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TOXTALK®

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2026 SOFT Leadership

SOFT 2026 BOARD OF DIRECTORS

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Secretary:
Dayong Lee, Ph.D., F-ABFT
Treasurer:
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Immediate Past President:
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Director:
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Erin Karschner, Ph.D., F-ABFT
Director:
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Dani Mata, M.S.F.S, D-ABFT-FT
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Kim Samano, Ph.D., ABFT-FD
Counselor:
Dan Anderson, M.S., D-ABFT-FT, ABC-GKE
Counselor:
Michelle Peace, Ph.D

2026 Committee Chairs and Vice Chairs

Applied Analytical Toxicology Committee:
Wayne Lewallen & Gregory Janis
Awards Committee:
Rusty Lewis & Aria McCall
Continuing Education Committee:
Kei Osawa & Sarah Douglas
Culture, Values and Diversity Committee:
Frances Scott & Danielle Boden
Drug Facilitated Crimes Committee:
Celeste Wareing & Marcela Velasco
Drugs & Driving Committee:
Sara Dempsey & Rebecca Hartman
Ethics Committee:
Michele Crosby
Finance Committee:
Robert Johnson
Meeting Resource Committee:
Erin Spargo & Denice Teem
Membership Committee:
Dayong Lee
Mentoring Committee:
Kim Samano & Marta Concheiro-Guisan
Nominating Committee:
Chris Heartsill
NPS Committee:
Alex Krotulski & Elisa Shoff
Oral Fluid Committee:
Mandi Mohr & Greg Sarris
Policies & Procedures Committee:
Dayong Lee
Postmortem Toxicology Committee:
Samantha Tolliver & Luke Rodda
Publications Committee:
Heather Barkholtz & Austin Ciesielski
SOFTopics:
Vanessa Meneses, Alanna deKorompay & Brennon Foster
Toxicology Resource Committee:
Joey Jones & Scott Larson
Young Forensic Toxicologists Committee:
Whitney Brown & Erika Phung

President's Message



Jeri Ropero-Miller, PhD, F-ABFT

Greetings all,

Nine months ago, I wrote my first ToxTalk President's Message, and today I write my last. It has been an honor to serve as SOFT's President, and this year has left me full of gratitude. Thank you for trusting me to lead our Society through another memorable year.

In February, I shared five key updates for SOFT's 2026. As the year closes, I'm pleased to report on four of them: volunteer service and committee appointments, the presidential ad hoc committees, the Committee Handbook updates, and the 2026 SOFT-TIAFT Joint Meeting (there is little to say about Federal Investments).

#1 – Volunteer Service and Committee Appointments

Please join us for the Committee Activity Update Meeting on December 2, 2026. Sign up on the SOFT website to see this year's accomplishments, hear what's planned for 2027, and meet our incoming Chairs and Vice-Chairs. Applications for committee membership are open, and special task groups and affiliate positions may also arise within some committees, so stay engaged and watch for opportunities. I also want to celebrate the great success of the 2026 SOFT Special Issue of *JAT*, led by **Teresa Gray** and the Publications Committee and released online in August, ahead of the Joint SOFT-TIAFT Meeting. My heartfelt thanks to the hundreds of volunteers serving on SOFT's 20+ committees.

#2 – Presidential Ad Hoc Committees

The Business and Operations Strategy and Community Survey Ad Hoc Committees have made more progress than I can capture here. Detailed updates on both appear elsewhere in this ToxTalk issue, and I encourage you to read them.

#3 – SOFT Committee Handbook

Secretary **Dayong Lee**, with **Beth Olson** and **Abby Russo**, led the completion of our Committee Handbook updates. Working closely with each committee, they harmonized and accurately captured its Mission and Purpose, Composition, Member Roles and Responsibilities, Terms and Appointment Process, Annual Deliverables, and other key information. These handbooks will support leadership transitions and a consistent volunteer experience, and because they matter so much, SOFT will update them annually.

