2024 HAMILTON COUNTY CORONER CRIME LABORATORY ANNUAL REPORT

Brian Scowden-Crime Lab Director

Profile of the Organization

The Hamilton County Coroner's Crime Laboratory (HCCL) is located in Blue Ash, Ohio and occupies a three-story building that was built in 2021. The mission of the crime laboratory is to provide reliable, accurate, timely, and impartial forensic services to the local and regional criminal justice community. The crime laboratory has an additional responsibility to assist forensic pathologists with determining cause and manner of death.

The Hamilton County Coroner's Crime Laboratory provides services in Drug Chemistry, Firearms/Toolmarks, Forensic Biology, Toxicology, and Trace Evidence. The crime laboratory currently has a staff of 29 analysts who process 8000-10000 cases a year. Most of the casework completed by the laboratory originates from Hamilton County law enforcement agencies. However, the laboratory performs analysis on evidence submitted by agencies outside the county for a fee. The evidence accepted is for investigations, not only at the local and state level, but the federal level as well. The analysts, as part of their analysis, provide expert testimony when required. On occasion, the staff at the laboratory provide training and give presentations to law enforcement, universities, and high schools.

Quality (Accreditation and Certification)

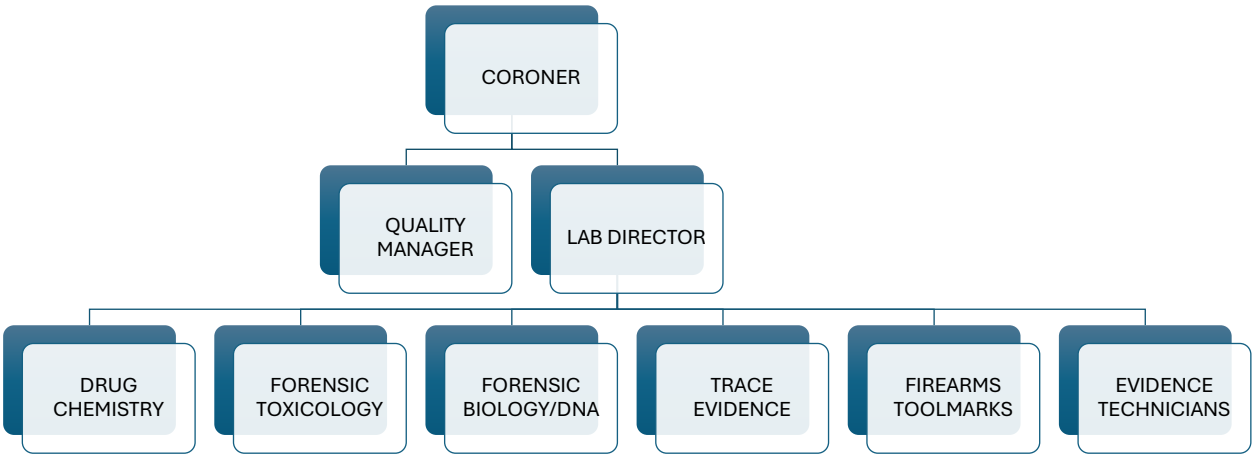
The Hamilton County Coroner's Crime Laboratory is committed to meeting the needs of our customers by providing accurate, impartial scientific examinations and related services. An effective quality management system ensures the laboratory meets these commitments. The primary objectives of this quality system include but are not limited to:

a. Providing effective forensic services to the law enforcement community commensurate with available personnel and equipment.
b. Complying with the highest national standards for scientific competence and professional responsibility.
c. Maintaining a healthy, safe, and pleasant working environment for all employees.

To help the laboratory meet those objectives, HCCL is currently accredited by ANAB (ANSI National Accreditation Board) to ISO/IEC 17025 standards for testing, calibration, and forensic laboratories.

To maintain accreditation, HCCL undergoes a full site assessment every four years with annual assessment activities to evaluate and confirm ongoing conformance. The laboratory successfully completed a full site assessment in March of 2023.

Laboratory Organizational Chart



Evidence Management

Staffing:

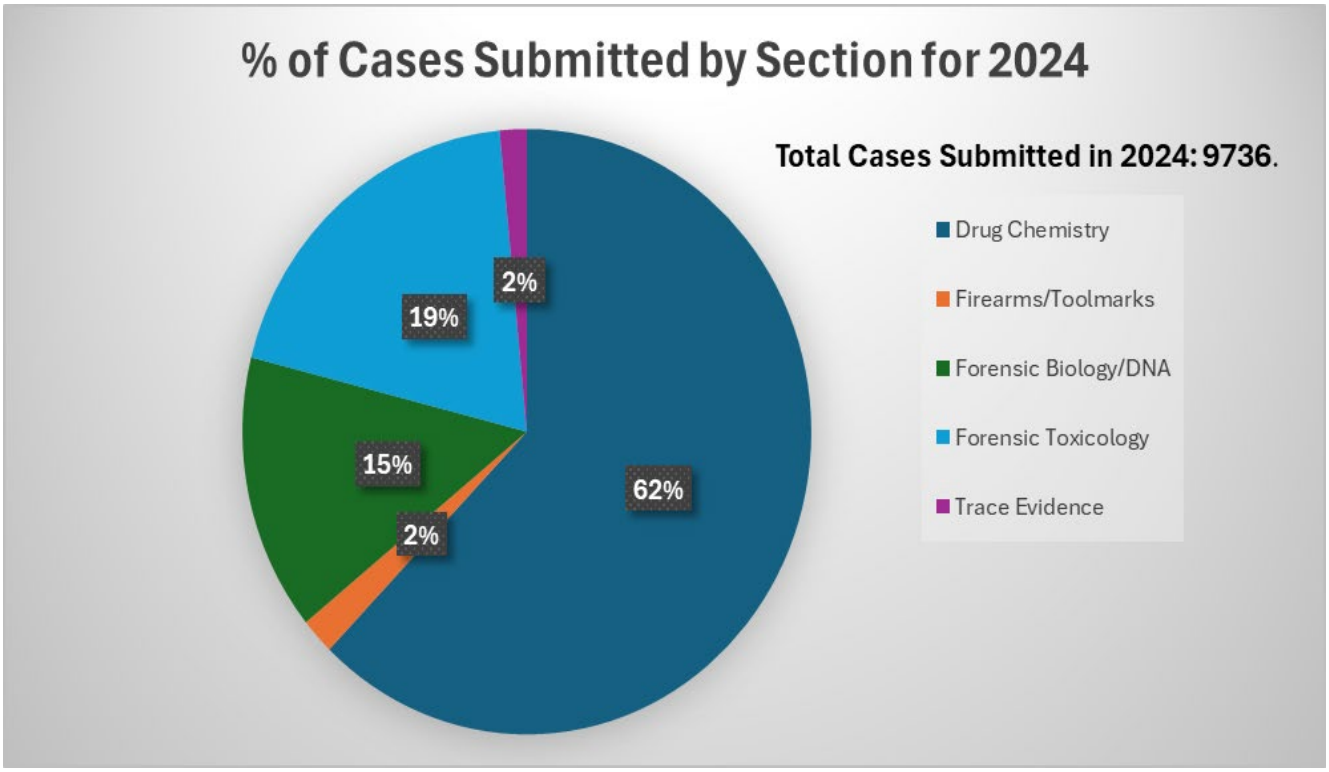
The laboratory has two full-time evidence technicians.

