
Clandestine Laboratory Investigating Chemists (CLIC)

# DRUG ANALYSIS - Services

- Specializes in the identification of controlled and/or dangerous substances
- DEA licensed
- Quantitation of THC in plant material
- Analyze evidence for Federal, State, And Local Law Enforcement
- Designated Chemist on call 24/7



# DRUG ANALYSIS - Staffing

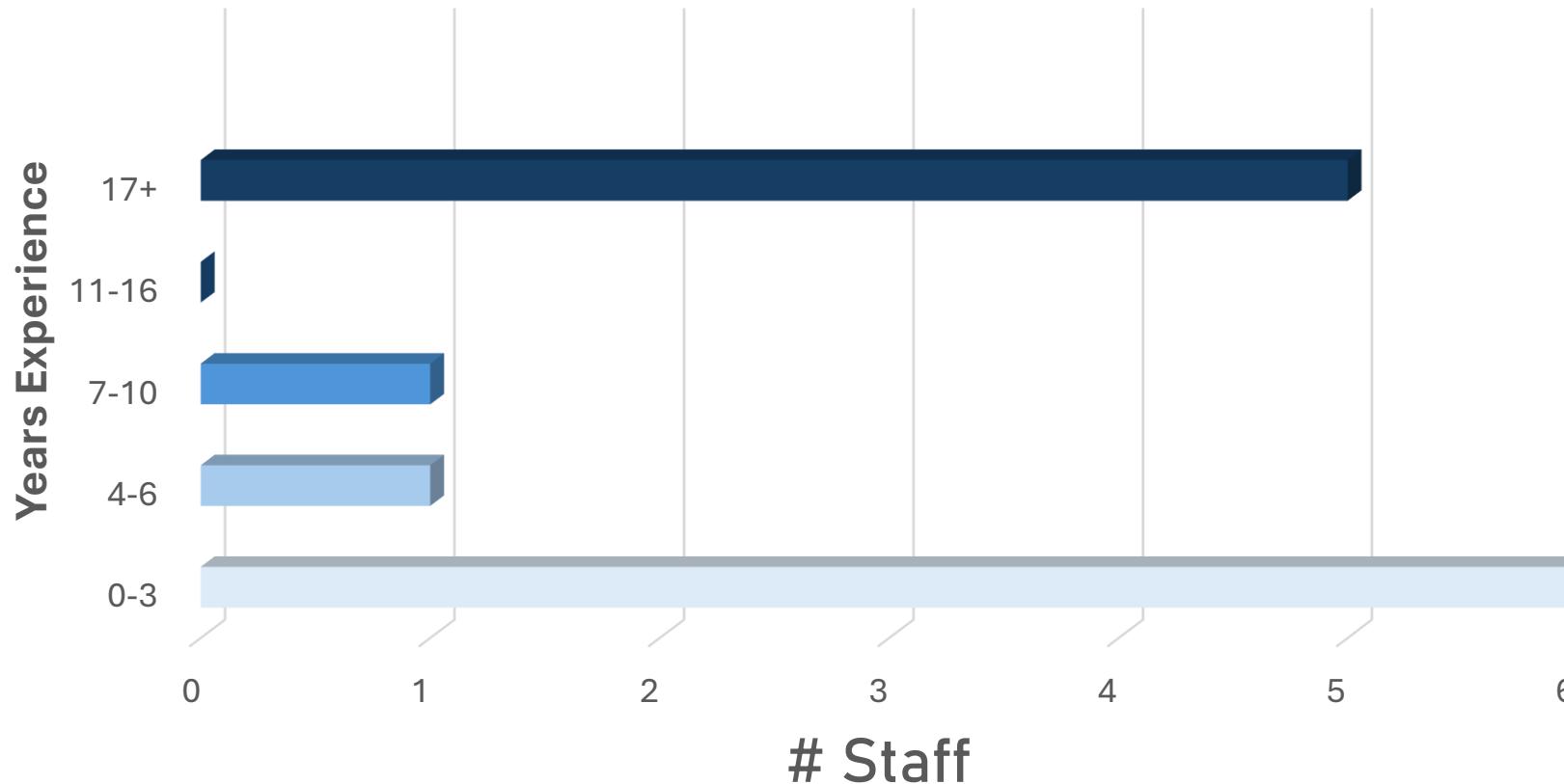


- The department is divided into 2 teams to handle the different types of submissions.
- Both teams weigh and screen submissions and then:
  - **THC Team** - performs semi-quantitative analysis of plant material due to Hemp Law, Hemp plant material goes through full quantitation.
  - **Drug Analysis** - performs qualitative analysis of all other forms of controlled substances.