#4 – The 2026 SOFT-TIAFT Joint Meeting

The **SOFT-TIAFT 2026 Joint Meeting** welcomed 1,342 attendees from more than 60 countries to the Hilton Chicago, September 19–24, for concurrent sessions, workshops, expert panels, and networking, ending with the "Feathers and Fedoras" Presidents' Banquet & Gala. Every moment was full of science, friendship, and fun, and it did not disappoint! Attendance was our largest ever, a reflection of the tremendous effort behind it. Heartfelt thanks to Hosts **Andre Sukta** and **Luke Rodda**, the Planning Committee, the SOFT Office (Beth and Abby), and our exhibitors and sponsors.

Thank you for the privilege of serving as your President. SOFT is strong because of its dedicated members, and I am grateful for everything you do. I am delighted to hand the leadership of SOFT to incoming President **Madeleine Swortwood**, and I wish her and the Board every success in 2027. I hope to see you at the December 2 Committee Activity Update, and I encourage you to get involved in a committee in the year ahead.



SOFT Community Update



2025 Community Survey: Results and Next Steps

In September 2025, SOFT conducted a community survey to better understand the needs, experiences, and priorities of our members and the broader forensic toxicology community. The survey was developed and administered by Delta Think, the consulting firm that also conducted SOFT's 2019 community survey.

The survey was distributed to 3,480 individuals and received 496 responses, including 407 from SOFT members. Delta Think presented its findings to the SOFT Board of Directors in October 2025.

In 2026, SOFT President Jeri Ropero-Miller established two initiatives focused on the organization's future: the Business and Operations Strategy Ad Hoc Committee, charged with developing a strategic plan, and the Community Survey Ad Hoc Committee, charged with further evaluating the survey findings. The survey was among the topics considered during the strategic planning committee's strengths, weaknesses, opportunities, and threats (SWOT) discussions, while the Community Survey Committee is undertaking a more detailed examination of the data.

The Community Survey Ad Hoc Committee, consisting of Jeri Ropero-Miller, Erin Karschner, Michelle Peace, and Nathalie Desrosiers, began its work in August, with Nathalie joining in September. The committee continues to analyze the survey results, particularly the open-ended responses, to identify recurring themes, concerns, and suggestions.

While this work continues, we believe it is important to make Delta Think's findings available to our membership. The complete Delta Think report is available for members to review. Visit the Member Landing Page of the SOFT website, and click on "2025 Community Survey".

The committee and Board of Directors will continue reviewing the data and open-ended feedback to identify common themes and opportunities for improvement. SOFT will share relevant findings and updates as they inform organizational priorities, decisions, and future initiatives, including the ongoing strategic planning efforts.

Thank you to everyone who participated in the survey. Your feedback is invaluable in helping SOFT continue to evolve and serve the forensic toxicology community.

SOFT Community Update

Planning for SOFT's Future: 2027–2029 Strategic Plan

As SOFT continues to grow and evolve, it is important that we take a thoughtful, proactive approach to ensuring the organization's long-term success. Our programs, services, and activities have expanded considerably over the years, and with that growth comes an increasing need to evaluate how we operate, allocate resources, and plan for the future.

In February 2026, SOFT President Jeri Ropero-Miller established the Business and Operations Strategy Ad Hoc Committee to undertake a comprehensive review of SOFT's organizational priorities and develop a strategic plan to guide our work over the next three years.

Chaired by Laurel Farrell, with Tate Yeatman serving as Vice Chair, the committee includes Roper-Miller, Jennifer Colby, Dani Mata, Erin Spargo, Robert Johnson, Madeleine Swortwood, and Executive Director Beth Olson.

The committee began its work by reviewing SOFT's organizational structure, existing programs, operations, and historical strategic planning efforts. Through a strengths, weaknesses, opportunities, and threats (SWOT) analysis, the committee identified areas where SOFT is performing well, opportunities for improvement, and challenges that may affect our long-term sustainability.

This process led to the development of the proposed 2027–2029 SOFT Business and Operational Strategy, organized around three primary focus areas.

1. Continuous Focus on SOFT's Mission

Our first priority is ensuring that SOFT's programs, initiatives, and decisions remain aligned with our mission and provide meaningful value to our membership.

The plan calls for developing formal processes to evaluate both new initiatives and existing programs. These evaluations will consider member value, financial and operational impacts, and the resources needed for successful implementation.

This focus area also includes a review of SOFT's governance and leadership structure, including Board composition, nominations, and succession processes, to support effective leadership and organizational continuity.