Duties:

The evidence technicians accept all evidence submitted to the laboratory. They are responsible for logging case information and evidence items into the laboratory's management information system at the time of receipt. They are responsible for organizing the storage of evidence so it can be retrieved when needed and the release of evidence as necessary. They deliver evidence for testing to each section's vestibule and pick up evidence from the vestibule when analysis has been completed.

Figure 1: % of Cases submitted by section for 2024

Figure 2: Items analyzed by section for 2024



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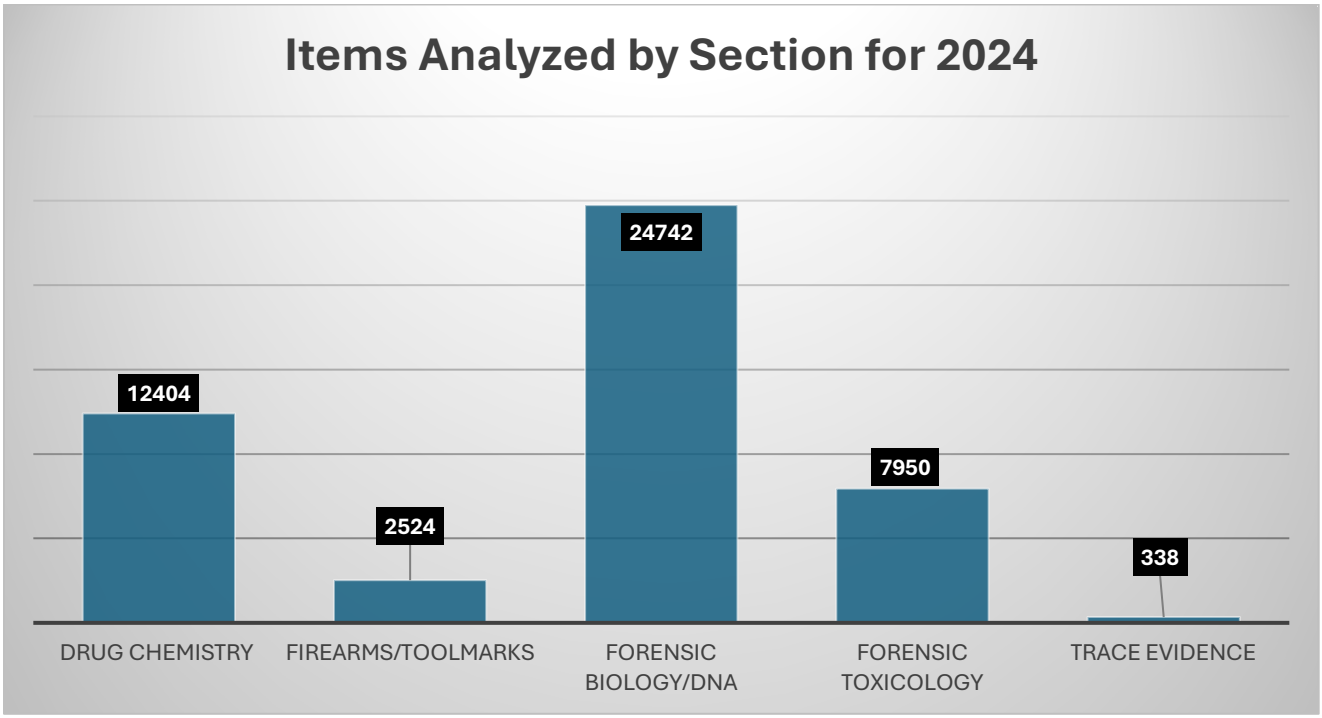


Figure 2

Drug Chemistry Section

Staffing:

The Drug Chemistry Unit is currently staffed by six full-time analysts.

Duties:

The Drug Chemists identify controlled substances, non-controlled substances of abuse, and diluent materials in seized evidence samples. They perform analysis on solid dosage type items including powders, solid material, liquids, tablets, and vegetation. They also perform analysis on residues from digital scales, syringes, packaging materials, and smoking devices. The Drug Chemists also perform open container analysis for ethyl alcohol content.

2024 Statistics:

Drugs and Marihuana:

The section completed analysis on **5786 cases** with **12404 items analyzed** and **37047 substances identified**.

