

CFS ANNUAL REPORT 2024



THE CENTRE OF FORENSIC SCIENCES

Ontario's Centre of Forensic Sciences (CFS) is one of the most extensive forensic science facilities in North America. We conduct scientific investigations in cases involving injury or death and crimes against persons or property. The CFS is part of the Public Safety Division of Ontario's Ministry of the Solicitor General. CFS has five scientific disciplines supported by Quality Assurance, Laboratory Effectiveness, and Support Services.



CENTRE OF
FORENSIC SCIENCES



MESSAGE FROM THE CFS DIRECTOR

Strategic Highlights

In 2024, CFS focused on reviewing our organizational structure to ensure that we optimized how we worked within the Ontario Public Service. We also started exploring the future of frontline forensic analyses, focusing on our role in ensuring the highest quality forensic analyses are performed as fast as possible, even for new equipment that is designed for use “in the field” such as at crime scenes or at police evidence processing sites.



Operating Highlights

Operationally, CFS focused on working with our clients to better meet their needs. One example was how CFS worked with police services throughout Ontario to develop a groundbreaking hybrid, multi-site training program for the new Intoxilyzer 9000. Over 6X the number of officers were trained within the same time period using this new model; supporting a smooth transition to use of the Intoxilyzer 9000 throughout the province for use in alcohol impaired-driving investigations.

Looking Ahead

“CFS caseload evolved in 2024. For example, our increased capacity to accept items and cases for High Volume DNA analyses dramatically increased submissions on these cases. Over 60% of DNA profiles generated in these case types hit to convicted offender profiles, making this among the most useful information available to police investigations. CFS will continue to focus on identifying and providing time-sensitive information that advances investigations to our clients.”

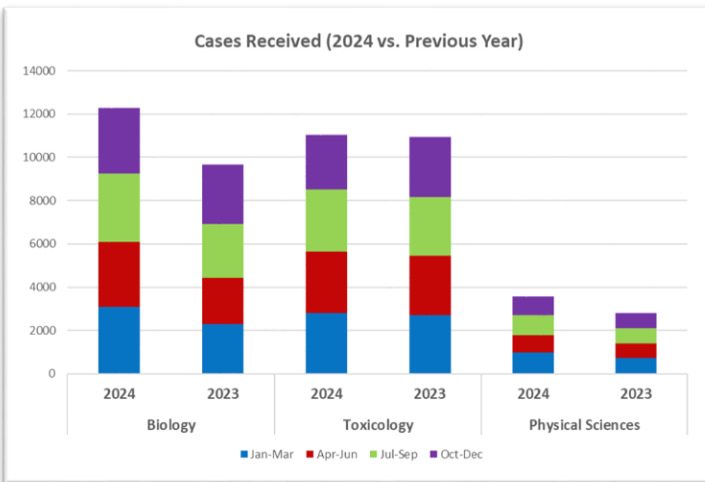
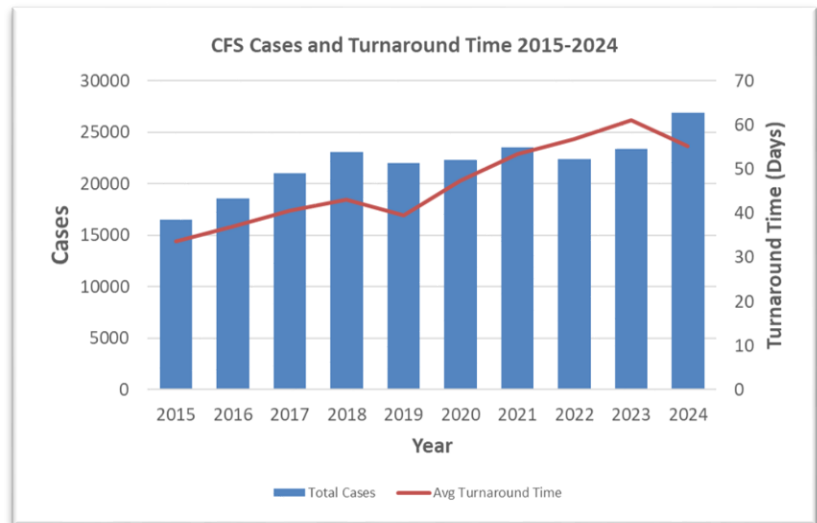
Amy Peaire

KEY STATISTICS

The following statistics alone cannot represent the contributions to public safety and impact that CFS staff are having on the judicial system in Ontario. Forensic evidence is used extensively in police and coroner's investigations and court cases in many murders, impaired driving, sexual assaults, and other crimes against persons and properties.