2. Operational Efficiency

As SOFT has grown, so have the responsibilities associated with managing the organization. Our second focus area addresses the need to strengthen operations, improve efficiency, and ensure our resources are used effectively.

Priorities include improving Board operations and decision-making, documenting administrative processes, identifying opportunities for automation, and evaluating how responsibilities are distributed among staff, volunteers, and outside service providers.

The plan also calls for developing succession and staffing strategies for critical Annual Meeting responsibilities to ensure continuity as volunteers and organizational needs change.

3. Financial Stability

Our third focus area is ensuring that SOFT remains financially strong and sustainable in the years ahead.

While SOFT is currently in a healthy financial position, rising costs, changing sponsorship opportunities, and increasing demands on organizational resources make long-term planning essential.

The proposed plan includes developing a rolling three-year financial planning model aligned with SOFT's strategic priorities. It also calls for evaluating opportunities to diversify revenue and funding sources, including educational programming, partnerships, grants, fundraising, and sponsorships.

Implementation and Accountability

The strategic plan is intended to be a living document rather than a one-time exercise. It establishes measurable goals, identifies responsibilities, and provides timelines for implementation.

Under the proposed framework, the Board of Directors will oversee strategic priorities and decision-making, while the Executive Director will be responsible for operational execution. The plan will be reviewed annually, with adjustments made as organizational needs and circumstances evolve.

An important component of this process is ongoing communication with our membership. We intend to provide updates on progress, accomplishments, and evolving priorities as this work moves forward.

Looking Ahead

SOFT's greatest strengths have always been its dedicated members, committed volunteers, and shared dedication to advancing forensic toxicology. This strategic planning effort is about building on those strengths while ensuring that our organization has the structure, resources, and processes needed to thrive in the future.

Instersted in Serving on a SOFT Committee?

Apply by November 25th!

We're excited to invite you to apply for open positions on our SOFT committees! Serving on a committee is a fantastic way to get involved, connect with fellow members, and contribute to the future of SOFT.

There are several committee openings for three-year terms starting January 1, 2027, and we encourage members from all categories to apply (unless noted otherwise). This is a great opportunity to bring your unique perspectives and expertise to the table.

You can apply for up to three committees, but to ensure diverse participation, members may only be selected to serve on one committee. If you already serve on a SOFT committee and your term extends into 2027, please do not apply.

For more information on the committee member selection process, please click here.

If you applied previously and were not selected, we encourage you to apply again. Each year there are more applicants than available committee positions.

Don't miss out! Please submit your application by Wednesday, November 25. We can't wait to see the contributions you'll bring to SOFT in 2027!



Annual Meeting Recap



Now that we are all back home, adjusted to our time zones, and hopefully caught up on some much-needed sleep, we want to take a moment to reflect on what an incredible week we shared in Chicago. The 2026 SOFT-TIAFT Joint Annual Meeting was filled with energy, innovation, collaboration, and plenty of fun. We were thrilled to welcome colleagues from around the globe to the Midwest and to share a little Midwestern hospitality along the way.

The 2026 SOFT-TIAFT Joint Annual Meeting welcomed 1,342 registrants, making it the largest forensic toxicology meeting ever held. This remarkable event was planned by a committee of 28 dedicated volunteers and supported on-site by 70 additional volunteers who helped ensure everything ran smoothly. A special thank you goes to our moderators, who kept the scientific sessions on schedule, no small feat with concurrent sessions running throughout the week.

The scientific program featured 462 abstracts, including 192 standard oral presentations, 32 lightning oral presentations delivered across 20 oral sessions, and 238 posters presented in three poster sessions. The breadth and diversity of topics showcased the unique value of a joint meeting. The opportunity to learn from such a wide range of perspectives was both eye-opening and inspiring. The enthusiasm, expertise, and dedication demonstrated by every presenter made it impossible to see everything, but memorable discoveries awaited in every session.

Chicago certainly delivered as a host city. While the rain and wind early in the week gave attendees an immediate opportunity to put their conference windbreakers to use, the sunshine soon arrived and allowed the city to truly shine. We hope you



enjoyed our off-site event at the Field Museum, where attendees had the opportunity to explore one of Chicago's most iconic attractions and get up close with SUE and Máximo. We were also excited to showcase the city through our excursion program, a first-time event for SOFT. From architectural tours to sporting events, the excursions provided memorable experiences, including one attendee's unforgettable catch of a foul ball at a Cubs game. What a perfect souvenir to bring home!