Open Container:

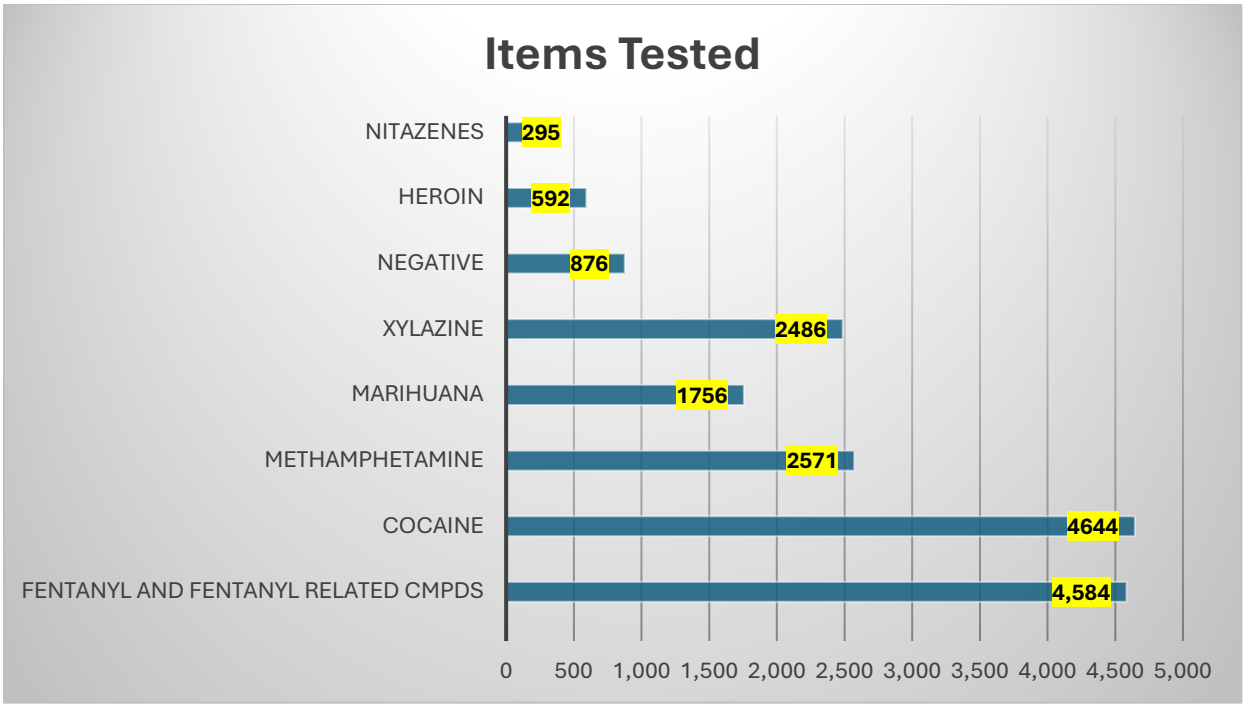
The section completed analysis on **272 cases** with **295 items** analyzed.

Average Turnaround time:

14.01 days

Figure 1: Top eight items identified in 2024. The counts include paraphernalia.

Figure 2: Comparison of Licit vs Illicit pharmaceutical preparations in 2024. Licit tablets are those tablets that contain the compound the tablet markings indicated. Illicit tablets are those tablets that contain a different compound than the tablet markings indicated and/or those tablets clandestinely manufactured (i.e. methamphetamine).



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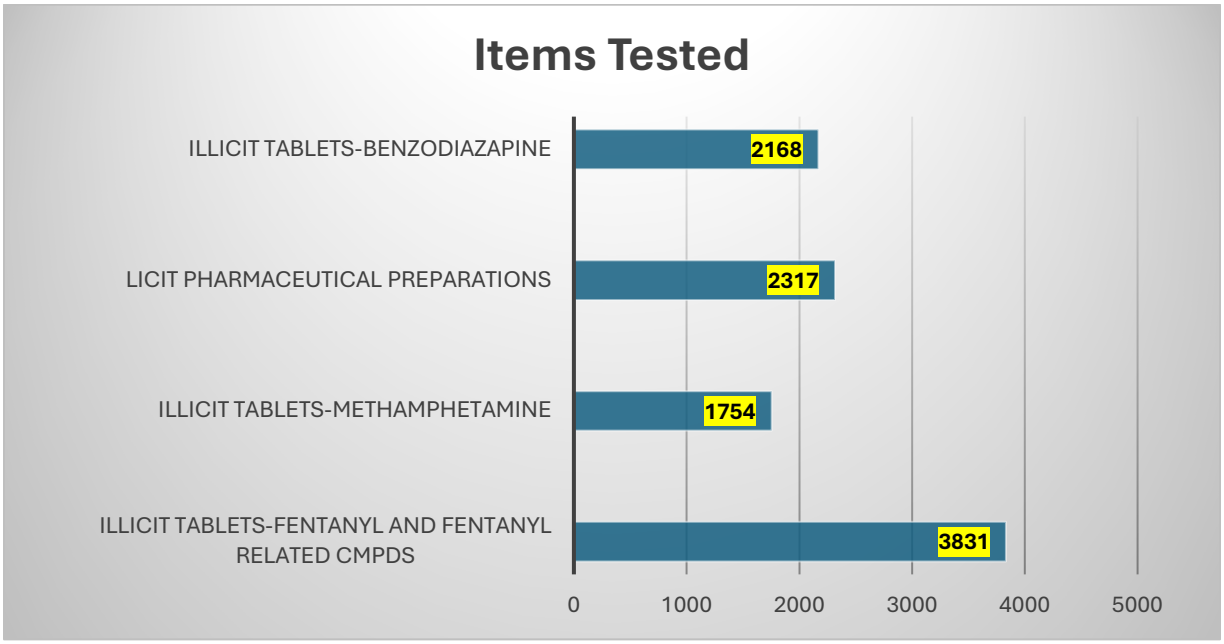


Figure 2

Toxicology

Staffing:

The Toxicology unit is currently staffed by a Chief of Toxicology, five toxicologists, and one toxicology assistant.