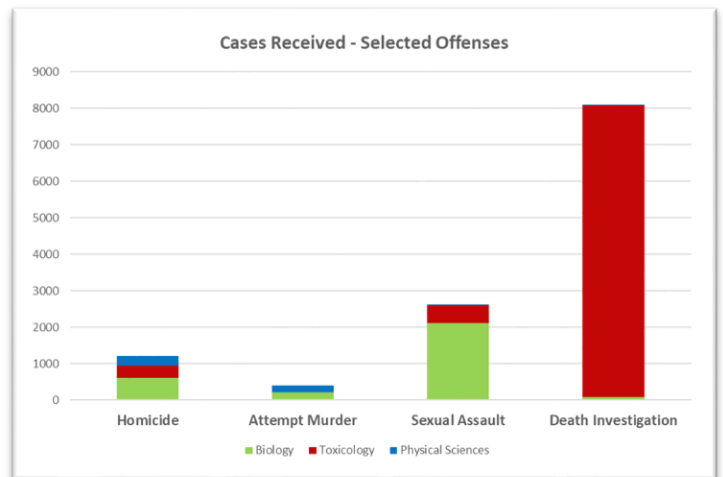
CFS Workload from 2015 to 2024

The CFS provides forensic services to all official investigative agencies in Ontario. Below shows the total number of case submissions and average time from item submission to report completion from 2015 through 2024.

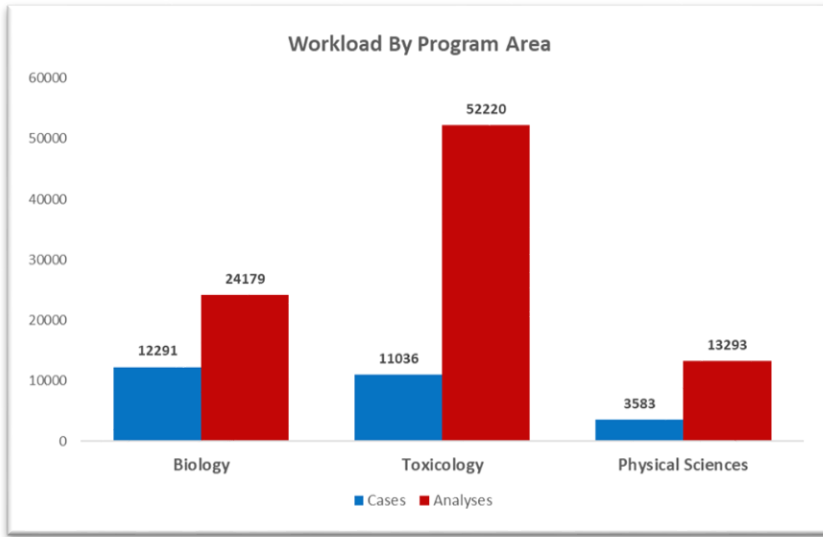


Total number of case submissions received in 2024 vs. 2023, stacked by quarter and separated by program area.

Number of submissions received for death investigations and three key offense types, stacked by program area.

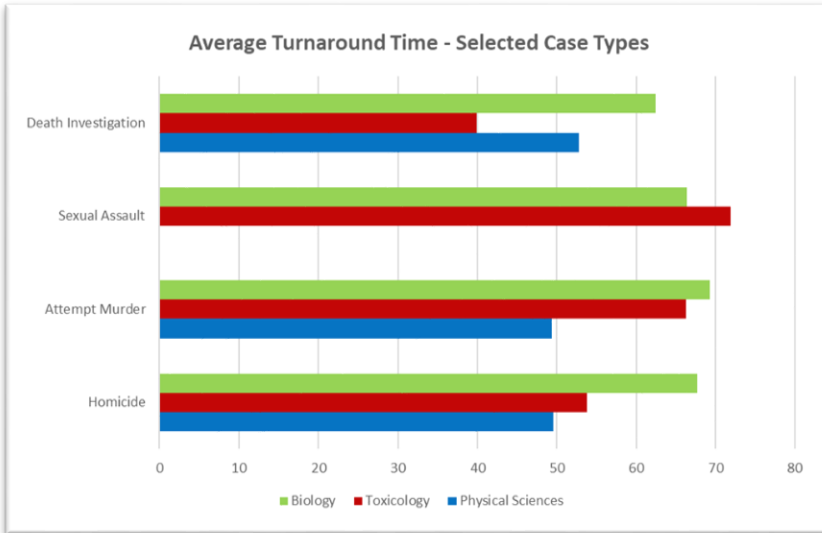
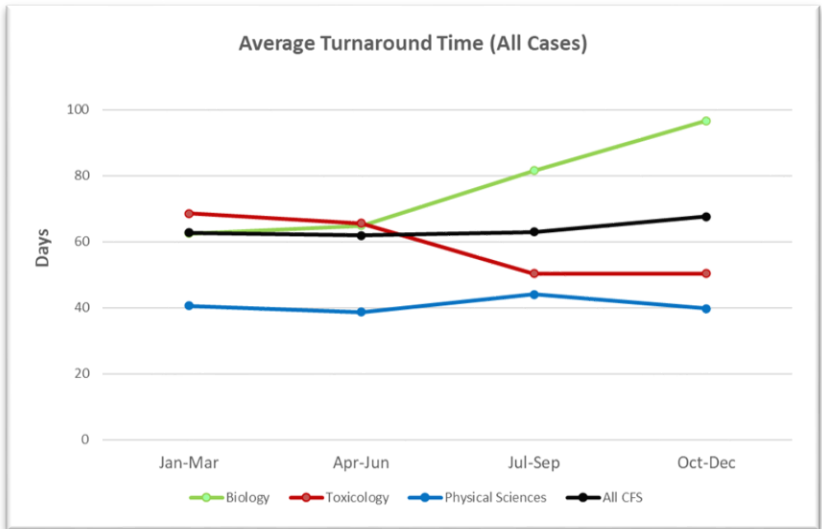


