



# Montana Department of Justice Forensic Science Division Annual Report - 2023

*Cost disclosure: \$0 for printing and \$0 for distribution.*



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The mission of the Montana Forensic Science Division is to use operationally efficient and financially responsible practices as the laboratory provides accurate, objective, and timely forensic analyses to the criminal justice community in order to maximize value to the citizens of Montana.

## Executive Summary

The Forensic Science Division had a productive year in 2023. Although our caseloads slightly declined, the complexity of the cases and items submitted for analysis increased. To address this, we are working towards procuring new instruments. We experienced the loss of several long-tenured staff members and have been navigating turnover, a process that continues into 2024. We were pleased to welcome Dr. Deland Weyrauch to the Medical Examiner staff at our Billings facility; he quickly acclimated and provided much-needed relief. Addressing turnover has been one of my greatest challenges as Administrator, and I am learning that it is a normal part of operations. It is essential to understand the reasons behind departures and identify any controllable factors. Our goal is to hire passionate, hard-working staff to support Montana's criminal justice system.



Looking ahead to 2024, we aim to procure an updated or new Laboratory Information Management System (LIMS). This process will require significant effort and time from everyone, with implementation expected to take about a year and a rollout date well into 2025. Additionally, we plan to acquire new instruments for the toxicology section to enhance detection capabilities and reduce the need for outsourcing samples. The procurement and validation of these instruments will also extend into 2025.

Travis Spinder, Administrator

## Forensic Science Division

The Forensic Science Division (FSD), better known as the State Crime Lab, is one of eight Divisions within the Department of Justice. It was established in Montana Code in 1977.

The Division has facilities in both Missoula and Billings. The Missoula facility has the following disciplines: medical examiners, biology, toxicology, chemical analysis, latent prints, firearms/toolmarks, quality assurance, and evidence sections. The Billings facility has the following disciplines: medical examiners, chemical analysis, and evidence sections.

FSD voluntarily participates in Project FORESIGHT which is a business-guided self-evaluation of forensic science laboratories across the globe. For the 4th year in a row FSD was awarded the FORESIGHT Maximus Award by the American Society of Crime Laboratory Directors (ASCLD). This award is presented to laboratories operating at 90% or better of peak efficiency. This award is in recognition of all the hard work that the entire staff at the Forensic Science Division does for the citizens of Montana.

<https://business.wvu.edu/research-outreach/forensic-business-studies/foresight>

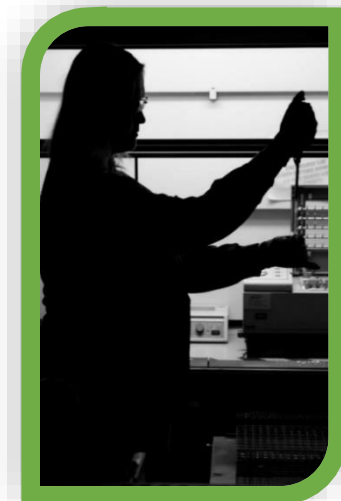
## Staff

The Lab continues to recruit a variety of scientists and staff with a broad range of skill sets to contribute to our mission. We have thirty-eight scientists, four medical examiners, and twelve administrative/support staff.

## Accreditation

Accreditation is the process by which organizations throughout the world demonstrate an applicable quality management system and properly perform testing activities, calibrations, or examinations according to the accrediting body requirements. The accrediting body determines the recertification or verification cycle to ensure demonstration of compliance with the accreditation requirements, the organization's policies and procedures, and other implemented requirements.

The Laboratory was originally accredited under the American Society Crime Laboratory Director's/Laboratory Accreditation Board's (ASCLD/LAB) Legacy program in 2005. In 2010, we attained a higher level of accreditation to ISO/IEC 17025 standards for testing laboratories, which are the current standards for forensic labs, as well as ASCLD/LAB-*International* Supplemental Requirements. In 2017, the Breath Alcohol Section was accredited to ISO/IEC 17025:2005 standards for calibration laboratories. In 2019, the laboratory continued accreditation with the ANSI National Accreditation Board (ANAB) through compliance with AR 3125 and ISO/IEC 17025:2017 requirements; these accreditation requirements are applicable to both facilities. ANAB provides laboratory accreditation to ISO/IEC 17025 and a variety of standards for many industry-specific programs. In 2023 ANAB assessors performed the four-year reassessment of all requirements that resulted in continuation of laboratory accreditation.



The Medical Examiner Office (MEO) became accredited with the National Association of Medical Examiners (NAME) in 2020. NAME accreditation is an endorsement indicating that the office provides an adequate environment for a medical examiner in which to practice and provides reasonable assurances that the office well serves its jurisdiction.

## Outreach

Our interactions with a broad cross-section of legislators, citizens, citizen groups, and criminal justice agencies and organizations across Montana continue to be a focus of our Division. We provide educational presentations across the state when needed. Historically lab representatives attended conferences or meet with boards for the Montana Sheriffs and Peace Officers Association, the Montana Association of Chiefs of Police, the Montana County Attorneys Association, the Montana Coroners Association, and the Attorney General's Law Enforcement Advisory Committee. When requested the Division holds open house events for legislators and the public and provides regular tours for the public. Our staff routinely spends over 300 hours training law enforcement, prosecutors, defense attorneys, judges, and the public in matters tied to the forensic sciences.

## National Matters

The Organization of Scientific Area Committees (OSAC) for Forensic Science works to strengthen the nation's use of forensic science by facilitating the development of technically sound forensic science standards and by promoting the adoption of those standards by the forensic science community. These standards are written documents that define minimum requirements, best practices, standard protocols, and other guidance to help ensure that the results of forensic

analysis are reliable and reproducible. The Lab is proud to have personnel that have served on national committees critical to the advancement of technological standardization of forensic sciences.

## Forensic Science Laboratory Advisory Board

The Forensic Science Laboratory Advisory Board was established in 1996 by Attorney General Joe Mazurek and has met nearly every year since. The Board serves as an advisory council and as an independent body to investigate complaints of negligence or misconduct. It also serves as a communication link between the Lab and its stakeholders. Board members include representatives from:

- Montana Attorney General
- District Judge Representative
- Montana Coroners Association Representative
- Non-Law Enforcement Coroner
- Office of the Public Defender Representative
- DOJ's Division of Criminal Investigation Administrator
- Montana Sheriff and Peace Officers Association Representative
- Montana Association of Chiefs of Police Representative
- Montana Department of Correction Representative
- Montana County Attorney's Association Representative

We are grateful for the time and dedication of these members; their input helps improve the Crime Lab and its services.

## Grant Funding

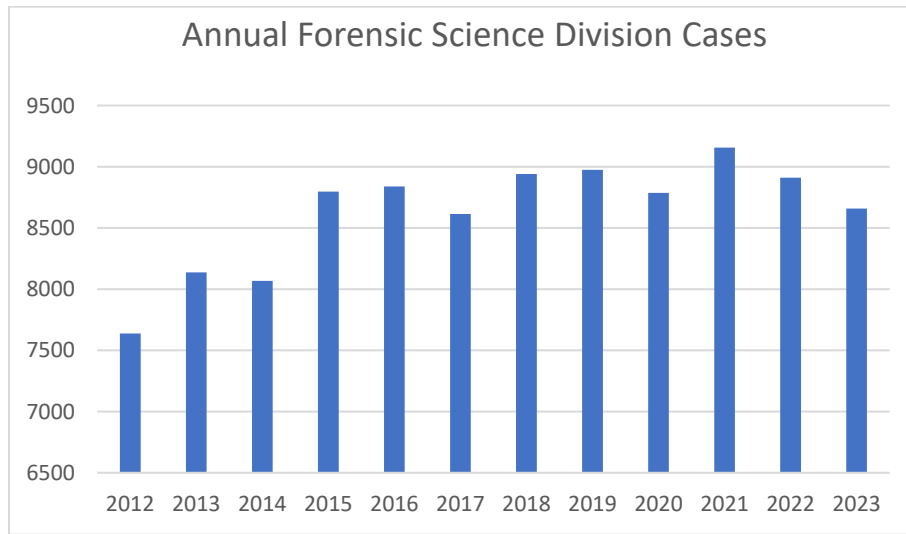
FSD takes advantage of federal grant funding whenever possible. In 2023, the following grants were received, totaling over \$1.3 million. Without this financial assistance, many of these projects would not have happened.

1. **BJA "Paul Coverdell Forensic Science Improvement" Grant**
  - \$281,437: Training/instrumentation/equipment/supplies/coroner education
2. **BJA "DNA Capacity Enhancement and Backlog Reduction" Grant**
  - \$650,000: Funding for personnel/training/supplies/DNA lab case management improvements
3. **NIJ "National Forensic Science Center" Grant**
  - \$99,534: Coroner Liaison position, scholarships for hosting medical students to promote interest in forensic pathology as a career choice, and the development of national forensic training for law enforcement, attorneys, and judges.
4. **Centers for Disease Control "Overdose Data to Action (OD2A): Increasing Surveillance and Prevention to Reduce Opioid Misuse in Montana" Grant** (*awarded through the Montana Department of Public Health and Human Services*)
  - \$327,300: drug-related autopsy reimbursement for counties/enhanced toxicology testing in complex postmortem cases/instrument parts and maintenance

## Caseloads

As with many forensic labs nationwide, FSD has seen a steady influx in cases over the last decade. The total number of cases submitted in 2023 was 8659 which is down approximately

3% from the previous year. Cases can be further divided into requests for testing within specific sections. One case may generate multiple requests for services throughout the Lab or within a section. For example, a single handgun may involve test requests for the presence of latent prints, DNA, firearms analyses and in some instances other case(s) for the MEO. Cases can contain anywhere from one to more than one hundred items of evidence. Section specific workloads are covered below.



## State Medical Examiner's Office

In 2023, the Montana Medical Examiner's Office employed three forensic pathologists for most of the year, and four forensic pathologists for the last quarter of the year, two autopsy assistants, and two part-time autopsy assistants. Administrative support was provided by the Forensic Science Division. Two pathologists work at the State crime laboratory in Missoula to serve the needs of coroners in western Montana. Two pathologists work at the State morgue facility in Billings to serve the needs of coroners in Eastern Montana.



The Medical Examiner's Office has focused on improving casework information and statistics. The Office releases an annual report, which summarizes annual case results based on manner of death, age of the decedent, deaths involving firearms, deaths attributable to alcohol or drugs, natural deaths, and report turn-around time performance. **The full report is available on the Montana Department of Justice's website under the Medical Examiner's Office or Forensic Science Division tab.**

In 2023, 789 postmortem examinations were performed: 359 in Missoula and 430 in Billings. This represents a 43 case decrease over the previous year. To support northern Wyoming counties who recently lost the forensic pathologist doing their autopsies, the Billings office also performed autopsies for northern Wyoming, with these numbers included in the 430 cases. Our pathologists responded to a limited number of scene investigations and recoveries. They also testified in court and gave educational presentations at the annual Montana Coroner Advanced and Basic Coroner trainings. In addition, consultations with coroners, law enforcement, county attorneys, organ and tissue procurement agencies, and funeral directors were common. The Coroner Liaison, Kayla Wallace, has continued to be a great addition, supporting the Medical Examiner's Office and coroners by offering death investigation consultation to the coroners, obtaining medical records, providing training, and offering other assistance to all Coroners.