Duties:

The staff of the Toxicology unit analyze:

1. postmortem biological specimens for volatiles, drugs, and other toxic substances affecting the manner and cause of death.

2. biological specimens for ethyl alcohol and/or other drugs from driver's involved in suspected OVI offenses.

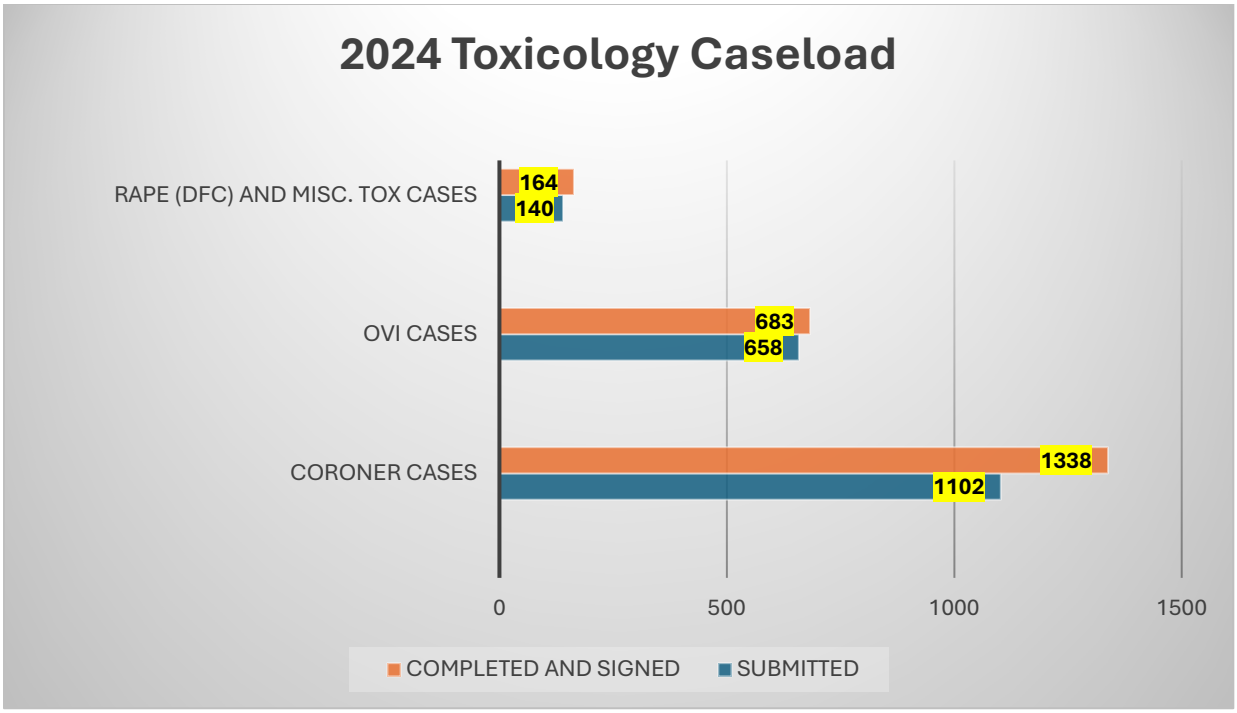
3. biological specimens from victims of suspected drug facilitated crimes and from suspects and/or victims of other criminal cases.

Stats for 2024:

The Toxicology unit completed **2185 cases** in 2024. The average turnaround time for coroner cases for 2024 was **37.3 days**.

Figure 1 is a chart of 2024 cases submitted, and cases completed and signed in 2024. OVI=operating a vehicle impaired. DFC=drug facilitated crime. Totals in the completed and signed category include cases that were submitted in 2023.

Figure 2 represents the average 2024 coroner case turnaround time in days by month.



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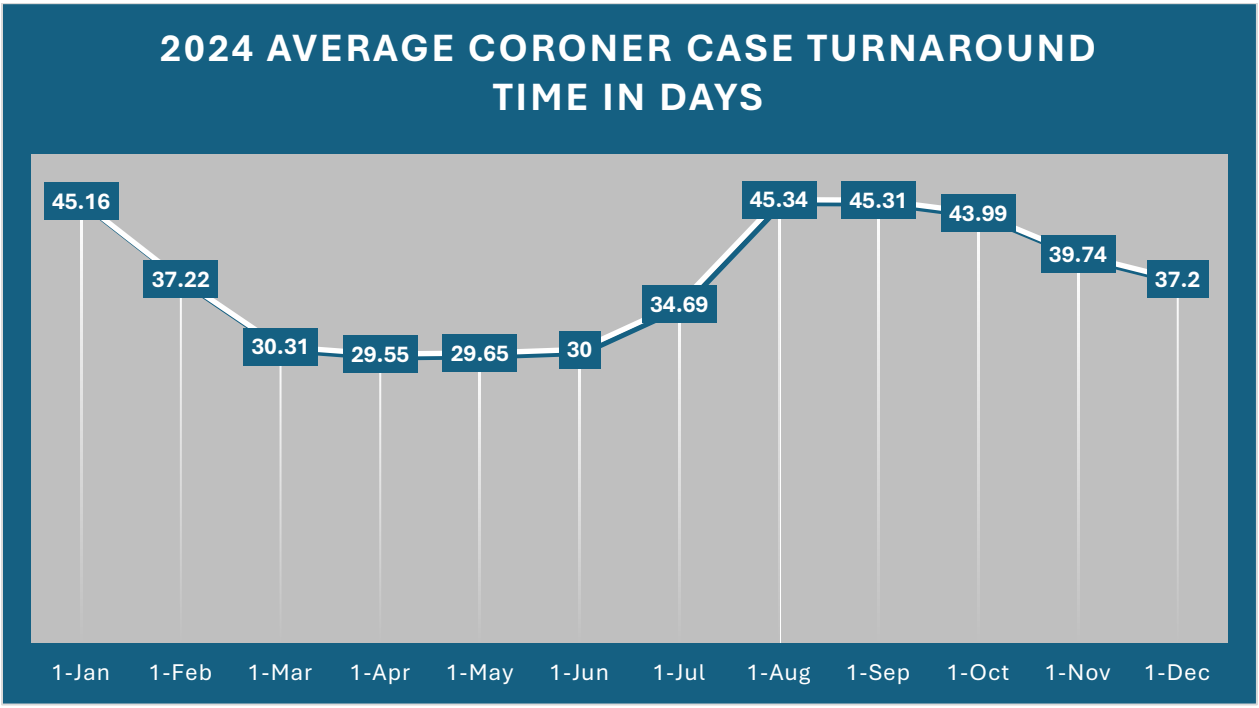


Figure 2

Forensic Biology/DNA

Staffing:

The Forensic Biology section is currently staffed by seven full-time analysts.