# DRUG ANALYSIS - Staffing

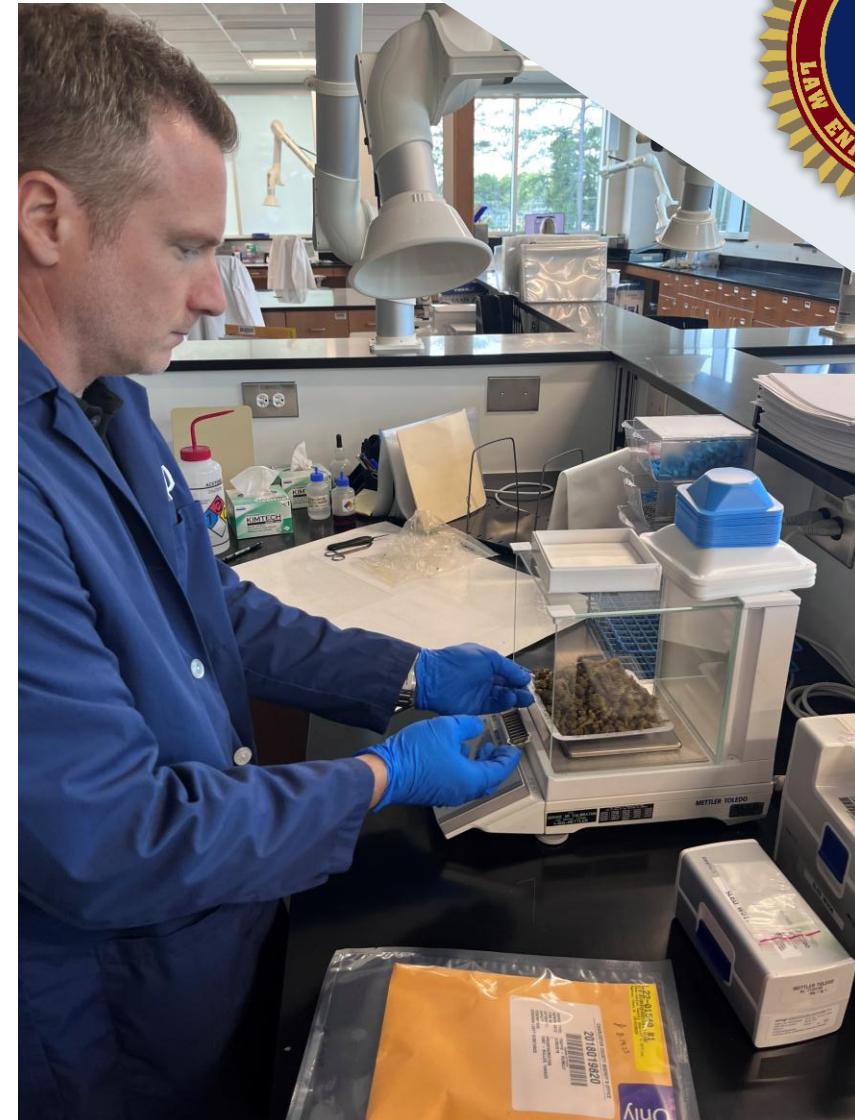


Drug Analysis Staff - Employee Experience



# CASE APPROACH

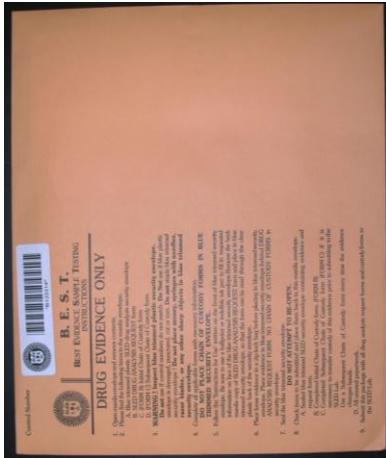
- Visual Inspection
- Inventory
- Sampling Plan
- Weight Determination
- Preliminary Test
- Confirmatory Test/Semi-Quantitative Analysis



# ANALYSIS – Visual Inspection



B.E.S.T. Submission



Non-B.E.S.T. Submission



- The SLED Forensic Services Laboratory provides B.E.S.T. kits to all law enforcement agencies throughout the state to be able to easily secure evidence in the field and for ease of submission.
- Ensure the evidence is properly sealed with evidence tape, along with the date and officer's initial.
- Evidence security very important in Controlled Substance Analysis

# ANALYSIS - Inventory



## Identify items submitted for analysis



- Like items are grouped for testing and described for identification purposes. All items or the proximal container are labeled with the case number and analyst's initials.

# ANALYSIS – Sampling Plan



## 2 Types of Sampling Plans

### B.E.S.T Evidence

There is a defined statutory threshold that can be met for a suspected substance based on screening.

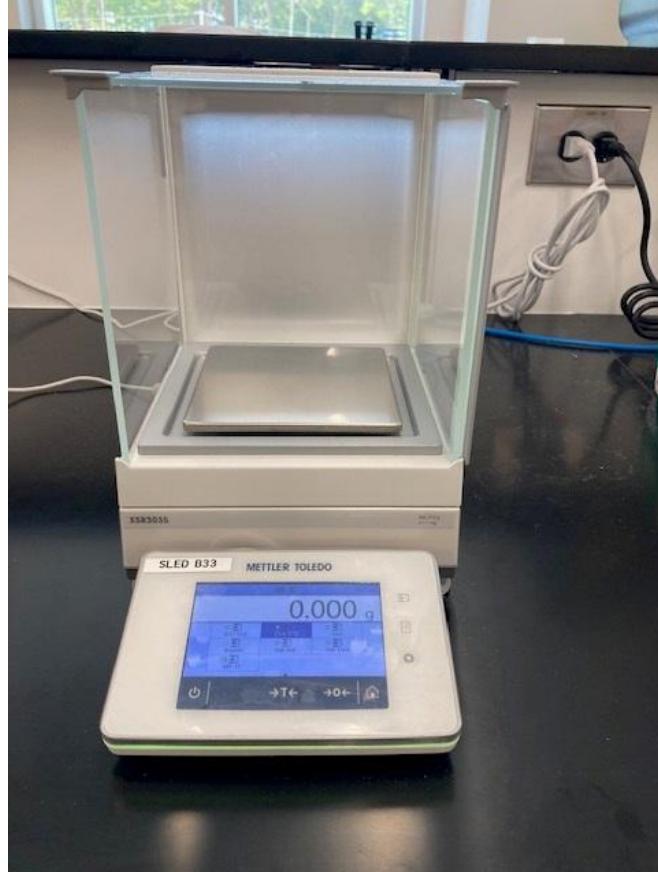


### Statistical Based

Used in cases where there is a large number (>25) of similar packaged/similar appearance substance



# ANALYSIS – Weight Determination



- Weekly verification of balances
- Sample is placed on weigh paper/weigh boat
- The reported weight is the net weight (without packaging)
- The weight is captured electronically