## Staff

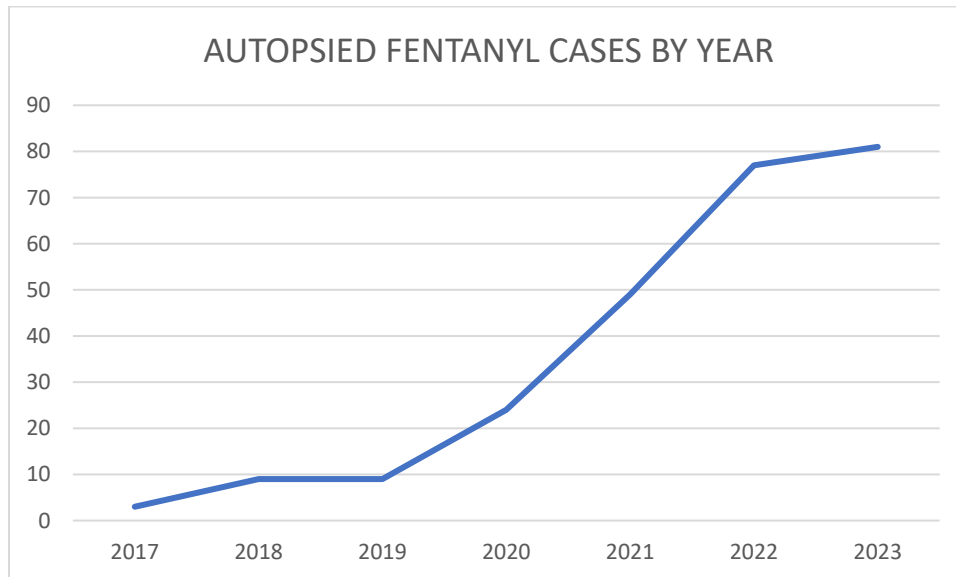
Dr. Walter Kemp	Chief Medical Examiner, Billings
Dr. Deland Weyrauch	Deputy Medical Examiner, Billings
Dr. Aldo Fusaro	Deputy Medical Examiner, Missoula
Dr. Sunil Prashar	Deputy Medical Examiner, Missoula
Kristy Burkhart	Autopsy Technician, Missoula
Jenny Taylor	Part Time Autopsy Technician, Missoula
Kendra O'Neal	Autopsy Technician, Billings
Tonya Shaffer	Part Time Autopsy Technician, Billings

## Successes

1. Partner in the National Center on Forensics grant through NIJ along with George Mason University, the American Society of Clinical Pathologists, and the National Association of Attorney Generals, which includes a Coroner Liaison position and training for medical and pathology students, as well as support for an upcoming series of videos, which will provide a resource for county coroners to obtain their required 16 hours of training every 2 years.

## Challenges

1. Statewide utilization of death case management system by county coroners, with work being done to switch to a different system after the current system indicated they were going to quit providing the service.



The State has seen an approximate 2,600% increase in fentanyl related deaths since 2017 (2017 - 3 cases vs 2023 – 81 cases).



## **Toxicology Section**

The Toxicology Section performs drug and alcohol testing in Driving Under the Influence cases (DUI or DUID), postmortem cases (assisting the medical examiner/coroner system in the determination of cause/manner of death), urinalysis testing (Department of Corrections probation/parole system and drug endangered children cases), and sexual assault cases. This section also oversees the breath alcohol calibration program, including maintaining and certifying the breath testing instruments used to detect the presence of alcohol in DUI cases. Section staff also provide over 300 hours of training per year to law enforcement, judges, prosecutors, and defense attorneys.



This report contains graphs/figures used to track the results on cases submitted by many agencies throughout Montana. This is not an exhaustive list of drugs detected and confirmed by the Lab; simply the most frequently confirmed drugs.

## **Staff**

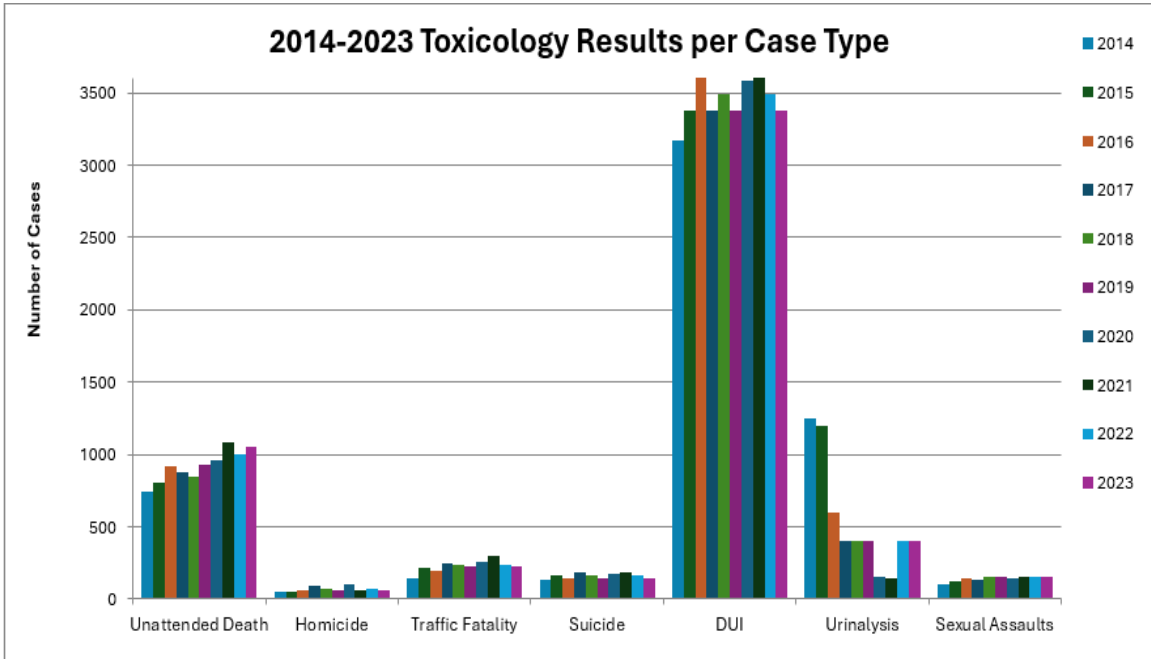
Beth Smalley, M.S., Toxicology and Breath Alcohol Supervisor	April Sheets, D.F.S., Forensic Toxicologist
Scott Schlueter, Forensic Toxicologist Diplomate-ABFT-FT	Gavin Lawson, Forensic Toxicologist Diplomate-ABFT-FT
Michelle Evans, Forensic Toxicologist Diplomate-ABFT-FT	Elizabeth Holom-DeYoung, M.S., Forensic Toxicologist
Eric Miller, Forensic Toxicologist Diplomate-ABFT-FT	Ben Vetter, Breath Alcohol Program Lead
Crystal Everett, M.S., Forensic Toxicologist	Justin Lyndes, Forensic Toxicologist and Breath Alcohol Scientist, ABC-FKE
Andrew Wade, M.S., Forensic Toxicologist	Jamie Soderling, Forensic Toxicologist
Matthew Lasker, M.S., Forensic Toxicologist	Amy Howls, Toxicology Technician (transitioning to DNA)

## **Successes**

1. Starting January 1, 2024, the stop-testing limit for drug testing in DUI cases was changed to 0.16 g/100mL from 0.10 g/100mL. This means that more DUI cases will be getting standard drug testing.
2. Validation of the blood master screen: This panel allows us to test for approximately 125 different drugs in one test. It has increased our efficiency and testing capabilities.
3. Several staff members attained certification or advanced degrees.

## **Challenges**

1. Moving to an all-electronic case record by the end of 2024.
2. Continual influx of novel substances, making toxicological detection difficult and increasing case complexity.
3. Increased travel for in-person testimony means more analyst time spent out of the lab, even for trials that proceed in absentia (defendant not present) or bench trials.



**2023 Performance Summary**

This chart reflects the average number of days it takes to complete 90% of cases. Also included is the average number of cases per toxicologist for both Montana and the national average.

**90% of cases completed in this timeframe.**

Type of Case	90% of cases completed in this timeframe	*2023 Cases per Montana Toxicologist	*Cases per Toxicologist National Average
Postmortem	61 days	323	180
DUI Drugs	56 days	303	212
DUI Ethanol	19 days	881	675

\*Numbers are based on “Project FORESIGHT Annual Report, 2022-2023,” from the Forensic Science Initiative, College of Business & Economics, West Virginia University

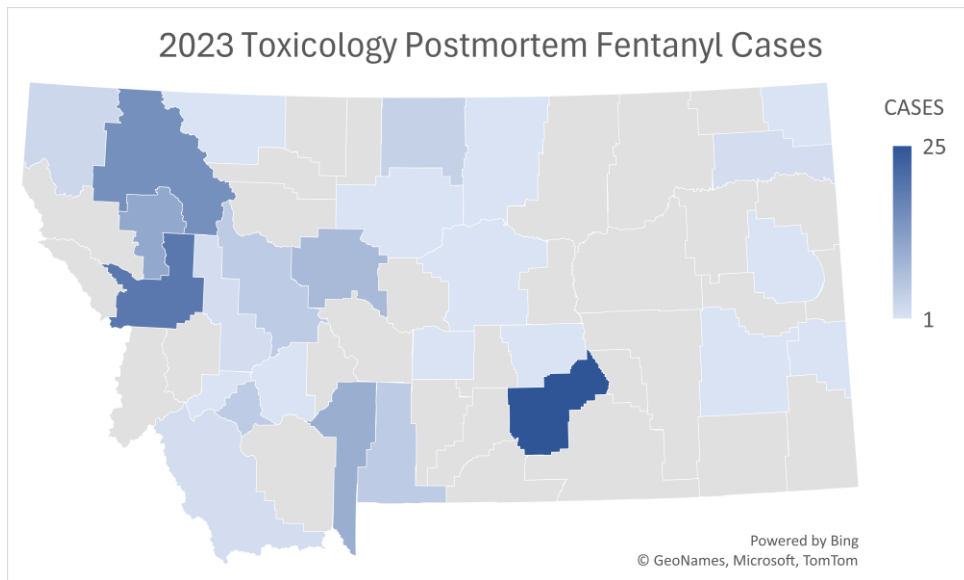
**Drugs of Interest:** It is important to recognize that a drugs’ presence in a postmortem death does not necessarily mean that it was part of the cause of death. That determination is done by the Medical Examiners and coroners as part of the death certificate.