Duties:

The Forensic Biology/DNA Section uses technology and scientific processes to identify the presence of blood, semen, saliva, or urine. They use appropriate chemical and microscopic testing for determination of the type of biological material present.

Forensic DNA analysis is a multi-step process which involves extraction, quantitation, amplification, separation by capillary electrophoresis, and interpretation of sample DNA. The generated DNA forensic profiles are then compared to known specimens from victims or suspects or searched within the Combined DNA Index System (CODIS) database of crime scene samples and previously collected offenders and arrestees.

Stats for 2024:

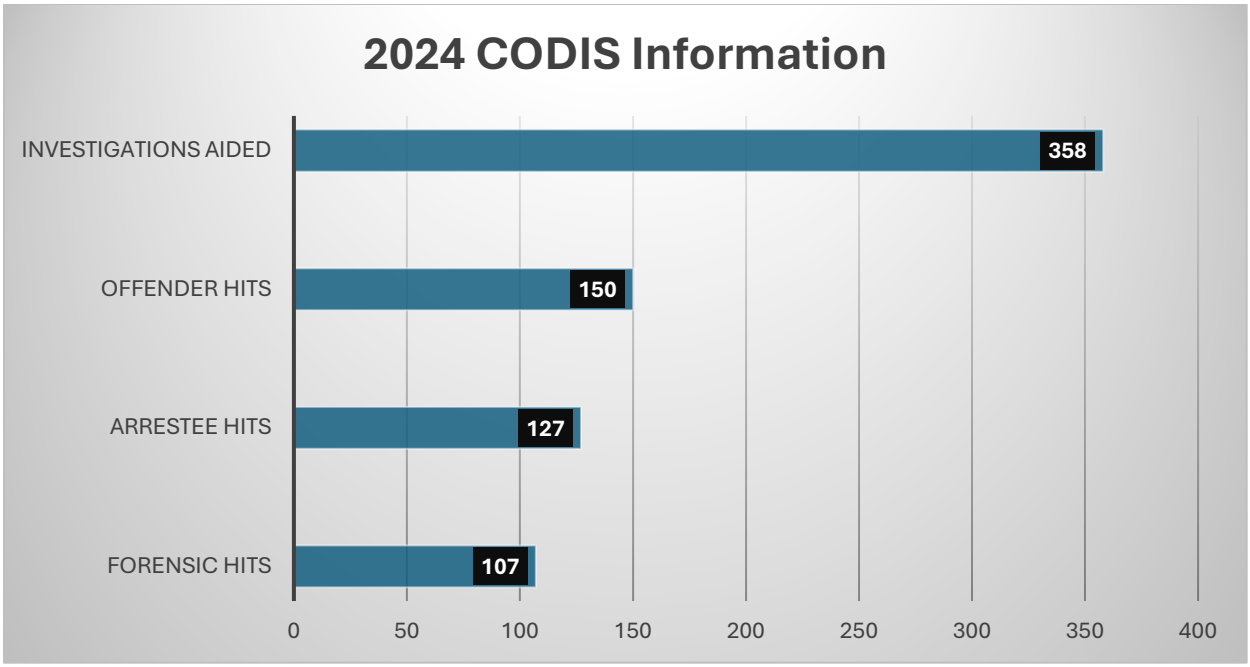
The section **received 1440 cases in 2024**.

The section **completed 1437 cases in 2024**.

The cases completed in 2024 represented **24,742 examinations** performed on **7202 items**.

Figure 1 is a chart of the 397 CODIS hits for 2024. An Offender is an individual who was previously convicted and was required to provide a DNA sample for inclusion in the CODIS database. An arrestee is an individual who has been arrested and was required to provide a DNA sample for inclusion in the CODIS database. A forensic hit is when two or more forensic samples submitted by casework laboratories match one another.

Figure 2 tracks the backlog for a five-year period.