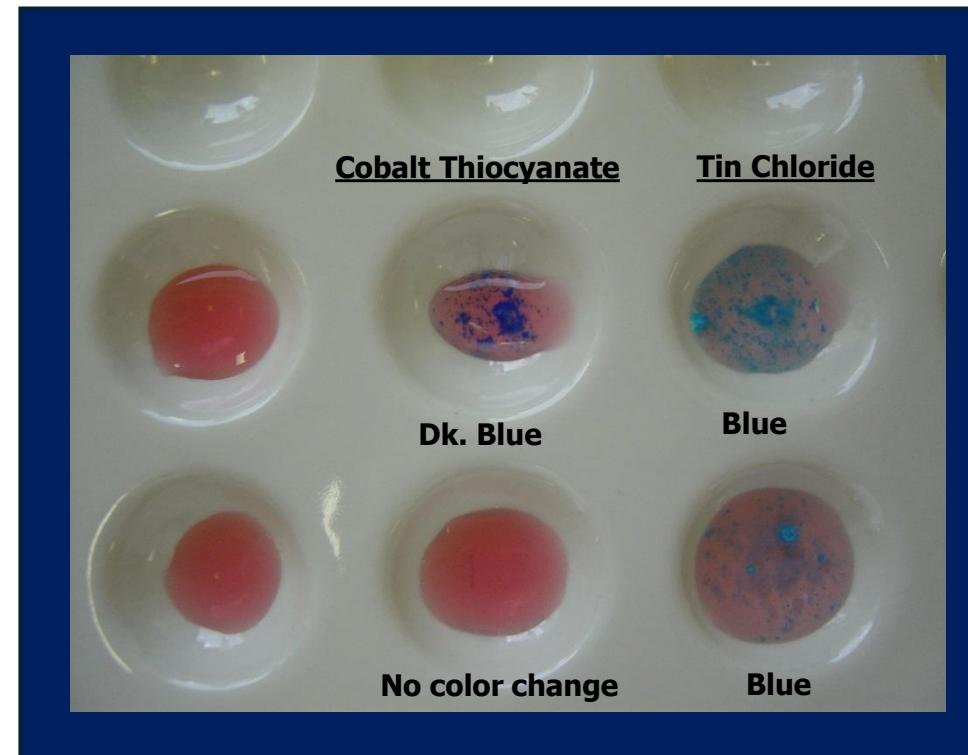
# ANALYSIS - Screening



## PRELIMINARY TESTS/SCREEN:

### Color Test

Cocaine Salt →



Cocaine Base →

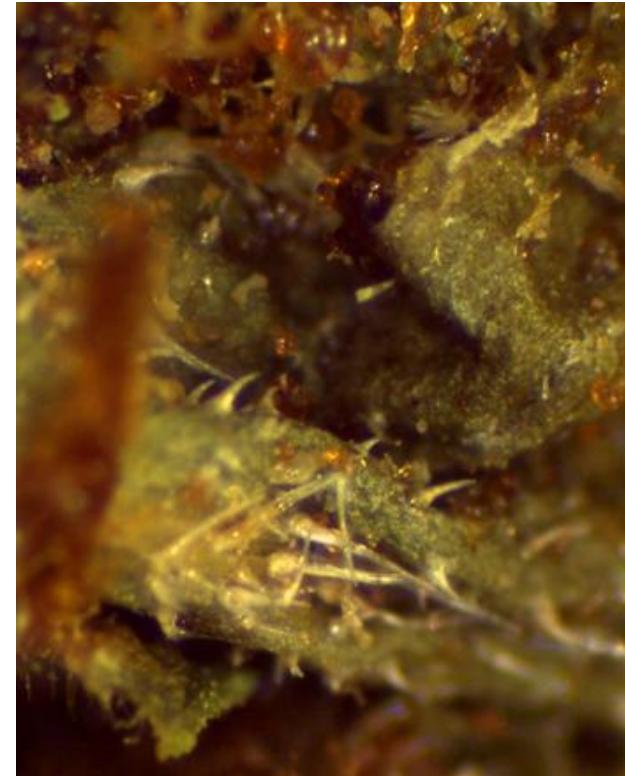
- Small amount of the substance is subjected to colorimetric testing.
- This helps identify the suspected class of drugs and is based on appearance/packaging.

# ANALYSIS - Screening



- For Cannabis, in addition to spot test, the plant material is examined for characteristic features microscopically.

## Microscopic Exam



## Duquenois-Levine Reagent



# ANALYSIS - Confirmation



**Attenuated Total Reflectance -Fourier Transform Infrared Spectrometer (ATR-FTIR)**

- Method is used for substances that are fairly pure, not well suited for mixtures
- Provides a confirmation comparison to a known library
- Real-time analysis and low sample volume required

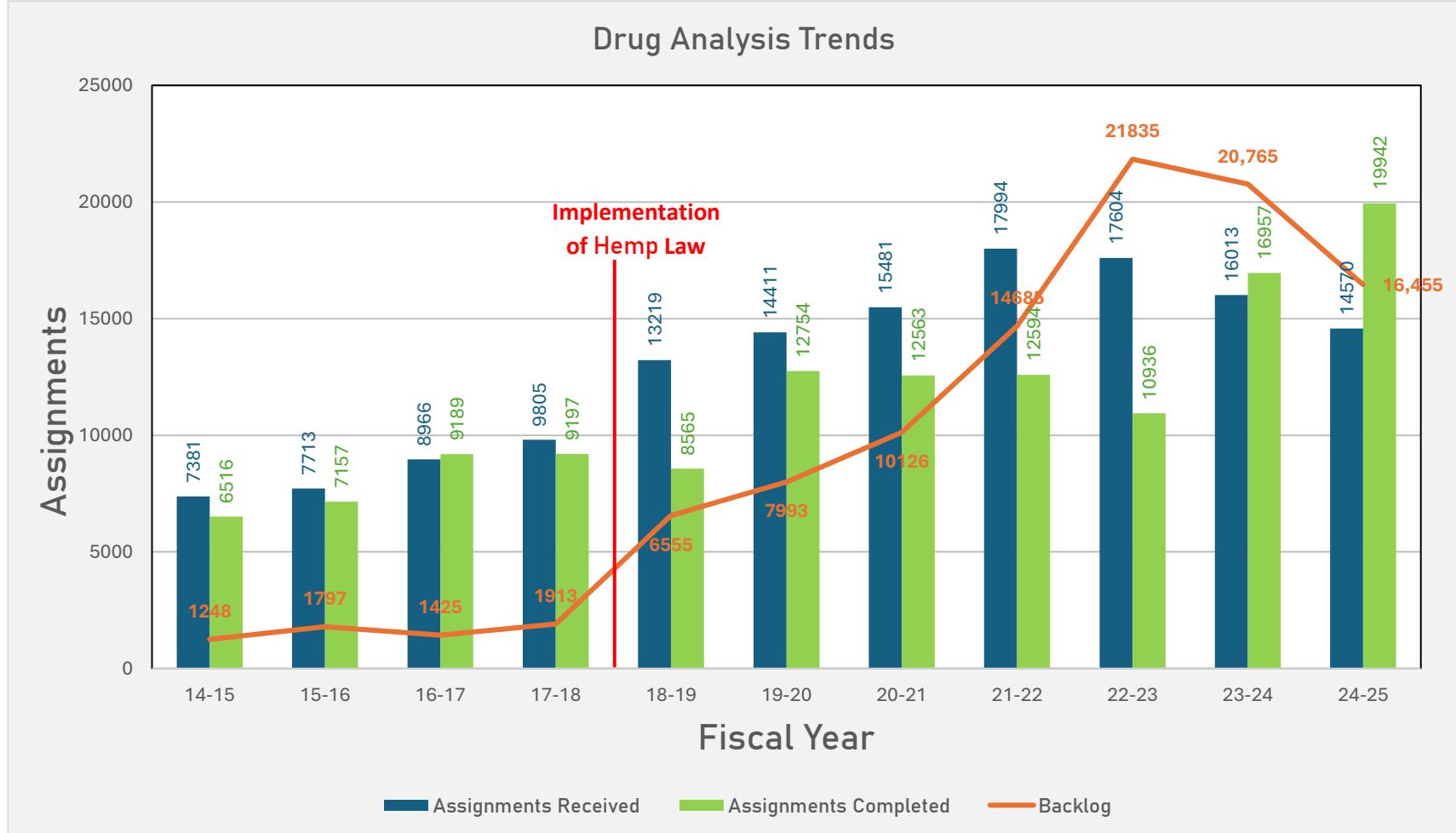
# ANALYSIS - Confirmation



## Gas Chromatograph/Mass Spectrometer

- Method uses retention time, comparison to a known standard and library matching to identify compounds of interest
- Separates components of a mixture so that all can be easily identified
- More time consuming, requires blanks between samples.