**Methamphetamine:** In 2023, methamphetamine continues to be one of the most prevalent drugs in toxicology’s casework. For postmortem cases, it was often seen when fentanyl was present. It was also found in 24% of all drug driving under the influence cases receiving full drug screens.

Case Type	2023 Cases	2022 Cases	2021 Cases	2020 Cases
Postmortem (Blood results only)	311 cases Mean: 0.71 mg/L Range: 0.02- 7.3 mg/L	229 cases Mean: 2.07 mg/L Range: 0.02- 92 mg/L	212 cases Mean: 0.95 mg/L Range: 0.02- 11 mg/L	191 cases Mean: 1.57 mg/L Range: 0.02-23 mg/L
DUID	382 cases Mean: 0.42 mg/L Range:0.02-2.4 mg/L	408 cases Mean: 0.39 mg/L Range:0.02-2.4 mg/L	500 cases Mean: 0.38 mg/L Range:0.02-3.9 mg/L	408 cases Mean: 0.35 mg/L Range:0.02-3.8 mg/L

**Fentanyl:** While still prescribed and used in hospital settings, fentanyl has flooded the illicit markets. Fentanyl is a synthetic opiate narcotic analgesic and is 40-50 times more potent than heroin. There was a 13% increase in its detection in postmortem casework. It was detected in 7% of drug driving under the influence cases receiving full drug screens.

Case Type	2023 Cases	2022 Cases	2021 Cases	2020 Cases
Postmortem (Blood results only)	203 cases Mean: 13.1 ng/mL Range:0.5- 720 ng/mL	180 cases Mean: 14.3 ng/mL Range:0.5- 800 ng/mL	87 cases Mean: 12.1 ng/mL Range:0.5- 117 ng/mL	41 cases Mean: 9.34 ng/mL Range: 0.6-48 ng/mL
DUID	99 cases	95 cases	57 cases	12 cases



**Tetrahydrocannabinol/THC (Marijuana):** Before and after the passage of the voter approved initiative to legalize use of marijuana starting in 2022, about 40-50% of the DUI cases tested for drugs were positive for cannabis, or its metabolites. In 2023, delta-8 THC/HHC was confirmed in 22 cases. Cases positive for delta-8 THC/HHC were included in the following numbers:

DUI THC POSITIVE TOX CASES					
YEAR CHANGE	YEAR	TOTAL CASES	MEAN CONCENTRATION NG/ML	RANGE CONCENTRATION NG/ML	MOST PREVALENT COUNTY
1%	2023	593	8.68	1-87	GALLATIN
-5%	2022	587	10.03	1-144	YELLOWSTONE
17%	2021	621	10.11	1-172	YELLOWSTONE
14%	2020	530	9.99	1-197	YELLOWSTONE
	2019	464	9.35	1-75	GALLATIN

**Summary of Alcohol and Drug Prevalence in Drivers (including fatal crashes)**

\*In 2013, a laboratory policy was implemented, determining drug testing in DUI cases only if requested and the blood alcohol was less than 0.100 g/100mL. Beginning January 1, 2024, this policy was changed to testing cases containing less than 0.16 g/100mL ethanol. Case reports are released with a note stating that no drug testing was performed, and customers may request testing by contacting the section. Cases involving a drug recognition expert (DRE) or a fatal crash are exempt from this policy.

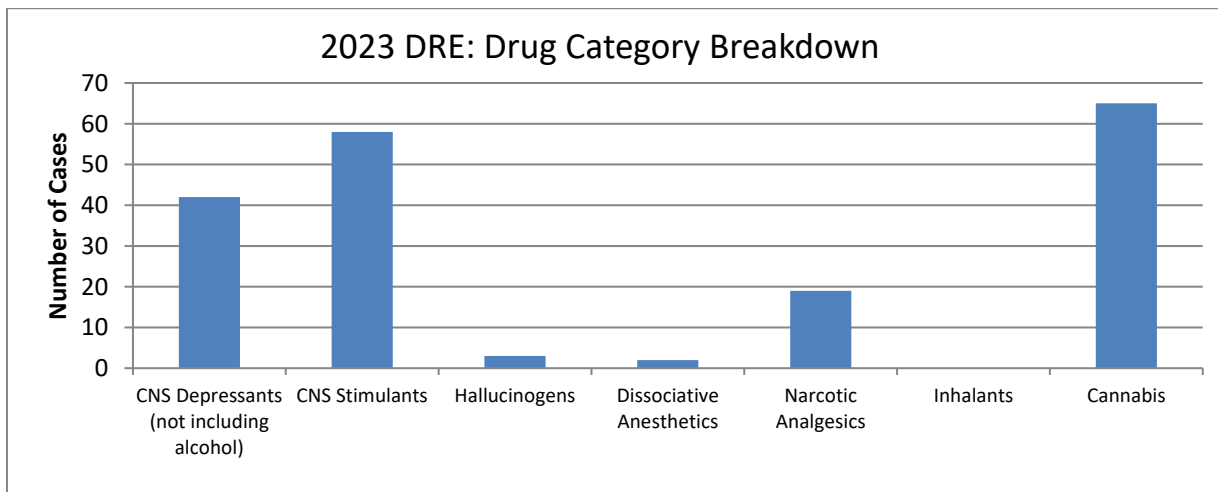
To request quarterly updates of this summary, email [michelle.evans@mt.gov](mailto:michelle.evans@mt.gov).

<b>Alcohol and Drug Prevalence in Driver Blood Samples (includes fatal crashes)</b>	
Blood Samples Submitted	3703
Blood Samples tested for drugs other than alcohol (drug)*	1624
Blood Samples Positive for Alcohol	69%
Blood Samples Positive for Drug(s) other than Alcohol*	34%
Alcohol Detected Only*	66%
Alcohol + Drug(s)*	10%
Drug(s) Detected Only*	25%
No Drug(s) or Alcohol Detected	5%
BAC Greater than 0.100%	59%
BAC 0.020% - 0.100%	10%
Average BAC	0.182, Range: 0.010-0.565 g/100mL
Most detected Drugs* -percentages based on total submitted (all) and samples tested for drugs (drug)-	

1. 1. Cannabinoids\*\* – 21% (all), 47% (drug)
    - a. THC – 17% (all), 40% (drug) (Avg = 8.5 ng/mL, Range: 1.0–87 ng/mL)
  2. Methamphetamine – 11% (all), 24% (drug) (Avg = 0.448 mg/L, Range: 0.021-3.2 mg/L)
  3. Fentanyl – 3% (all), 7% (drug) (Avg = 7.9 ng/mL, Range: 0.5-85.0 ng/mL)
  4. Gabapentin – 2% (all), 5% (drug) (Avg = 4.8 mg/L, Range: 0.6-82.0 mg/L)
  5. Citalopram/Escitalopram – 1% (all), 3% (drug) We do not currently quantitate this drug
  6. Lorazepam – 1% (all), 3% (drug) (Avg = 30.8 ng/mL, Range: 2.0-207.0 ng/mL)
  7. Benzoylcegonine – 1% (all), 3% (drug) (Avg = 0.92 mg/L, Range: 0.025-4.0 mg/L)
  8. Diphenhydramine – 1% (all), 3% (drug) (Avg = 0.166 mg/L, Range: 0.020-2.1 mg/L)
  9. Δ8-THC-COOH – 1% (all), 3% (drug) We do not currently quant this drug. Included in #1 Cann.
  10. Clonazepam – 1% (all), 2% (drug) (Avg = 0.035 mg/L, Range: 0.021-0.083 mg/L)
- \*\*This includes any positive from delta 8 or 9 -THC, THC-COOH, or 11-OH-THC with each case only counted once

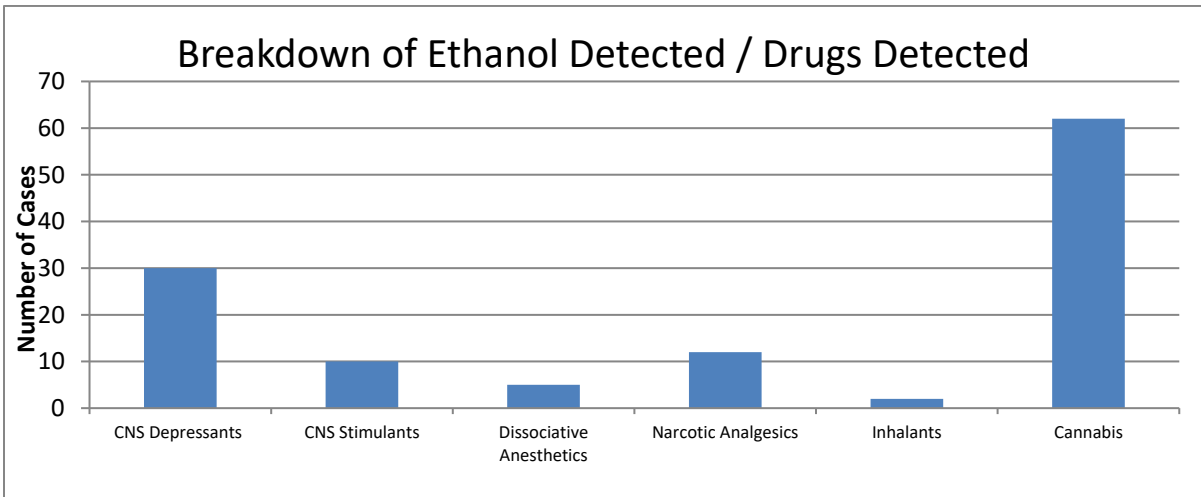
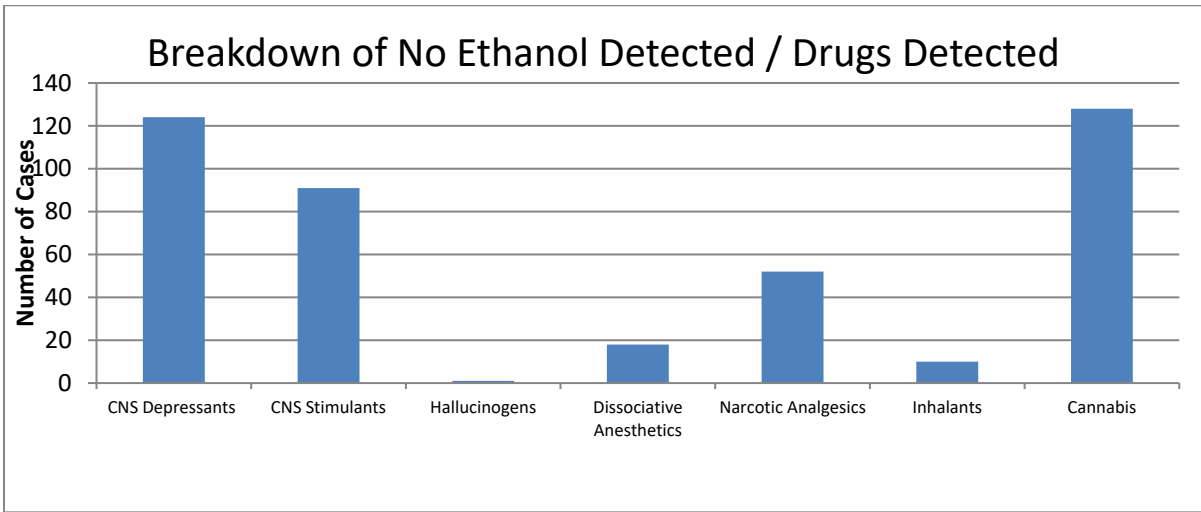
**DRE (Drug Recognition Expert) Summary**

Drug testing is performed on all DRE submitted cases. In 2022, 187 DRE cases were submitted. Some cases may be positive for multiple drugs.