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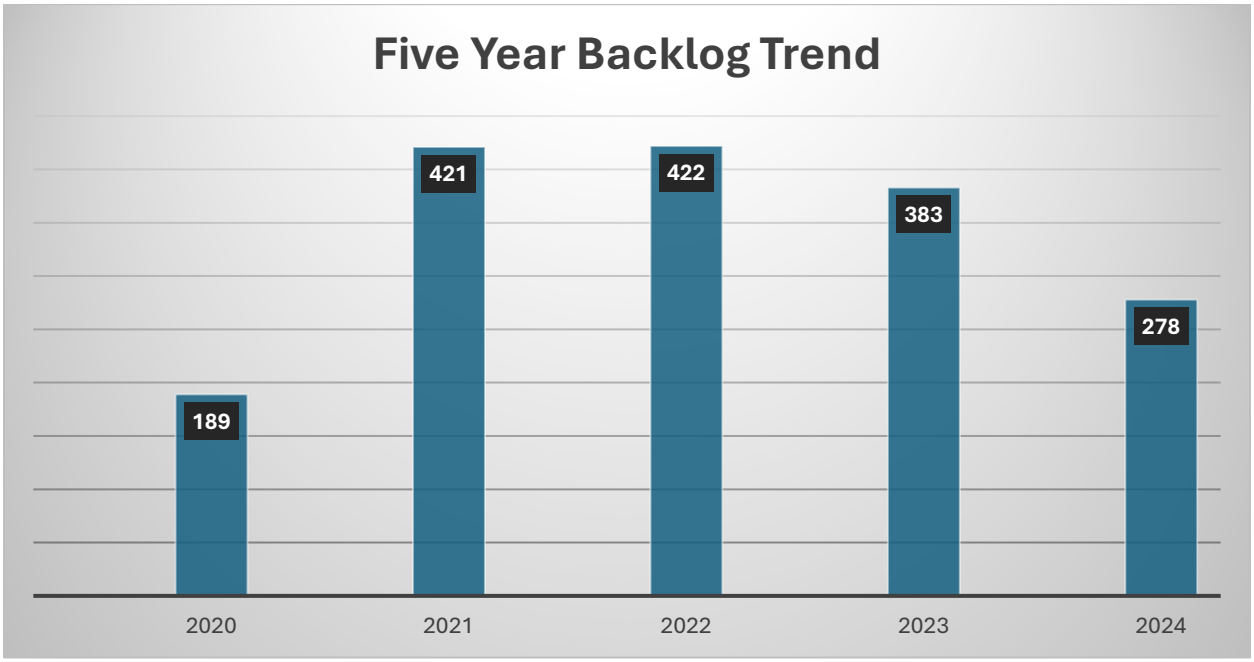


Figure 2

Trace Evidence

Staffing:

The Trace Evidence Section is currently staffed by two full-time analysts, one of which is currently still training in some sub-disciplines.

Duties:

Trace evidence is the minute transfer of materials based on Locard's Exchange principal theory. Trace evidence may provide a link between the suspect and victim, a victim and a scene, or the suspect and a scene.

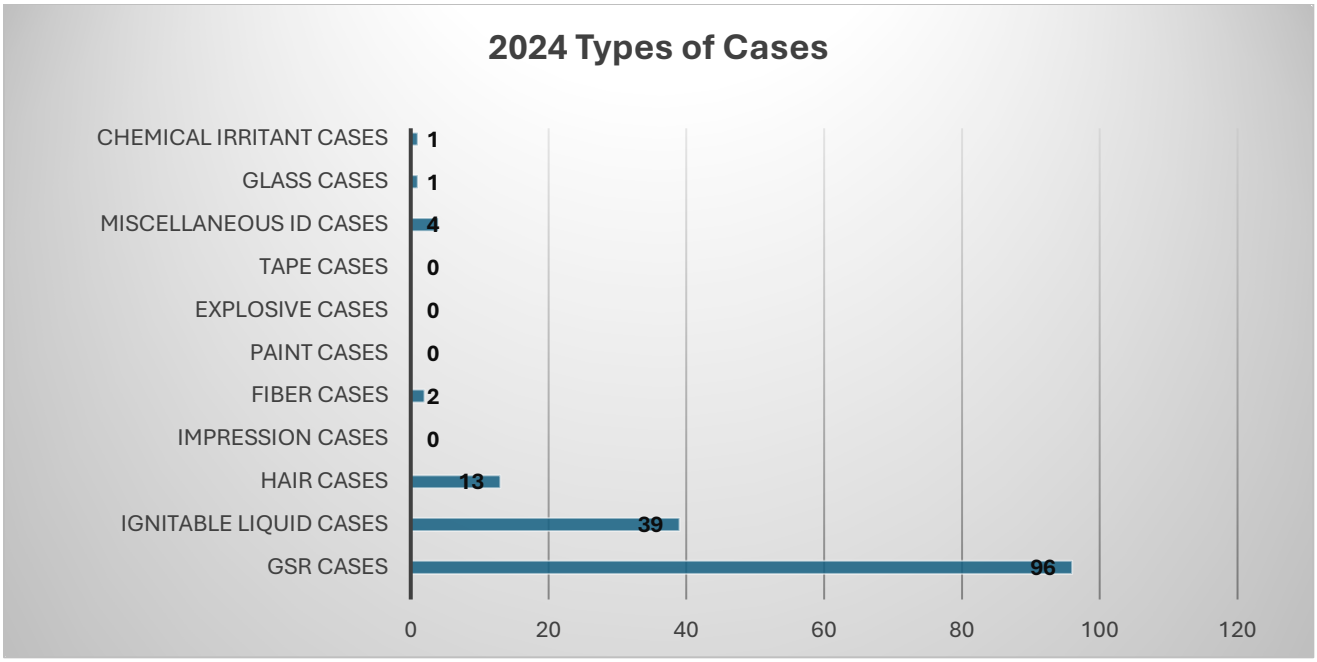
The Trace Evidence Section examines an array of evidence including footwear and tire impressions, paint, glass, tape, hair, dye packs, chemical irritants, explosives, fibers, gunshot residue (GSR), ignitable liquids, and fracture matches.

Stats for 2024:

The Trace Evidence Section accepted **149 cases** in 2024. The section completed work on **145 cases** in 2024.

Figure 1-Types of Cases worked in 2024.

Figure 2-Cases submitted and cases completed for the last five years.