# DRUG ANALYSIS - Metrics



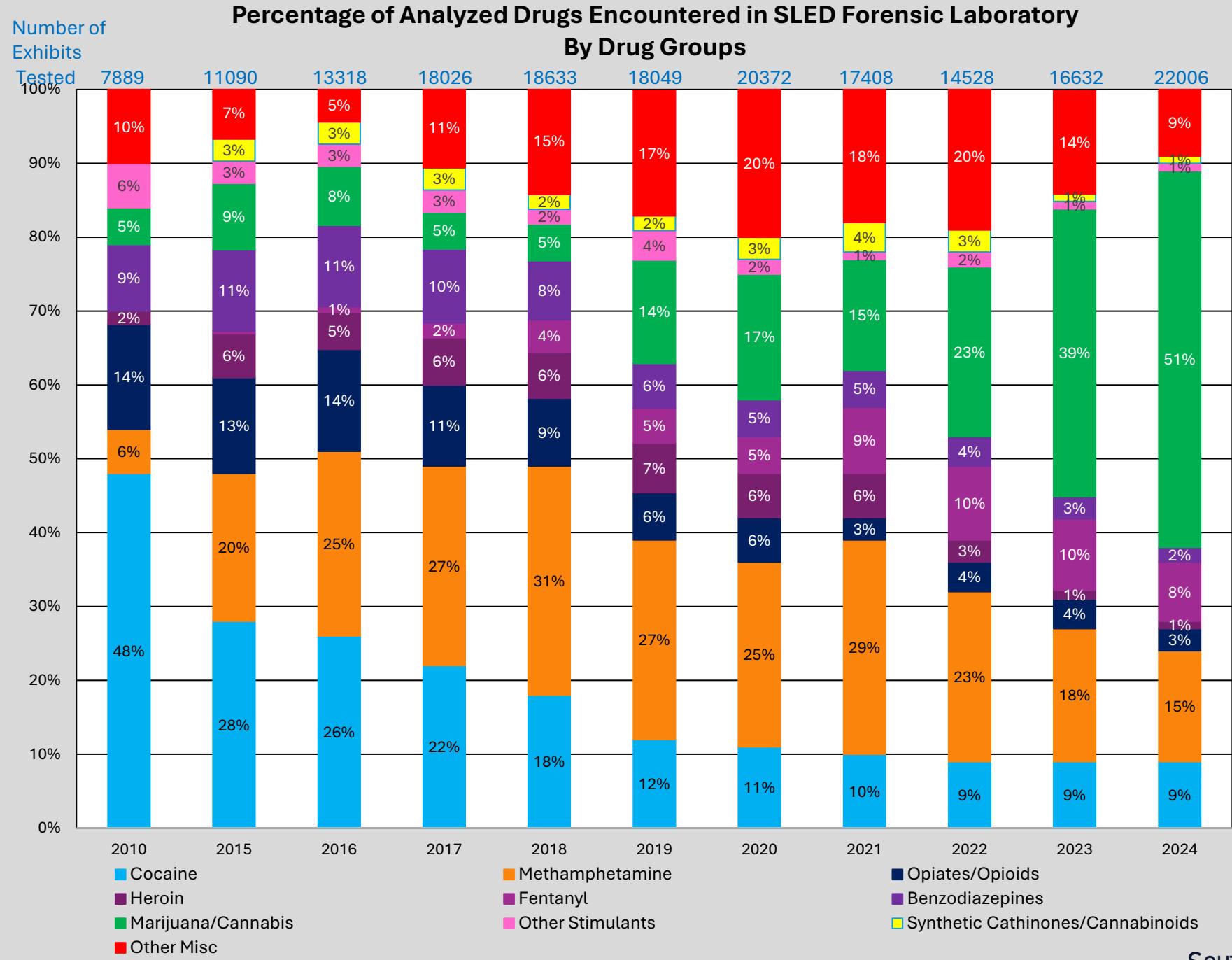
The Drug Analysis department was tremendously impacted by the Industrial Hemp Law.

It has taken years to increase trained staff and instrumentation, and their impact is starting to reverse trends.

# DRUG ANALYSIS - Metrics

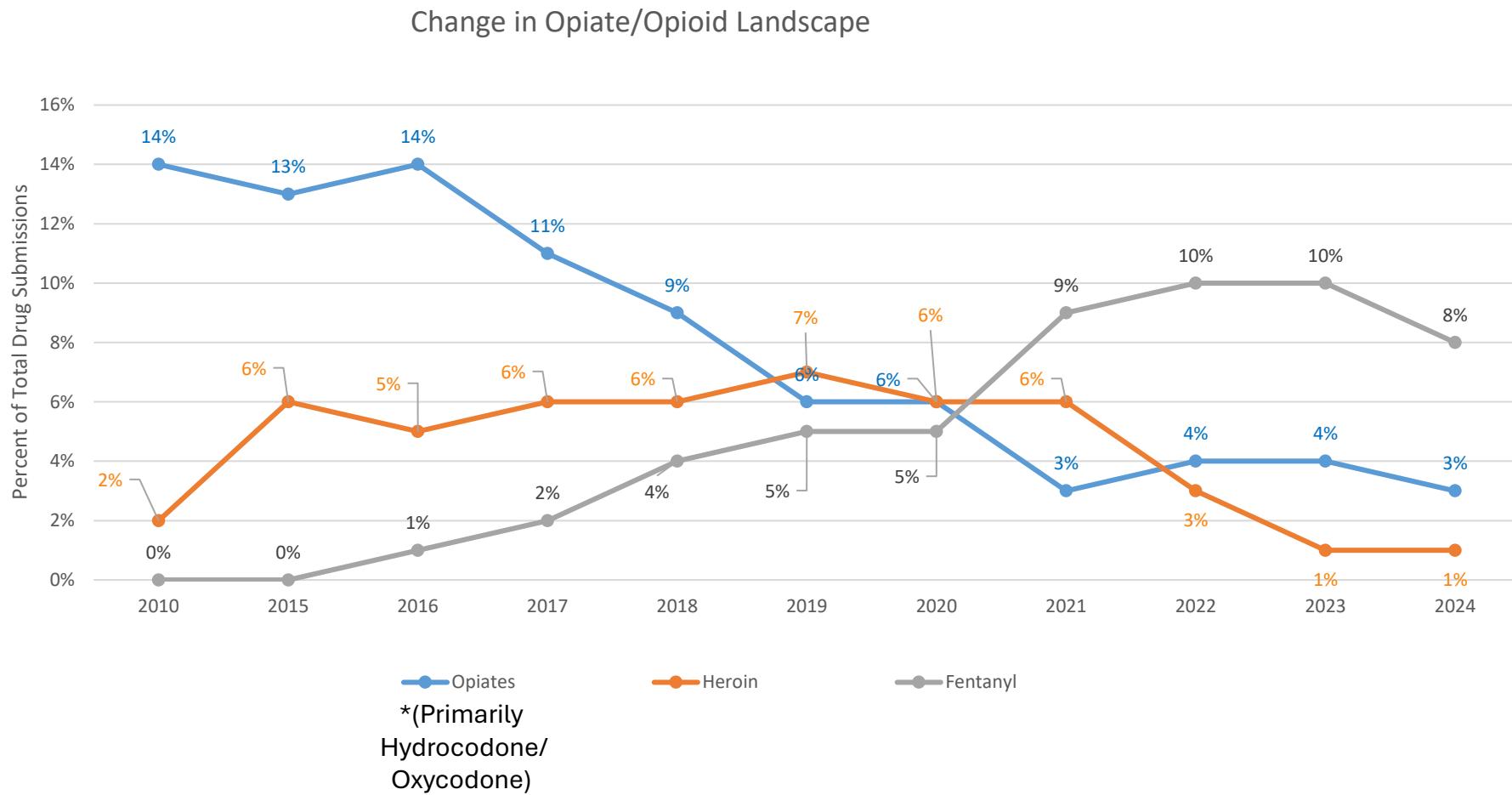


	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Assignments Received	9,805	13,219	14,411	15,481	17,994	17,604	16,013	14,570
Assignments Completed	9,197	8,565	12,754	12,563	12,594	10,936	16,957	19,942
Items Received	23,421	33,502	37,754	38,096	33,578	30,346	21,905	32,126
# Staff	9	9	10	12 (2 Techs)	11	12	13	12