KEY STATISTICS



The total number of case submissions and analysis requests for each section in 2024. Note that multiple items may be analyzed under a single request.

The average time from item submission to report completion, presented over the four quarters of 2024 and separated by program area.



The average time from item submission to report completion for death investigations and three key offense types, separated by program area.

INNOVATION AND MODERNIZATION

New Technology:

- PSS-Firearms section began implementation of [RedLore](#) technology to track firearms in reference collection.
- As part of a multi-year collaborative research effort between the Biology Section and Dr. Aaron Wheeler (U of T - Professor and Canada Research Chair in Microfluidics) developed a digital microfluidic device that facilitates



automated, miniaturized sample pre-processing that separates DNA contained in sexual assault samples. This work was [published in the journal Advanced Science](#) and is ultimately intended to allow for rapid, on-scene processing of forensic samples collected at sexual assault and domestic violence treatment centres.

New Collaborations:

1. PSS-Chemistry (Supervisor: Hendrik Dorn) initiated a collaboration with Ontario Tech University (Student: Kayleen Simao) for the analysis and comparison of the bulk chemical composition on unburnt and burnt wire sparklers using XRD, FTIR, and SEM-EDS. The manuscript for this research is in preparation.
2. PSS-Chemistry established the Ontario Fire Martial /CFS Operational Manager Working Group in November 2024. This initiative, led by manager Dr. Marc Pelletier meets bimonthly, with a goal fostering an effective, collaborative, and responsive professional relationship between the OFM and the CFS in support of public safety in Ontario.
3. Toxicology (Emily Medeiros) and LSS-Toxicology (Celeste Owen) partnered with University of California - Davis student Kitty Yu to investigate illicit drug concentrations in patients treated for substance use disorder. This work culminated in a Masters of Science thesis for Kitty and a manuscript is currently in progress.
4. Toxicology (Patricia Solbeck) and LSS-Toxicology (Aileen Lu & Karlie Marshall) collaborated with Dr. Karen Woodall and student Julia Migos to review fentanyl related causes of death in Ontario Canada. This was presented as a poster at CSFS (2025) and a manuscript is currently in progress.

Publications:

Scientists at the CFS were authors and coauthors on the following publications:

Elsayed M, Bodo L, Gaoiran C, Keuhnelian P, Dosajh A, Luk V, Schwandt M, French JL, **Ghosh A, Erickson B, Charlesworth AG, Millman J**, Wheeler AR. Toward Analysis at the Point of Need: A Digital Microfluidic Approach to Processing Multi-Source Sexual Assault Samples. *Advanced Science*. (2024) Nov;11(41):2405712.

Gegar MS, Cisneros GA, **Cox J, Richard M**, Currie KA. Saliva-derived secondary DNA transfer on fabric: The impact of varying conditions. *Forensic Sci Int Genet*. (2024) Sep;72:103092.

Currie Z, Lamparter C, Gosselin S, Watterson J. A two-year review of cocaine findings in impaired driving investigations in Ontario, Canada. *J Anal Toxicol*. (2024) Jul 13;48(6):447-455.

Adamo A, **Marshall K**, Woodall KL. Fentanyl-related deaths in Ontario, Canada: toxicological findings and circumstances of death in 4395 cases (2020-22). *J Anal Toxicol*. (2024) Oct 28;48(8):598-605.

Mocanu C, Woodall KL, Solbeck P. Prevalence and blood concentrations of benzodiazepines and opioids in opioid-positive death investigations in Ontario, Canada, from 2017 to 2021. *J Forensic Sci*. (2024) Mar;69(2):607-617.

Top Priorities for 2025:

- Introduction of internal ethics review process for all research activities
- Review and revision of research-related MOUs and agreements to reduce administrative burden and streamline partnership process.
- Review section research priorities with a goal of reinvigorating the creation of new research projects and collaborations across sections.



Email General Queries: CFS.Feedback@ontario.ca
Website: [Centre of Forensic Sciences](#)
LinkedIn: [LinkedIn](#)



Toronto Office

Ph: 647-329-1320



Sault Ste. Marie Office

Ph: 705-945-6550



CENTRE OF
FORENSIC SCIENCES