**Crash/DUI Summary**

The Laboratory received 1070 vehicle crash cases in 2023. The mean ethanol concentration was 0.184 g/100mL. The mean THC concentration was 6.9 ng/mL. Drug testing was performed on 433 of these cases. Some cases may be positive for multiple drugs. Ethanol is not included in the CNS depressant drug group.



The combination of THC and alcohol poses a significant increase in the risk for impairment, even at low levels. Because these are the state’s two most prevalent drugs, we will continue to monitor trends involving the combination. In 2023 drug testing was not routinely administered for cases with a BAC above 0.100 g/100mL (traffic fatalities are excluded from this policy). This chart includes cases positive for THC only (not cases only positive for metabolites of THC).

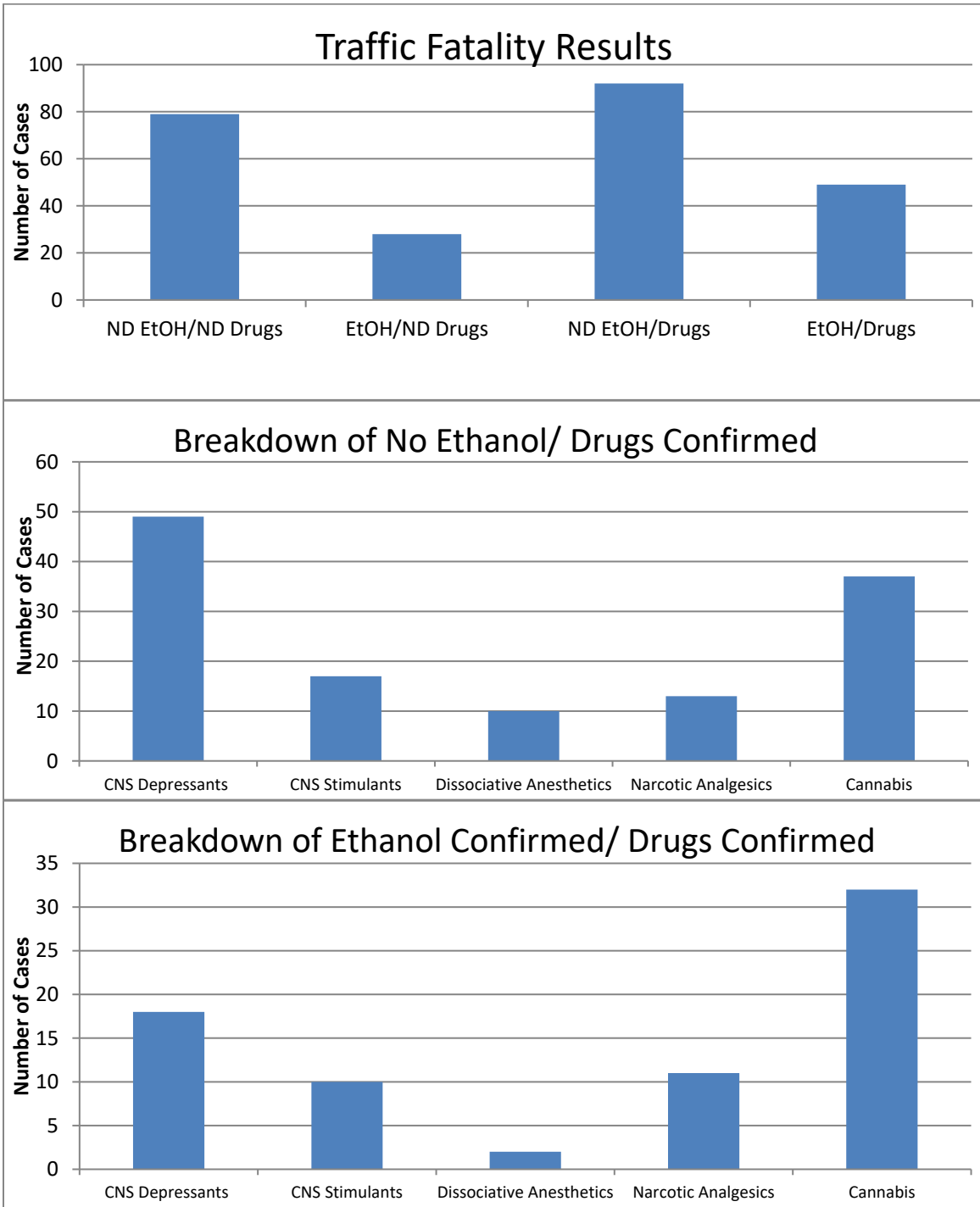
	Ethanol + THC ONLY (NO other drugs)		ALL Ethanol + THC (COULD include other drugs)	
2019	112	% Increase	173	% Increase
2020	121	8%	194	12%
2021	131	8%	210	8%
2022	137	5%	232	10%
2023	152	11%	231	0%

\*\* Numbers have been updated from previous years to include ethanol data from Intoxilyzer breath instruments.

**Traffic Fatalities Summary**

The Laboratory received 256 traffic fatality cases and performed toxicology testing on 249 cases. 69% of traffic fatalities tested were positive for ethanol, drugs, or both. There is no distinction between a driver and a passenger in the following data. The mean ethanol concentration was 0.172 g/100mL in cases when it was detected. When it was detected, the mean THC

concentration was 10 ng/mL. Some cases may be positive for multiple drugs. Ethanol is not included in the CNS depressant drug group below.

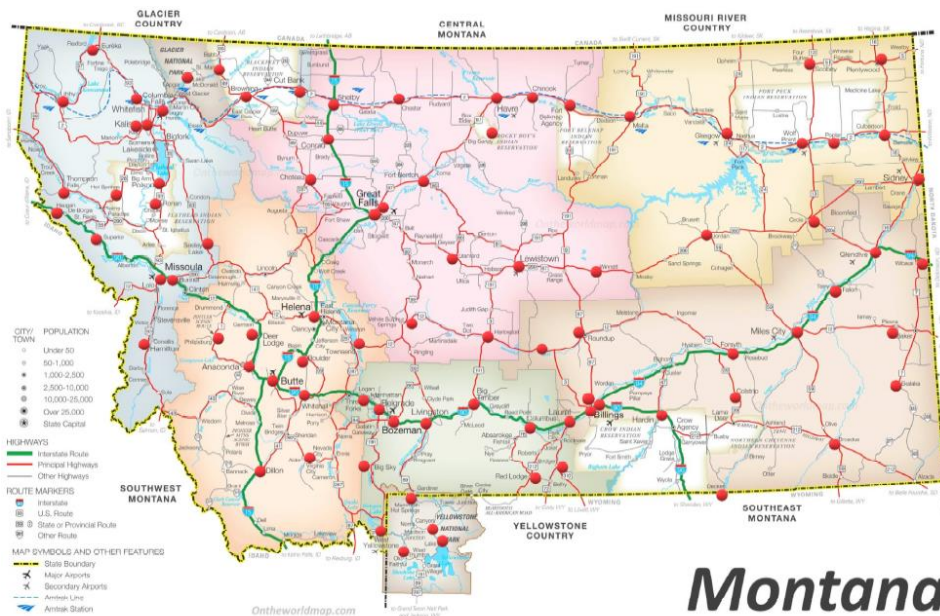


## Breath Alcohol Summary

The Intoxilyzer 9000 breath instruments have been in use since July 1<sup>st</sup>, 2022. There are currently about 90 instruments located around the state including in Glacier and Yellowstone National Parks. These instruments provide the ability to capture multiple subject results from a single breath sample. The breath alcohol section is also able to download test data from the instruments when they come into the lab for annual certification or any type of maintenance or repair. Even though the data can't be collected in real time, the section will still be able to provide much improved and useful stats from breath tests conducted throughout the state.

The Section has three main duties it performs regularly. The first is the maintenance, repair, and calibration of all breath analysis instruments. These instruments are given to local, county, state, and federal law enforcement agencies statewide. Montana Administrative Rules require the return of all instruments to the Laboratory at least once a year for annual certification, which returns the instruments to above factory standards using the most modern forensic techniques available.

The second duty of the Breath Alcohol Section involves the training and recertification of all law enforcement officers. As part of their Montana Law Enforcement Academy requirements, all officers must pass a comprehensive 40-hour course in DUI detection, arrest, and processing. Officers from all types of law enforcement agencies, including local, county, state, and federal attend these courses. The course includes basic alcohol pharmacodynamics and pharmacokinetics, breath analysis instrument infrared theory and operation, and standardized field sobriety testing (SFST). All students are exposed to live alcohol dosed individuals for 'real world' hands-on training and must pass a written and practical test. This course typically has over 50 students and is offered at least five times each year. After achieving this level of certification, all officers must get recertified annually to maintain their Breath Test Specialist certification status.