- Chart highlights changes in drug trends from year to year.
- Trends in Items Tested

# DRUG ANALYSIS - Trends

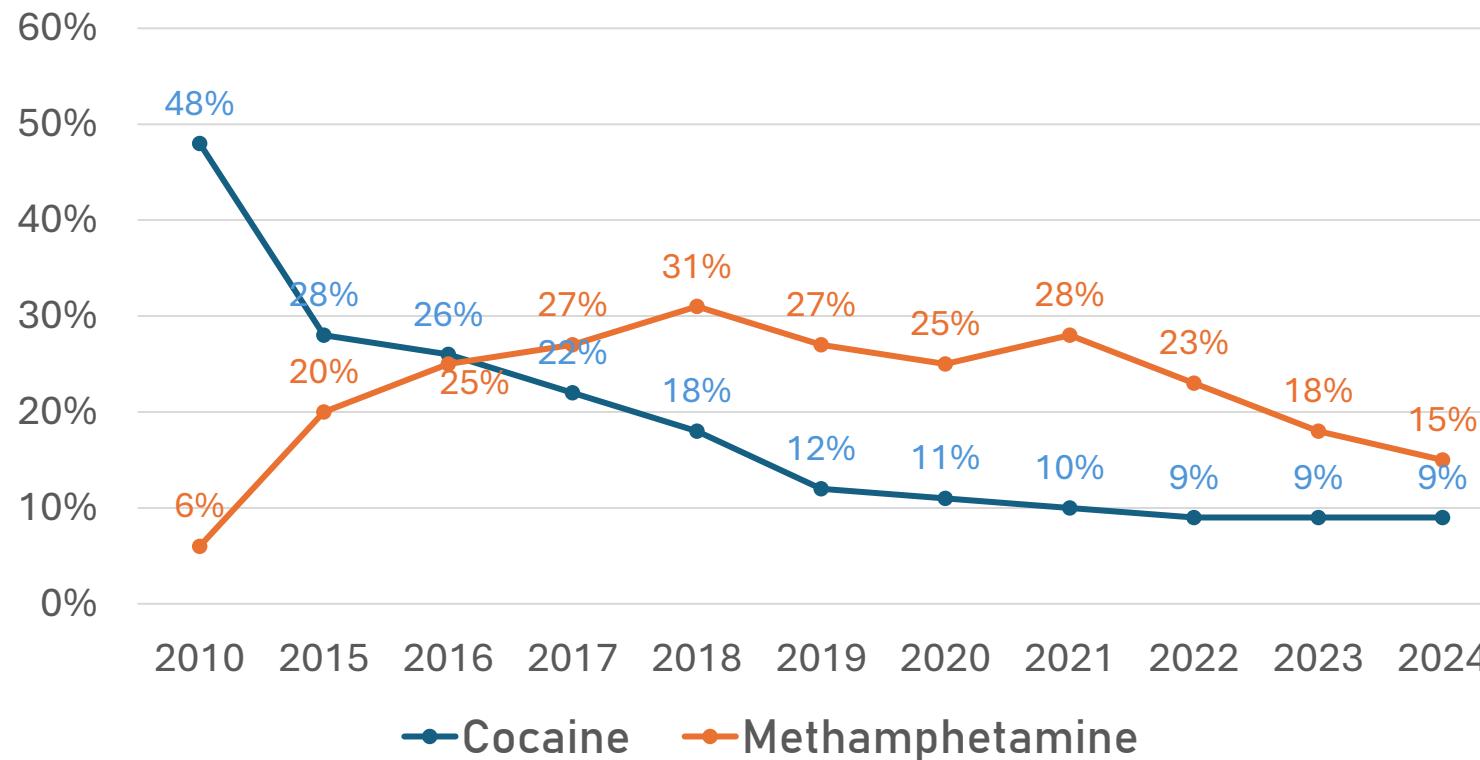


- Prescription Opiates have seen a dramatic decrease
- Heroin has seen a rise and fall
- Fentanyl and synthetic drugs have seen dramatic increase, now starting to fall

# DRUG ANALYSIS - Trends



## Stimulant Trends



Cocaine which once dominated the illicit stimulant market has seen a dramatic increase while synthetic stimulants such as Methamphetamine increased and have now stabilized somewhat.

# DRUG ANALYSIS – BACKLOG, By Task



As of July 17, 2025, current status of cases in Drug Analysis Backlog by task type:

Year	THC Tasks	General Drug Tasks
2020	182	0
2021	1640	474
2022	95	3149
2023	28	4048
2024	5	3409
2025 (through July 17, 2025)	875	3892
<b>TOTAL</b>	<b>2825</b>	<b>14972</b>

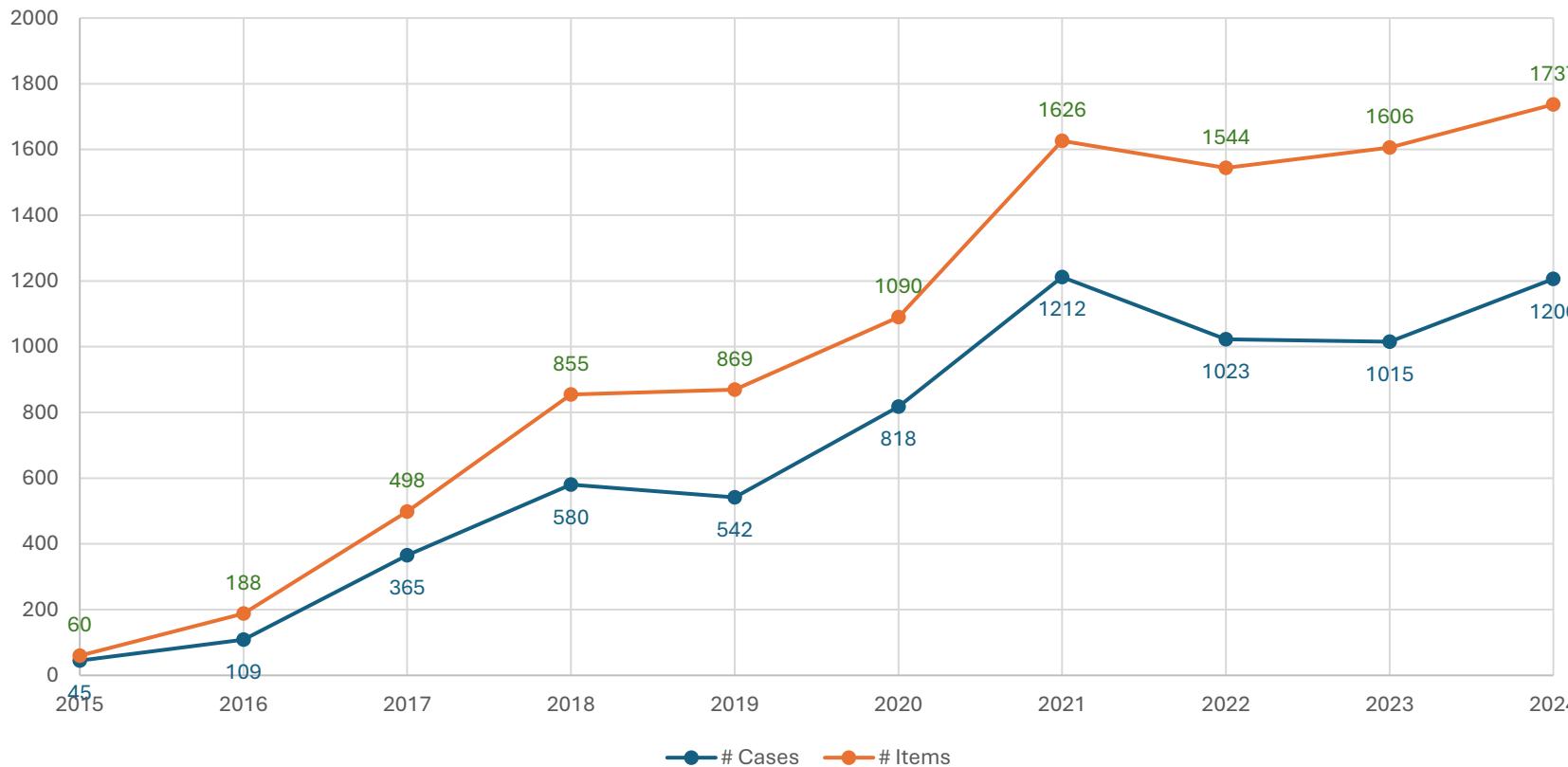
**Total 17,567 Cases, 17,997 Assignments\*\***