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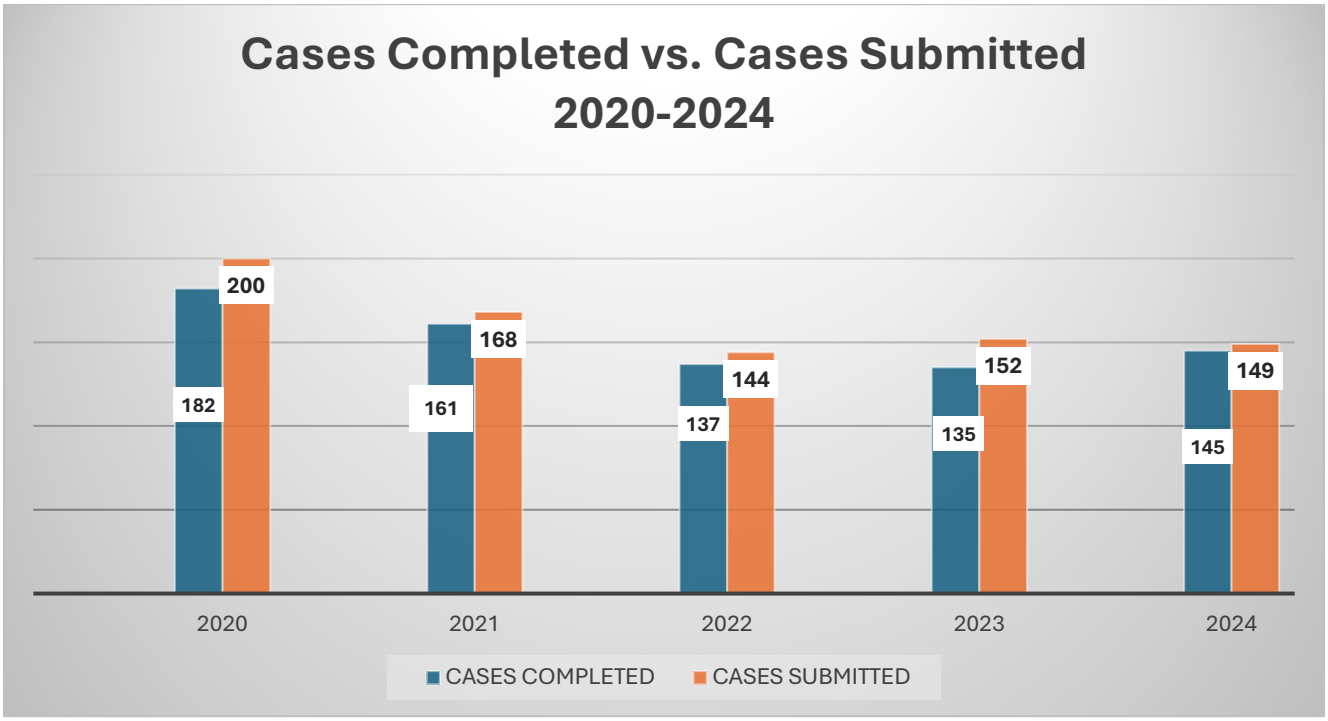


Figure

Firearms and Toolmarks

Staffing:

The Firearms and Toolmarks Section is currently staffed by two full-time analysts, one part-time analyst, and three analysts in training.

Duties:

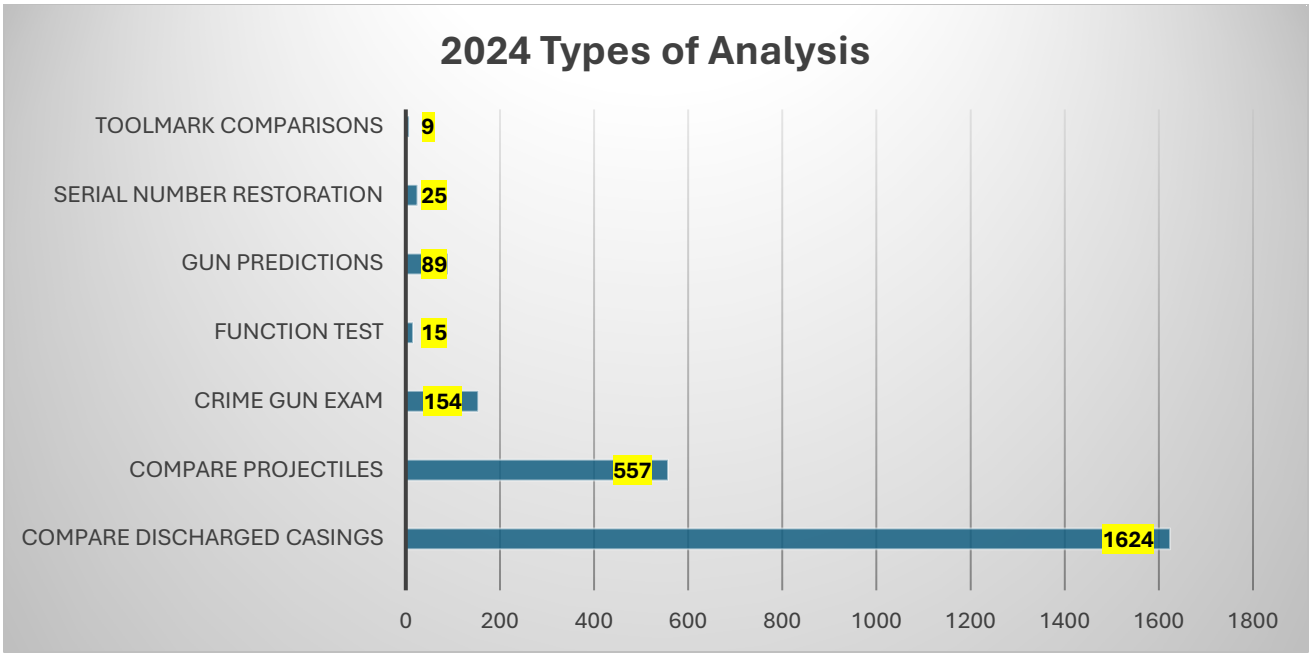
The Firearms and Toolmarks Section conducts a wide variety of examinations. Using valid scientific procedures, they conduct safety and function testing on firearms, determine general rifling characteristics, perform serial number restoration, compare ammunition components to determine if they were fired in a specific firearm, and determine if a specific tool made a certain toolmark.

Stats for 2024:

The Firearms and Toolmarks Section accepted **189 cases** in 2024. They worked **264 cases** in 2024. At the end of 2023 the section had a backlog of **300 cases**. At the end of 2024 the section had a backlog of **202 cases**.

Figure 1-Types of analysis performed on the work completed in 2024.