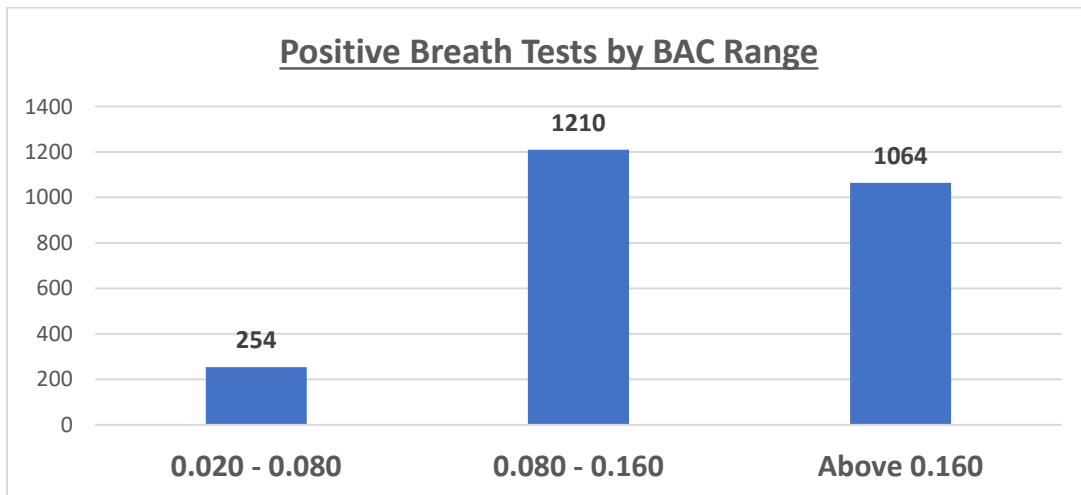
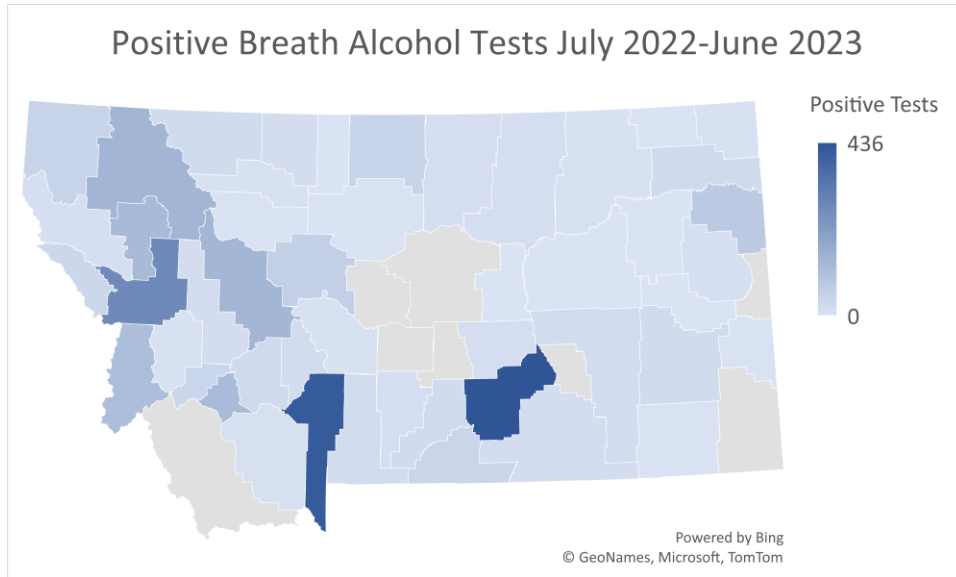
Red dots depict instrument locations.

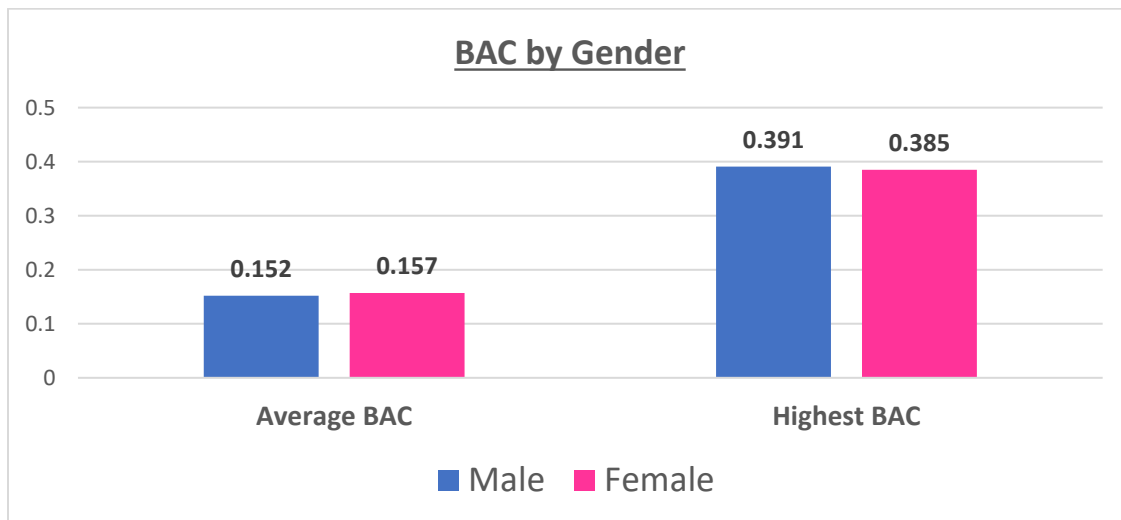
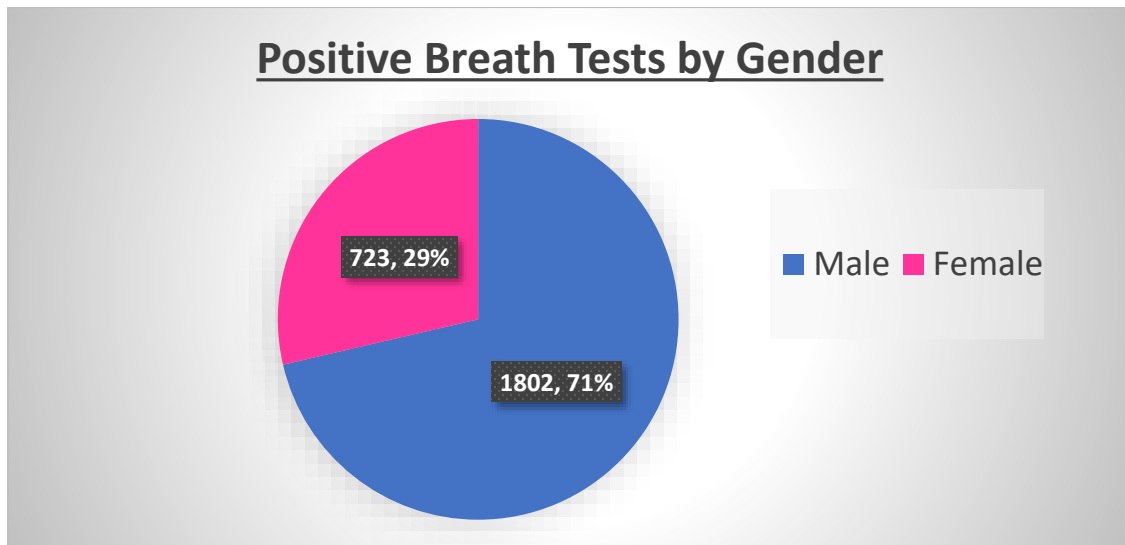
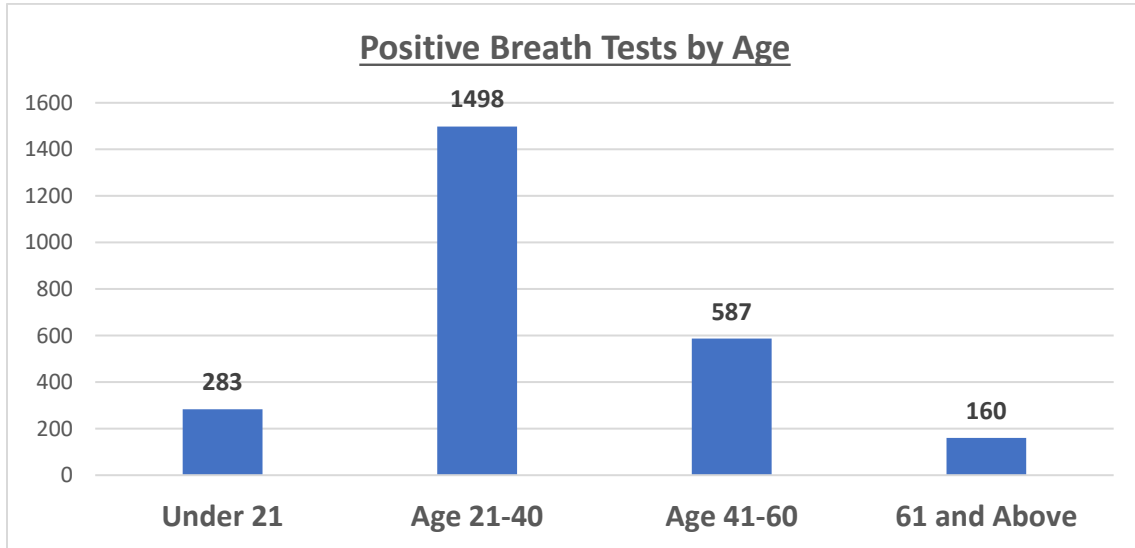


The Section’s third responsibility is to teach various groups across the state about breath alcohol testing, including prosecutors, defense attorneys, and judges. Additionally, Section personnel testify in court, for both the prosecution and the defense, in city, justice, district, and federal courts across Montana.

The following statistics are from BAC (breath alcohol concentration) subject test data collected 7/1/2022 through 7/1/2023:

- This is not a complete data set because during this timeframe training tests were administered, and some counties were not reported.
- Because instruments in the field do not have a network connection to the lab, subject test data reporting will not be in real time.
- Total positive tests 2528 (total tests run 4290, includes training tests)
- Average BAC = 0.153 g/210 L
- Highest BAC = 0.391 g/210 L
- 45% of all positive BA tests are from 3 counties: Yellowstone, Gallatin, Missoula
- Highest average BAC for an urban area: Flathead County 0.177 g/210 L





## Chemical Analysis Section

The Chemistry/Trace Unit analyzes controlled substances, suspected clandestine laboratory evidence, and gunshot residue casework. Forensic chemists analyze samples seized in cases involving dangerous drugs and clandestine labs, including the identification of previously unseen analogues now flooding the recreational drug market. The increase in fentanyl/fentanyl analogues and designer benzodiazepine cases have increased case complexity. Submissions to this section have more than doubled in the last 10 years.