**\*\*Some cases have both a THC task and a General Drug task requiring 2 reports per case**

# DRUG ANALYSIS - Metrics



Fentanyl and Fentanyl Analogue  
Trends in Drug Casework



- Impact of Fentanyl and Fentanyl analogues on casework



# CONCLUSION & QUESTIONS

House Oversight Committee - 2025

# SLED FORENSIC SERVICES

## TOXICOLOGY

2025 House Oversight Meeting



Lt. Dustin Smith

SOUTH CAROLINA LAW ENFORCEMENT DIVISION

# SLED FORENSIC SERVICES



## Lt. Dustin Smith

### Education:

Bachelor of Science, College of Charleston, 1993-1997

### Work History: 26 Year SLED Career

Lieutenant, Toxicology Department, SLED – May 2013 - present

Team Leader, Toxicology Department, SLED – November 2006 – May 2013

Forensic Scientist, Toxicology Department, SLED – November 1999 – November 2006

Forensic Technician, Toxicology Department, SLED – November 1998 – November 1999

### Committees/Organizations

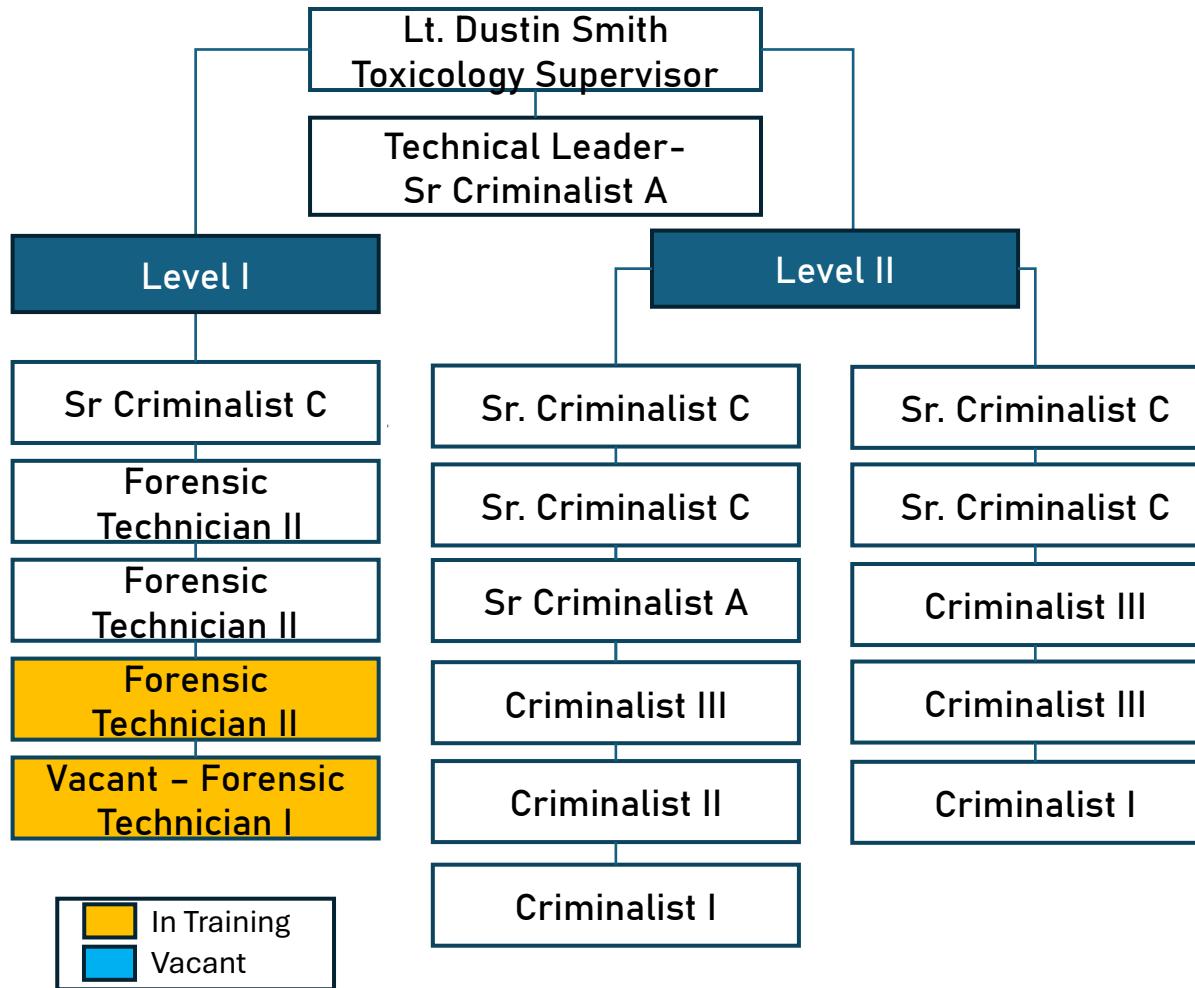
American Board of Forensic Toxicology, Fellow