Figure 2-Five-year summary of cases worked, cases submitted, and backlog.



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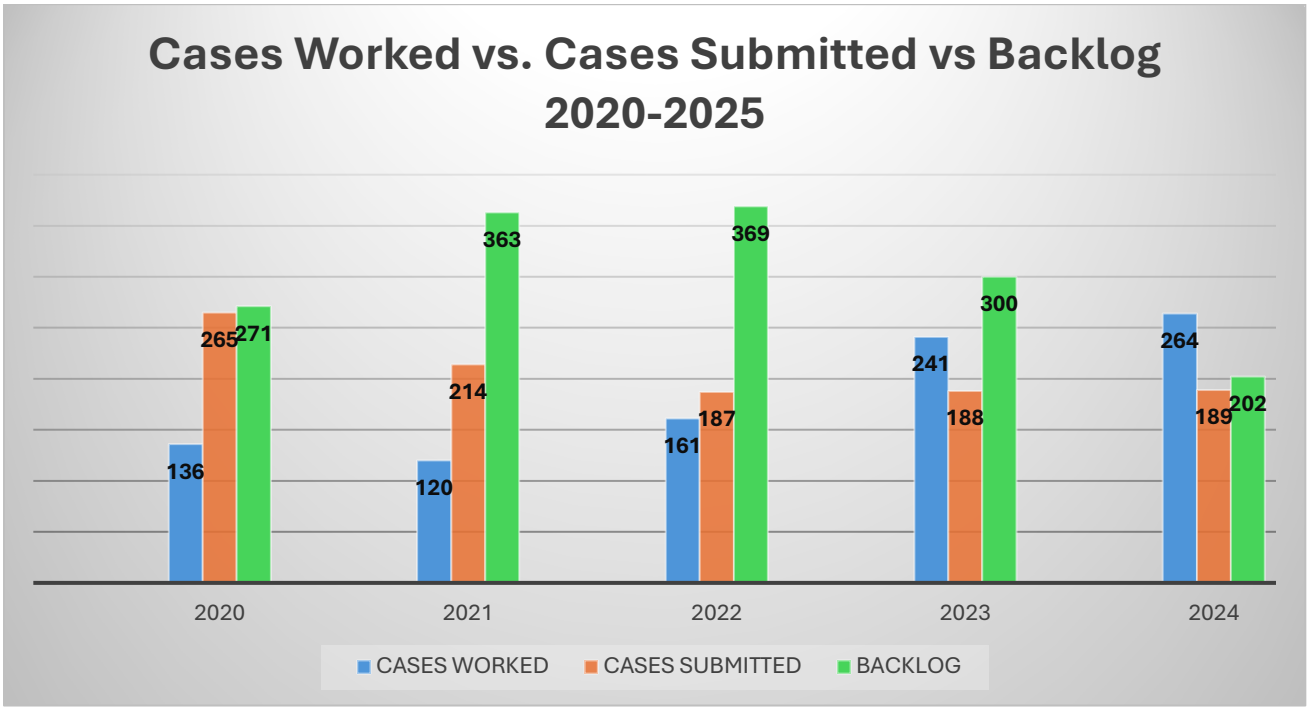

Figure 2

Projections/Goals for the Laboratory in 2025:

The laboratory's management and professional staff will continue to focus on an environment of continuous improvement -through training opportunities, collaboration and communication, new technology, and supporting the health and wellness of our staff. Below are some of the 2025 goals/projections for the laboratory sections.

General Laboratory:

The design of the new FIMS (Forensic Management Information System) continued in 2024. The new system is tentatively scheduled to go live in June of 2025. Training for portal users will happen in the first quarter of 2025. This system should be more efficient in accepting evidence. It will also notify agencies when casework is finished and allow customers access to lab reports. The office is also designing a new website which also is scheduled to be completed in 2025. The goal of the website is to serve as an information hub and to provide customer support and communication with our stakeholders and the community. The laboratory will undergo a site surveillance visit from our accrediting body (ANAB) in March of 2025.

Drug Chemistry:

The section will continue to strive to keep the turnaround time for cases to around 14-21 days. The new analyst completed their training. The section validated/verified two new instruments: a Gas Chromatograph/Mass Spectrometer for controlled substance case work and a new headspace sampler for open container analysis. The section purchased new balances. The section will be working toward validating their liquid chromatography/ tandem mass spectrometer (LC/MS/MS) to expand services offered. This instrument will allow the laboratory to differentiate between psilocybin and psilocyn, as well as perform purity testing of methamphetamine for the

federal court. The section participated in NIOSH study titled “Illicit Drug Exposure in Forensic Science Workers”.

Toxicology:

The section is committed to reducing their average turnaround time for completing and signing out coroner cases to under 25-30 days. They will also continue to develop and validate more in-house methods and procedures to reduce the number of send-outs. A new toxicology associate was hired in August of 2024. The toxicologists began training to provide impairment testimony. Training will be completed by end of 2025.

Forensic Biology:

The new analyst completed their training and is performing casework. The section continued to reduce the number of backlog cases throughout 2024 and will look to continue that trend in 2025. In 2025 the section will go through an external QAS for Forensic DNA Testing Laboratories audit.

Trace Evidence:

The trace section successfully hosted a basic tape workshop in conjunction with American Society of Trace Evidence Examiners (ASTEE) in 2024. They continue to help other laboratories by performing tech reviews for Lake County Crime Laboratory and the Arkansas State Crime Laboratory. They have performed casework for agencies in Largo, Florida, Sydney, Ohio, Sheridan County in Wyoming, and Brown County in Indiana. The section completed the verification of their new Fourier Transform Infrared (FTIR) Microscope.

Firearms and Toolmarks:

The Firearms and Toolmarks Section will continue to strive to reduce the backlog. The goal is to be able to work cases as they are submitted to the laboratory. The section completed training for one of the new analysts. In 2025 the other two analysts will complete their training. As part of their training each of the analysts will complete a research project.