## Staff

<b>Misty Icard</b> Chemistry Supervisor – Billings ABC Board Certified	<b>Bahne Kliez</b> Forensic Chemist – Missoula ABC Board Certified
<b>Josh Williams</b> Forensic Chemist – Billings ABC Board Certified	<b>Amber Trochta M.S.</b> Forensic Chemist – Missoula
<b>Brook Knapp M.S.</b> Forensic Chemist – Billings ABC Board Certified	<b>Travis Doria</b> Forensic Chemist – Missoula ABC Board Certified
<b>Tanna Brown</b> Forensic Chemist – Missoula ABC Board Certified	<b>Alyssa Stulz</b> Forensic Chemist – Missoula ABC Board Certified

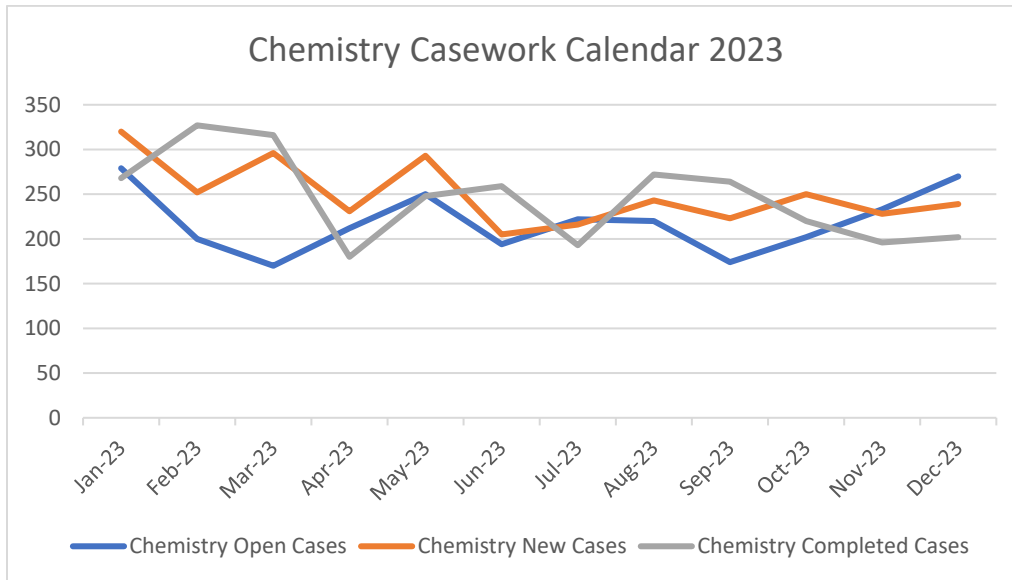
## Successes

1. Maintained a turnaround time of 60-90 days
2. Completed cross-training for two analysts in clan lab analysis
3. Continued to simplify and streamline section policies
4. Completed the validation on a new GC column
5. Implementation of changes to MCA 50-32, which are more inclusive of fentanyl related substances, substituted benzodiazepines, and cleared up THC wording
6. Implemented worksheets within the LIMS that reduces probability of transcription errors to the lab report.
7. Reformatted lab reports to make results easier to read for the customer

## Challenges

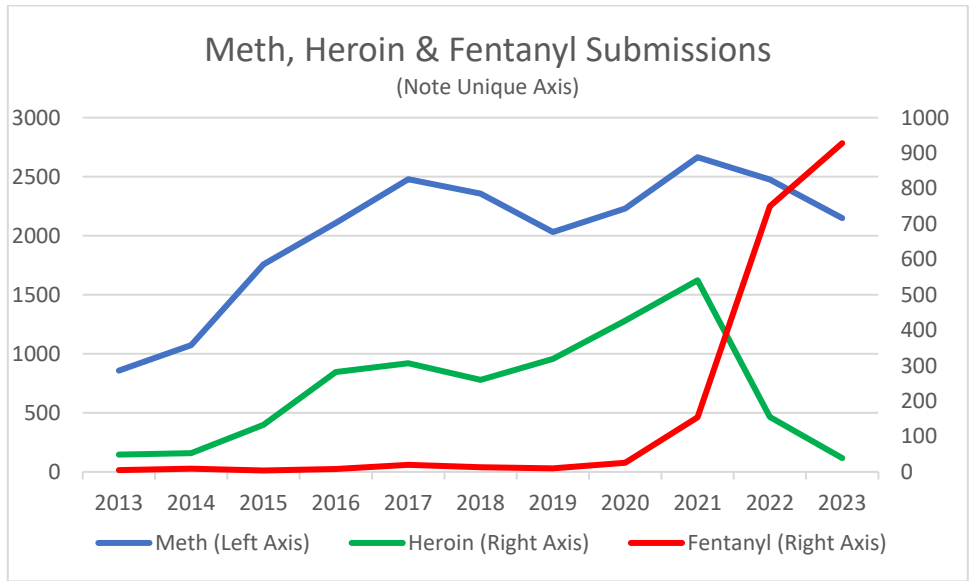
1. Maintaining current turn-around times in the midst of staff members on extended leave
2. 24% increase in fentanyl related submissions in 2023
3. Continually see new substances that are sometimes not easily identifiable with our current instrumentation/methods.
4. Changes to other sections in the MCA on cannabinoid products that conflict with MCA 50-32.
5. Increase in requests from law enforcement and county attorneys to test more items than what is required per our sampling plan.
6. In person testimony required instead of allowing video testimony which equates to more time out of the lab

## Casework Summary

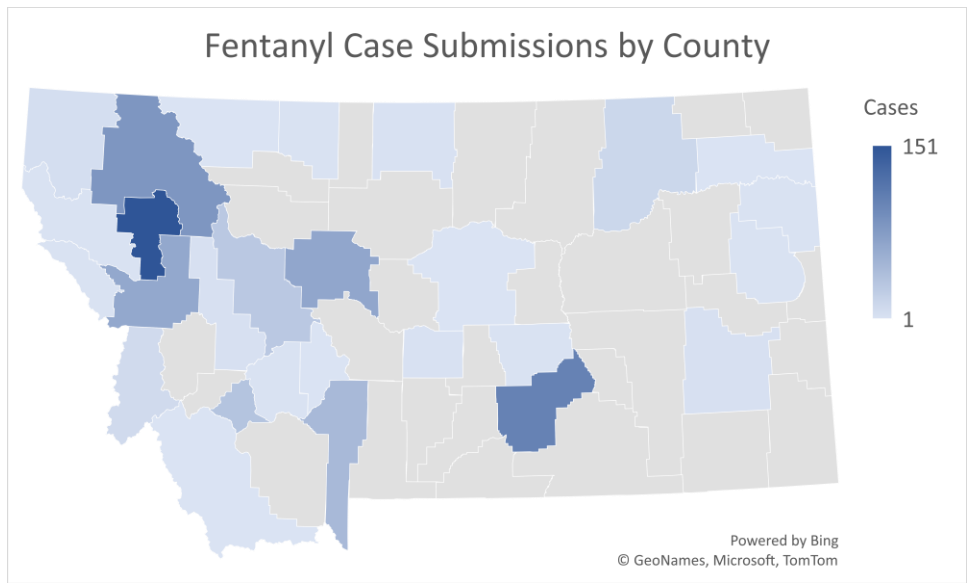


Year	Number of Cases Submitted Missoula/Billings/Outsourced	Samples Analyzed	Beginning Year Backlog (Cases)	Turnaround Time for Year (Days)
2013	1348	1819	627	162
2014	1482	1854	1240	224
2015	2221	2772	1051	120
2016	2024/565	3392	560	67
2017	2047/911	3947	366	31
2018	1434/1323/2	3721	370	175
2019	1096/1239/264	3132	1528	195
2020	1114/754/826	3578	1747	141
2021	2084/862	4087	332	24
2022	2138/754	4223	199	22
2023	2288/740/4	5834	231	20

The Chemistry Section has seen a drastic increase in the prevalence of fentanyl found in samples submitted for testing in the past 3 years. There has been an approximate 24% increase over the past year and an approximate **3600%** increase since 2020. The lab continues to take precautions to ensure the safety of our staff by making sure that there are additional staff present during testing or support staff are notified to monitor the chemistry staff by way of security cameras installed in the section. To date there have been no exposure incidents from fentanyl by staff. In 2023, the majority of fentanyl submissions were counterfeit M30 tablets.



Methamphetamine and Heroin submissions continued to decrease in 2023. Methamphetamine submissions saw ~15% decrease and heroin decreased to a level below 2013 numbers. Cocaine submissions have been on the rise for the last 2 years, with an increase of ~12% from 2022. Psilocin submissions are up ~44% from 2022.



## Latent Print Evidence Section

The Latent Print Evidence Section analyzes evidence for the presence of latent fingerprints. Staff then compare them to known prints when possible. The Lab utilizes both a regional and federal Automated Fingerprint Identification System (AFIS), databases for the search and registration of unidentified latent impressions and the retrieval of known fingerprints.



## Staff

<p><b>Kaitlin Delphy</b> Supervisor Latent Prints/Firearms/Evidence IAI Board Certified, ABC Certified</p>	<p><b>Stephanie Shappee</b> Forensic Scientist IAI Board Certified</p>
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## Successes

1. The Section has continued to keep up with casework with the average turnaround time being between 30 and 60 days.
2. Maintained casework during extended personal leave for one staff member and, outside of technical review, no casework needed to be outsourced during this period.
3. Able to accommodate expedited requests that provided significant investigative leads for law enforcement.
4. Obtained CJIN access which improves the process of retrieving known records and assisting with UDR identifications.
5. Assisted the ME’s office with approximately 25 positive identifications when identity of the decedent was unknown.

## Challenges

1. The discontinuation of a routinely used chemical led to supply chain issues and ultimately a change in formulations for reagents used in casework.
2. Identified a need for outreach/coordination within the lab to help identify cases/items of evidence best suited for latent print analysis.

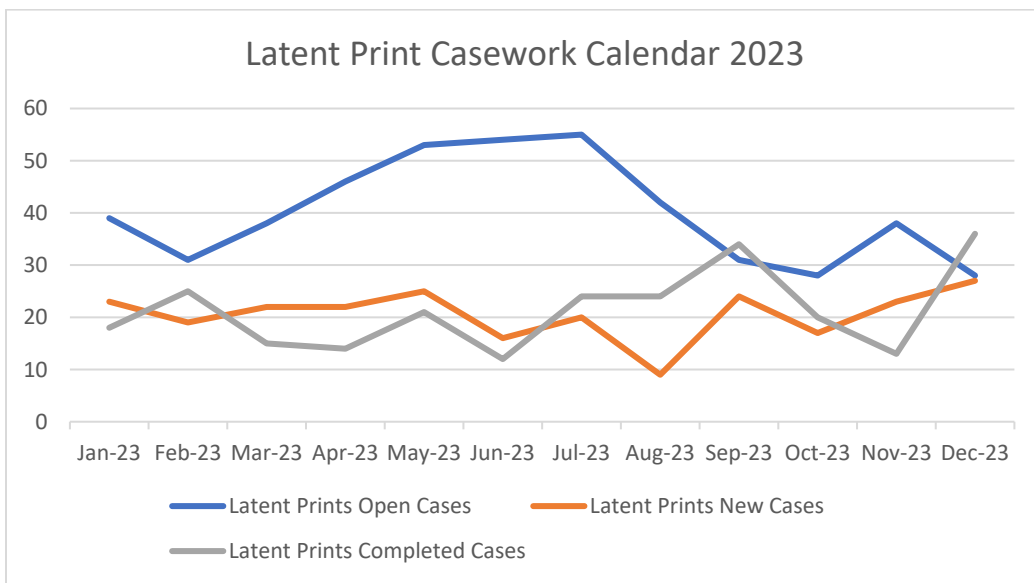
## Casework

The efforts of the latent print section over the past few years have led to more efficient management of casework. Future efforts are focused on outreach to user agencies, coordination with other sections in the laboratory to improve the flow of multi-section cases, procurement of improved imaging technology to replace aging equipment, and continued reductions in turnaround time. The latent print section recently completed cross training in evidence swabbing for preservation purposes.