Society of Forensic Toxicologists

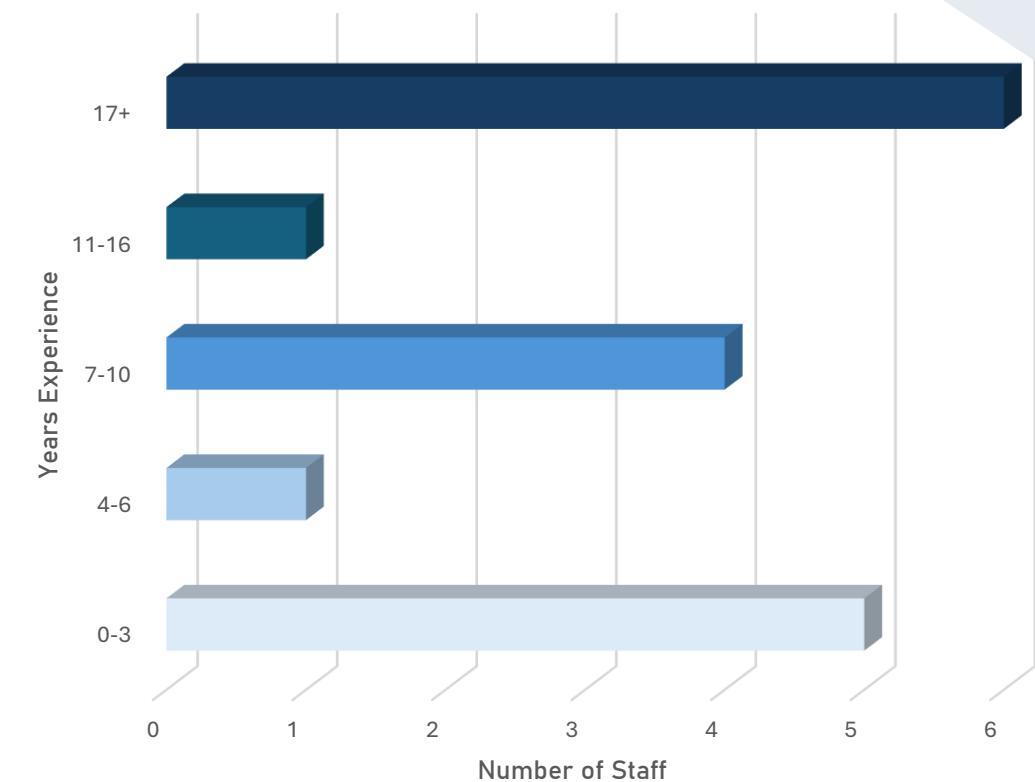
National Institute of Justice, Forensic Science Research and Development Technical Working Group



# Toxicology- Staff



Toxicology Staff - Employee Experience



# Toxicology - Staff

Who are we?

14 Toxicologists

4 Technicians

10 Advanced Degrees

6 National Board-Certified Toxicologists

8 Toxicologists with over 10 years experience



# TOXICOLOGY— What do we do?

- Analysis of blood, urine, tissues, etc. for the absence or presence of alcohol, drugs and poisons
- Types of Cases
  - DUI (DUI, Felony DUI, Driving under Unlawful Concentration (DUAC), BUI)
  - Criminal Sexual Conduct
  - Death Investigations
    - Homicide
    - Suicide
    - Traffic Fatality
    - Natural Deaths
    - Unexplained Death
    - Child Fatality



Walk-in refrigerator for storage of samples



# TOXICOLOGY— Why is Toxicology Important?

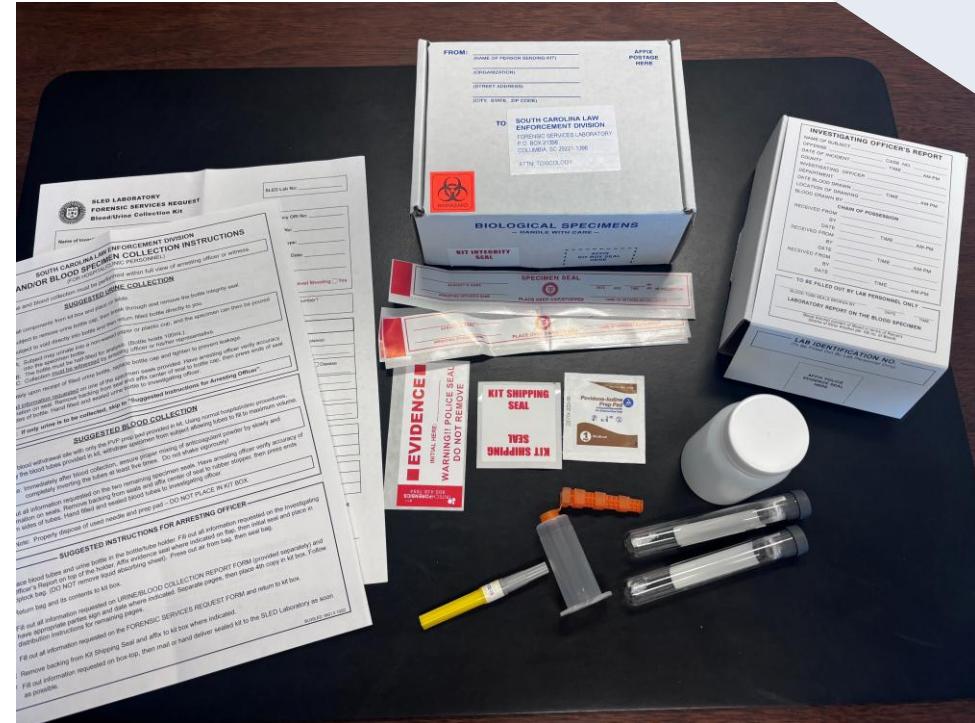


- Cause of Death
- Manner of Death
- Impairment/Mental State
- Emergency

## What Types of Samples Can Be Analyzed?

Blood, Urine, Ocular, Gastric  
Tissue  
Food/Drinks  
Clothes  
Bed Linens  
Bones  
Maggots

Syringes  
Medications  
IV Bags  
Sewer Water  
Lungs  
Etc.



Urine/Blood Collection Kit

# TOXICOLOGY— Services

- **Interpretation —**

The department routinely provides interpretation of case findings to coroners, law enforcement, prosecutors, defense attorneys, and families

- **Testimony -**

Staff are available to provide chain of custody and technical testimony whenever needed



# TOXICOLOGY— Preliminary Analysis

- All evidence submitted to the department is inventoried upon receipt. This inventory includes photographic documentation of all seals, notations, and labeling from the outer packaging to the actual evidence containers.
- All cases then move to volatiles analysis (Blood alcohol analysis) by Headspace Gas Chromatography – Flame Ionization Detector (HSGC-FID). Drug screening may follow by liquid chromatography time of flight mass spectrometry (LC-QTOF) for blood and enzyme linked immunosorbent assay (ELISA) for urine.



Headspace- Gas Chromatography Flame Ionization



# TOXICOLOGY – Inside Toxicology



- A view of inside the Toxicology laboratory with biological hoods for sample preparation

- Technician labeling and arranging sample vials for blood alcohol analysis



# TOXICOLOGY – New Technology



## Liquid Chromatography – Quadrupole Time of Flight (LC-TOF)

- New technology implemented in the Toxicology lab for blood drug screening.
- This instrument allows for the accurate detection of compounds based on their exact mass and retention time.
- The exact mass is determined by the time it takes for a compound to be repelled up a flight tube and fall back down to a detector.
- This new instrument allows for faster detection of compounds of concern and a more comprehensive panel.
- This means that the lab is able to detect more compounds significantly faster, reducing backlog and turnaround time.