Year	2023	2022	2021	2020	2019
Total cases submitted	247	248	181	240	164
Total cases completed	256	232	230 No outsourcing	188 184 cases completed in-house 4 cases outsourced	323 152 cases completed in-house 171 cases outsourced
Average TAT (days)	58**	32	24	68 (in house cases)	45 (in house cases)
90% of cases worked (days)	124	104	108	*307 (95%) (Due to clearing out historic cases)	*1,043 (95%) (Due to clearing out historic cases)

\*2019 and 2020 stats were based on a 95% calculation for days worked

\*\*Category was changed to Average instead of Median in 2023



## **Biology Section**

The Biology Section provides quality, accurate, and timely analysis of evidence for the presence of biological fluids and further characterization of those samples using state of the art DNA technologies. In addition, the Missoula laboratory administers the FBI CODIS program and processes all convicted offender database samples for the State. Lastly, the section staff testify at trials regarding analysis conclusions.

Jamie Bray-Tanner, Biology Supervisor
Megan Ashton, Technical Leader/State CODIS Administrator
Danielle Klemenko, DNA Analyst (in training)
Andrew Bishop, DNA Analyst
Jen Revis-Siegfried, DNA Analyst (part-time)
Steven Antonich, DNA Analyst
Haley Fallang, DNA Analyst
Lacey Van Grinsven, Serologist/Y Screening
Rachel Beddall, Serologist/Y Screening
Kate Kulgavyy, Serologist/Y Screening
Kendra Henning, DNA Databasing Analyst
Emily Tuck – DNA Analyst (in training)
Amy Howls – DNA Analyst (in training)



## **2023 Successes**

1. Implementation of bone and teeth extraction method
2. CODIS and Serology programs are completely paperless
3. Three casework analysts were trained and brought online
4. Filled DNA analyst vacancy in October 2023-training to be completed Fall 2024
5. Successful Internal DNA FBI Quality Assurance Standards annual assessment

## **Challenges**

1. Supervisor/Technical Lead departure in November 2023
2. DNA analyst departure in March 2023
3. The need for an increase in staff due to an increase in case submissions has resulted in a need for a greater laboratory footprint.

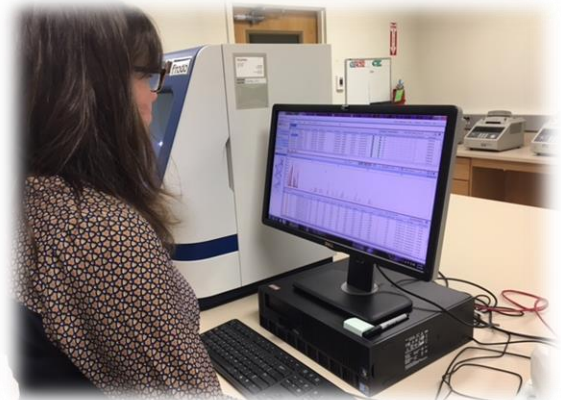
## **2024 Planning**

1. Training of newly hired DNA Analyst – Completion of training Winter 2024/ Spring 2025
2. New extraction robot validated and implemented
3. Implementation of STRmix probabilistic genotyping software for mixtures and statistics
4. Further implementation of paperless processes

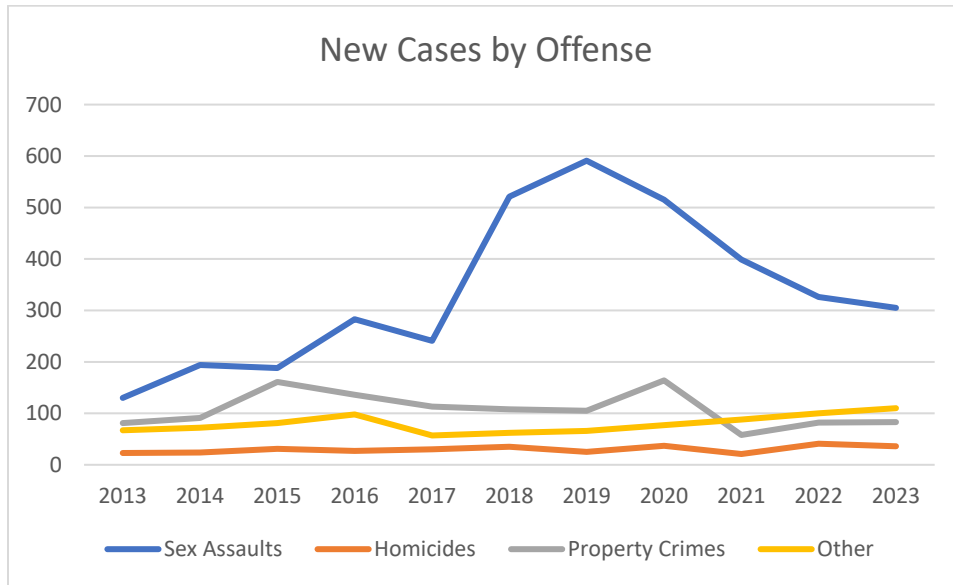


**Annual Case Submission**

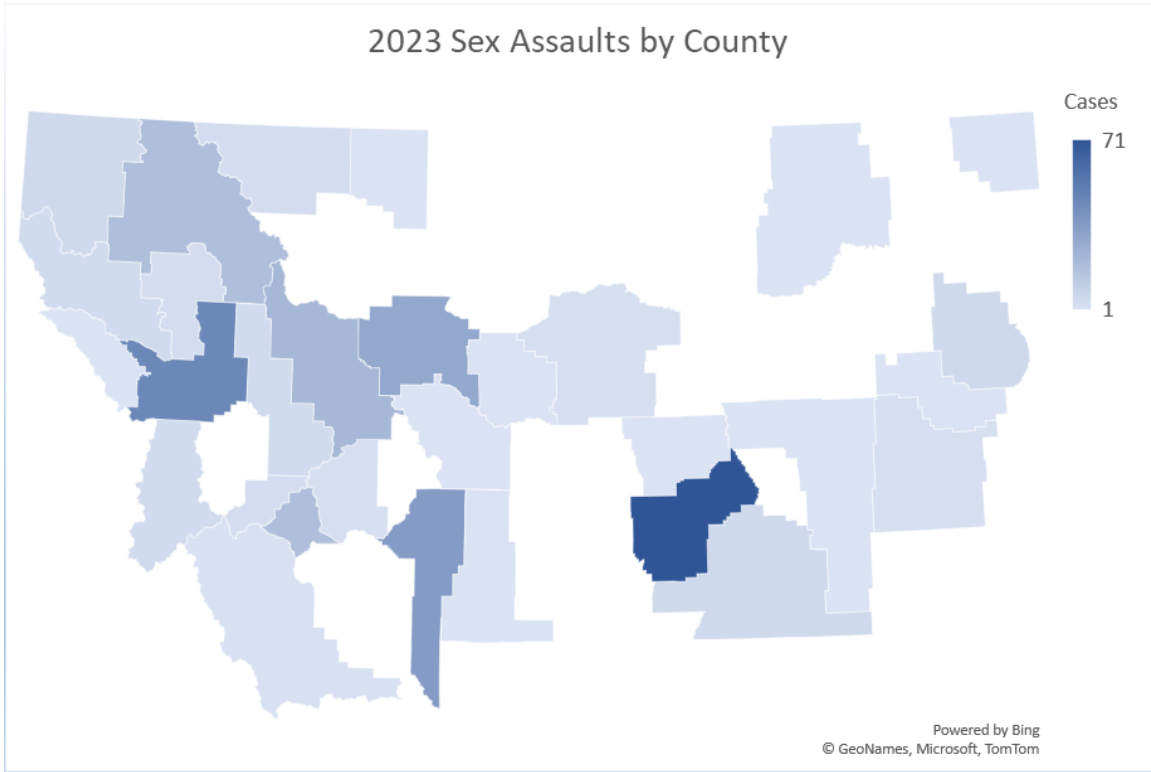
The DNA analysis process continues to be performed using a team approach. By using this approach, the section can be more efficient as compared to analysts processing individualized case batches. These improvements have resulted in a 58% reduction in cases awaiting DNA analysis equating to a decrease in time to deliver results to requesting agencies.



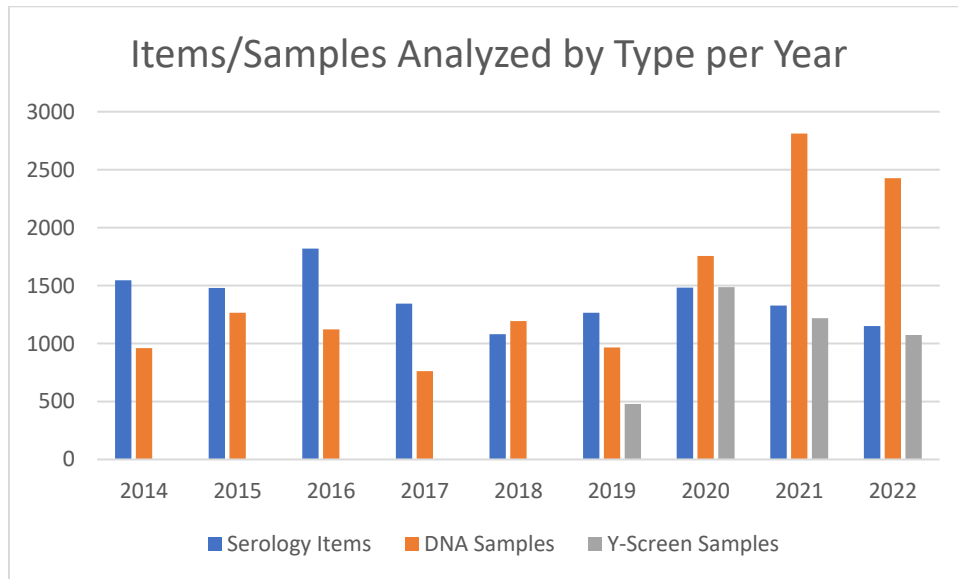
*Biology Supervisor Jamie Bray-Tanner works on DNA profile data at the State Crime Lab.*



Following an increase in sexual assault submissions from 2016 through 2018 resulting from the Sexual Assault Kit Initiative and passing of State Bill 52, sexual assault submissions have leveled off moving into 2023. Below is a map showing the sexual assault submissions by county.

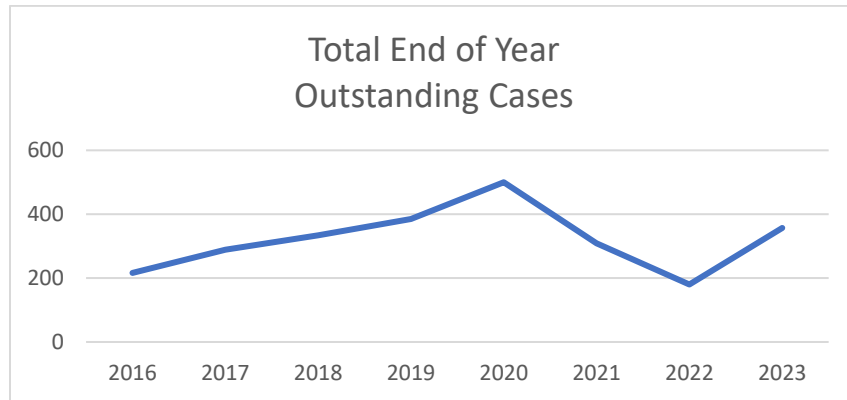


Most case submissions consist of multiple items or samples requiring analysis. This chart represents the volume of items and samples worked by type each year.

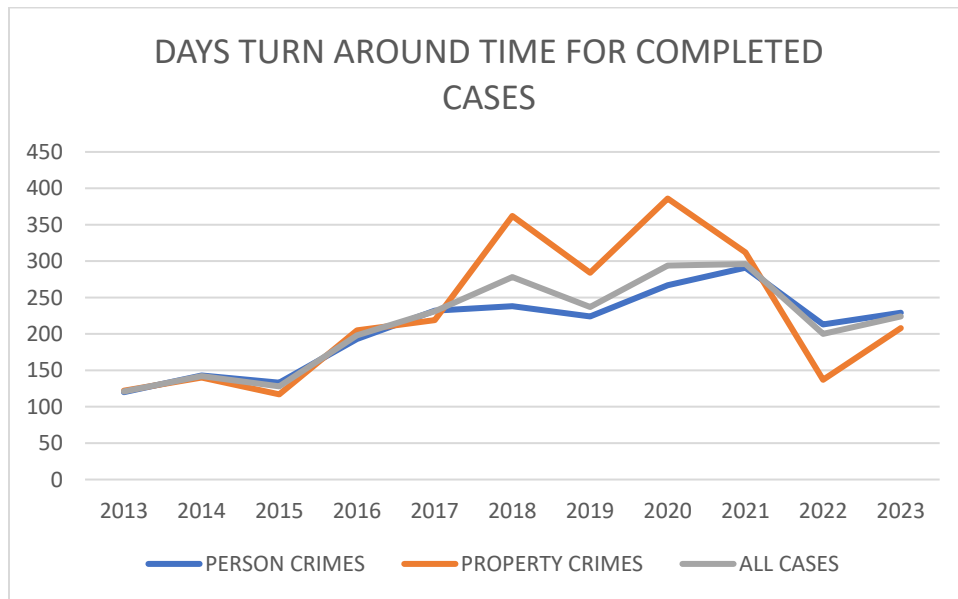


Processing of DNA samples has decreased over the past year but still has increased 38% as compared to 2020. This directly correlates with the decrease in backlogged DNA cases. Serology items and Y screening have continued to decrease as the initial effects of SB52 level off. Y screening of sexual assault kits was initiated in mid-2019.

### DNA Backlogged Cases



### Turnaround Times



As Biology cases are completed, the turn-around times posted reflect the total time the lab has had the request for Biology analysis. Over the course of the next year, the turn-around times are expected to decrease more sharply as the total number of open cases is reduced and the completion times decrease further.

### CODIS

The CODIS database allows forensic laboratories throughout the nation the ability to compare DNA profiles from one case to another and to known convicted offenders from each state. Annual Forensic Unknown profile entries continue to increase with a correlation of CODIS HITS. Each HIT is an investigative lead. Upon completion of DNA databasing cross-training, the CODIS lab now

has a full time DNA Databasing analyst to process the stream of Montana convicted offender samples that come into the lab monthly.

**CODIS Totals – Casework and SAKI**

	<b>2023</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Casework Forensic Unknowns	<b>91</b>	216	243	189	71	124	105
SAKI Only Forensic Unknowns	N/A	N/A	N/A	15	237	129	N/A
<b>Total Profiles Entered</b>	<b>91</b>	216	243	204	308	253	105
<b>CODIS HITS</b>	<b>87</b>	111	92	86	140	138	31

## **Firearm/Toolmark Section**

The Firearm/Toolmark Section examines firearms and ammunition from crime scene evidence. In addition, its staff examines toolmarks by request. They can determine whether a bullet was fired from a particular gun, and whether a particular tool was used at a crime scene. Within a certain range, they can estimate the distance between a gunshot victim and the gun.



## **Staff**

<p><b>Lynette Lançon</b> Forensic Scientist AFTE Certified</p>	<p><b>Doug Lançon</b> Forensic Scientist AFTE Certified</p>
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## **Successes**

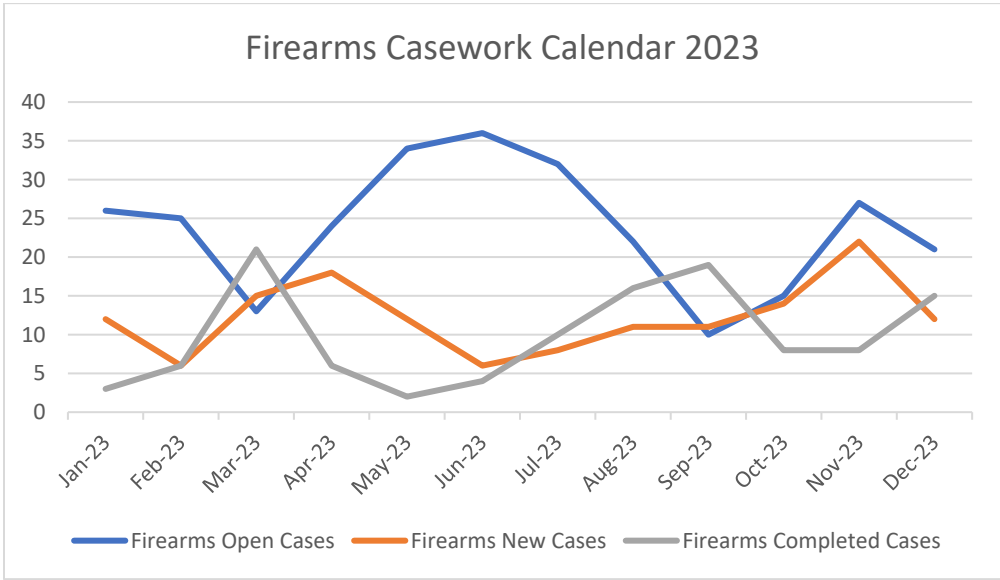
1. All staff are certified by the Association of Firearm and Tool Mark Examiners
2. The Bullet Recovery Water Tank was successfully retrofitted.
3. The Virtual Comparison Microscope was purchased, validated, and is being used in casework.
4. Staff have submitted a journal article for peer review which resulted in the completion of all 2023 outlined goals.
5. Able to accommodate expedited requests that provided significant investigative leads for law enforcement.

## **Challenges**

1. Increase in complex and interrelated cases.
2. More outreach is needed based on submissions and requests received.
3. There has been an increase in submissions where some evidence that would be eligible for firearm analysis is not submitted or has been submitted to another lab/agency.

## **2024 Planning**

1. Purchase and validation of shotshell casing tray for Virtual Comparison Microscope (VCM)
2. Purchase and validation of portable scanner which allows for scanning of damaged bullets and fragments.
3. Scanning of test fires for all firearms submitted to the laboratory.
4. Consider other potential research topics.



**Casework**

Year	2023	2022	2021	2020	2019
Total cases worked	118	137	88	90	65
Total Items Worked	1389	905	970	2112	597
Average TAT (Days in Firearms section)	50**	40	33	46	25
90% of cases worked (Days in Firearms section)	104	76	83	91	64

\*\*Category was changed to Average instead of Median in 2023

## **Quality Assurance**

The Quality Assurance Section maintains the Forensic Science Division's accreditation and continually improves its management system. Ensuring that the quality and safety management system is implemented and consistently adhered to is the responsibility of the quality assurance manager. This includes ensuring compliance with ANAB [ISO/IEC 17025 and AR 3125] and NAME accreditation requirements and the Forensic Science Division policies.



## **Staff**

**Stacey Wilson**

Quality Assurance Manager

## **Successes**

1. Accreditation and recertification for ANAB testing and calibration in 2023 were attained without any nonconformities.
2. Liquid files (DOJ Large & Secure File Transfer) option for sending documents for discovery requests has been beneficial.
3. Compliance Management System (AKA Ideagen/Qualtrax) continues to be an optimal software for managing policies/procedures; quality assurance documents and processes; testimony and proficiency review.
4. Website access to laboratory and medical examiner's office policies and procedures has streamlined answering questions and discovery requests.
5. Employees maintain laboratory safety, as evidenced by the low number of injury reports.

## **Challenges**

1. Medical Examiner's Office NAME accreditation re-certification toward end of 2024.
2. Compressing large files for discovery requests (7-zip sometimes challenging for recipient to access files).
3. Bloodborne pathogen exposure follow-up testing, finding practitioners that will work with workman's compensation claim.

## **Evidence Section**

The Evidence Section ensures evidence is accurately and efficiently transferred to maintain the integrity of all evidence submitted and to protect it from loss and cross contamination.

### **Staff**

<b>Vacant</b> Evidence Technician - Missoula
<b>Emily Tuck (transitioning to Biology)</b> Evidence Technician - Missoula
<b>Marina Contreras</b> Evidence Technician - Billings



## **Casework**

In 2023, the evidence technicians processed 8659 cases. Most of them have multiple pieces of evidence, some totaling over one hundred individual items. It is an essential and often overlooked role within the Division to document, log, and track the tens of thousands of unique pieces of evidence submitted each year.

## **Successes**

1. Discontinued the use of hard copy file folders for all sections except for Toxicology, moving closer to a paperless system.
2. Improved the system by which evidence is retrieved from and returned to the Main Evidence Vault by laboratory staff.
3. Assisted with the implementation of updated LIMS within the laboratory and quickly adapted.

## **Challenges**

1. Increase in fentanyl cases cause increased risk of evidence technicians as they perform the intake of evidence into the lab.
2. The section has experienced a high turnover rate in recent years.

## **2024 Planning**

1. Continue providing basic evidence intake/laboratory information at MLEA.
2. Increase outreach by providing additional training to user agencies.
3. Assist laboratory sections with implementing changes that improve efficiency and/or progress paperless systems.