# TOXICOLOGY – Drug Screens

## Enzyme Linked Immunosorbent Assay – ELISA 21 Panel Drug Screen - Urine

- Amphetamine
- Benzodiazepines I, II and III
- Carisoprodol
- Cocaine Metabolite
- Methadone
- Methamphetamine
- Fentanyl
- Dextromethorphan
- Phencyclidine (PCP)
- Opiates
- Oxycodone I and II
- Tramadol
- Zolpidem
- Cannabinoids
- Buprenorphine
- Generic Opioids
- Barbiturates
- Tricyclic Anti-depressants



RANDOX – Drug Screening Instrument



# TOXICOLOGY – Carboxyhemoglobin



- Used to determine carbon monoxide toxicity in fire and smoke inhalation deaths
- Uses multiple wavelengths to measure Carboxyhemoglobin



# TOXICOLOGY – UV-Vis



- Ultraviolet light used to determine the absorbance of compounds in solution
- Used to validate the concentration of drug standards made in house



# TOXICOLOGY – Drug Quantitation and Confirmation



- Confirm the presence and quantify drugs detected, when appropriate.
- Instrumentation:
  - Liquid Chromatography – Mass Spectrometry/Mass Spectrometry (LC-MS/MS)
  - Gas Chromatography – Mass Spectrometry (GC/MS)



Gas Chromatography-Mass Spectrometer



# TOXICOLOGY – Typical Drug Classes

- GC-MS
  - Anti-seizure
  - Antihistamines
  - SSRIs
  - TCAs
  - Muscle relaxants
- LC-MS/MS
  - Anti-psychotics
  - Beta-blockers
  - Muscle relaxants
  - "Z" drugs
  - Anti-convulsants
  - Drugs not suitable for GC-MS



Liquid Chromatograph-Mass Spectrometer

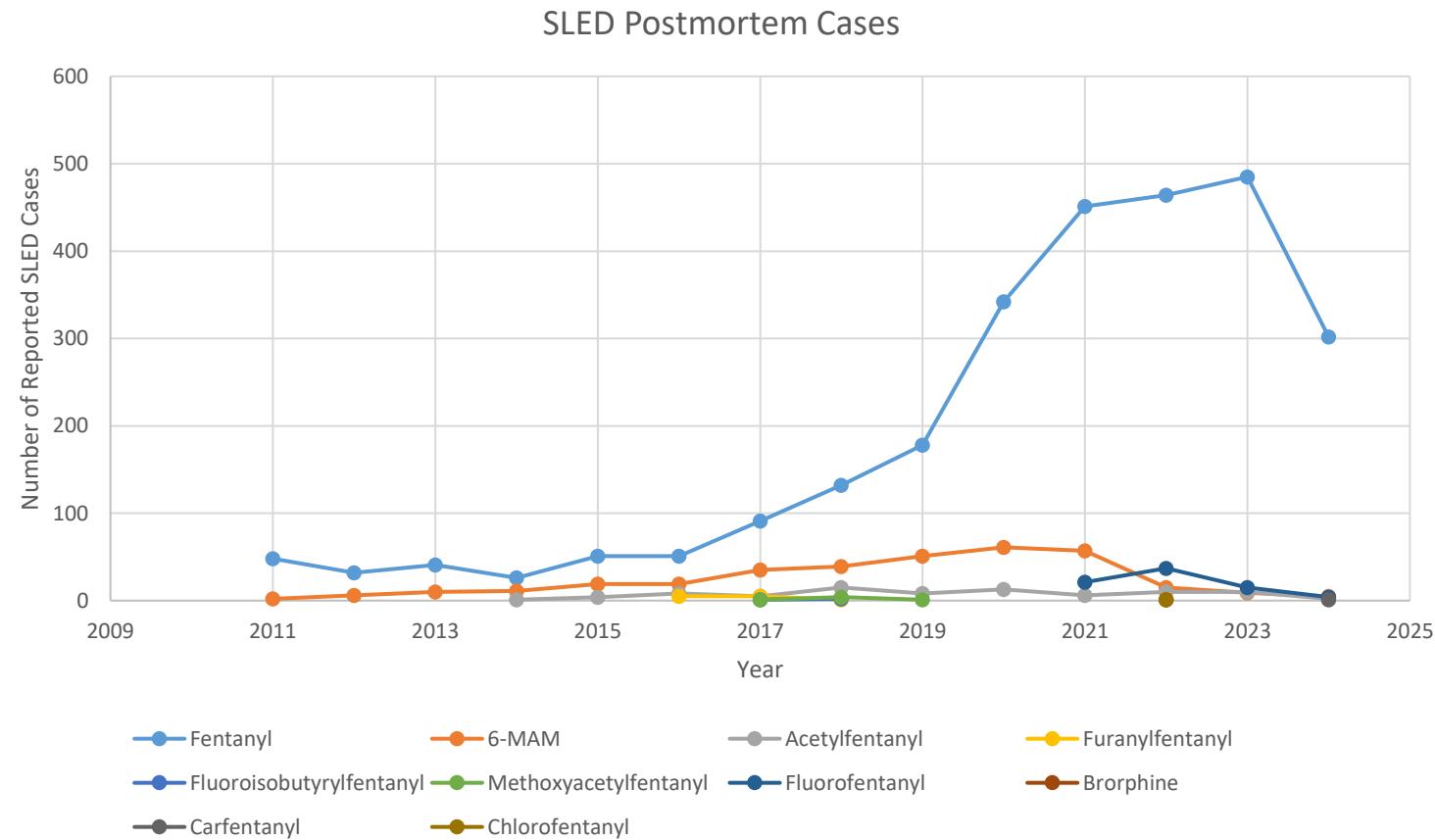
# TOXICOLOGY – Instrumentation



- The SLED Toxicology Department is the only Full-Service Toxicology Laboratory for Law Enforcement in the State of South Carolina
- Full-service Toxicology is very expensive to complete
- Laboratory currently has over \$5 million in specialty instrumentation.



# TOXICOLOGY – Fentanyl in Post-mortem Cases



# TOXICOLOGY – FORESIGHT STUDY



## Cases per 100,000 Population Served

Area of Investigation	SLED	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile
Blood Alcohol (BAC)	60.44	46.97	79.58	143.84
Toxicology ante-mortem (excluding BAC)	31.67	41.72	70.78	133.58
Toxicology post-mortem (excluding BAC)	43.43	43.43	75.70	136.30

## Turnaround Time from First Item Received by Investigative Area

Area of Investigation	SLED	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile
Blood Alcohol (BAC)	14	17	29	39
Toxicology ante-mortem (excluding BAC)	38	42	69	84
Toxicology post-mortem (excluding BAC)	42	59	80	91

# TOXICOLOGY – FORESIGHT STUDY



## Backlogged Cases as a Percent of Total Cases by Investigative Area

Area of Investigation	SLED	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile
Blood Alcohol (BAC)	0.46%	1.42%	1.68%	2.33%
Toxicology ante-mortem (excluding BAC)	5.93%	6.60%	9.03%	10.35%
Toxicology post-mortem (excluding BAC)	4.41%	4.87%	9.37%	10.45%