Beyond the scientific sessions, the meeting featured 24 workshops, the Young Forensic Toxicologists/Young Scientists Symposium, a plenary presentation, and the Elmer Gordon Forum. Attendees also enjoyed a variety of social events, including the Opening Ceremony, Welcome Reception, Karla Moore Memorial Fun Run/Walk, President's Banquet, Closing Ceremony, and Closing Reception. These events provided valuable opportunities to reconnect with colleagues, establish new collaborations, and strengthen the global forensic toxicology community.

We would also like to extend our sincere gratitude to our sponsors and exhibitors. The meeting was supported by 18 sponsors across five sponsorship tiers and 67 exhibitors. Their generous contributions helped make many aspects of the meeting possible, including food and beverage breaks, receptions, and the desserts and refreshments enjoyed throughout the week.

A heartfelt thank you goes to all planning committee members and volunteers for their countless hours of work behind the scenes. Your dedication, professionalism, and commitment made this meeting the success that it was. We would also like to recognize the SOFT Office for serving as the backbone of this effort. Special thanks to Abby Russo, who successfully managed her first annual meeting as a new staff member, as well as Beth Olson and her family, whose support and tireless efforts behind the scenes contributed immeasurably to the meeting's success.

Finally, to everyone who attended, presented, volunteered, exhibited, sponsored, and contributed in any way, thank you for making the 2026 SOFT-TIAFT Joint Annual Meeting such a memorable experience. The success of this meeting belongs to all of you.

As we return to our regular annual meeting format for the next few years, we look back fondly on this extraordinary joint gathering and the connections it strengthened across our profession. Thank you for being part of it. We look forward to seeing you again soon.

Andre Sukta
Luke Rodda



SOFT 2026 Buisness Meeting

The SOFT Business Meeting takes places during the annual meeting. Minutes are taken by the acting secretary and shared with the general membership, so that those who were unable to attend may stay informed. To access the full meeting minutes click here, or scroll to the bottom of the page.

Society of Forensic Toxicologists, Inc.
Business Meeting Agenda
2:00 pm Thursday, September 24, 2026

Call to Order by President Ropero-Miller at 2:00 PM Central. Jeri Ropero-Miller

A quorum was established and reported to President Ropero-Miller.

Approval of Agenda
Jeri Ropero-Miller

The agenda was provided to the membership. A motion to approve was made by Marilyn Huestis. There was no discussion, and the agenda was APPROVED by all.

Approval of 2025 Annual Business Meeting Minutes Jeri Ropero-Miller

The 2025 Annual Business Meeting Minutes were published in ToxTalk, Volume 49, Issue 4. A motion to approve was made by Prentiss Jones. There was no discussion, and the minutes were APPROVED by all.

President's Report
Jeri Ropero-Miller

President Ropero-Miller reflected on her first SOFT meeting in 1996 and on serving as the Society's 52nd elected President. She thanked the membership and volunteers and described SOFT as an organization that has had a lasting professional and personal impact throughout her career.

She reported that the Board of Directors continued to meet monthly and that the May midyear meeting addressed the draft strategic plan, membership, committee operations, awards, and other priorities. SOFT also continued harmonizing committee handbooks and revising policies and procedures. The Business and Operations Strategy

Ad Hoc Committee evaluated SOFT's current position and long-term sustainability, using community survey feedback to inform a SWOT analysis.

President Ropero-Miller reported that a new three-year strategic plan had been completed and would move into implementation. The planning process identified 22 new initiatives launched during 2025-2026. She emphasized the need to focus SOFT's time and resources carefully so that the Society's activities remain sustainable and continue to provide meaningful value to members. The Community Survey Ad Hoc Committee continued organizing and reviewing the hundreds of open comments received from members and other respondents, with findings expected to be reported to the membership by the end of 2026.

President Ropero-Miller also reported on a Code of Conduct matter involving a felony conviction that fell within the scope of the Code, including conduct inside and outside SOFT activities. Following review of the complaint, investigative findings, and court records, the Accountability Officer and Ethics Committee recommended permanent expulsion. The member was notified and given an opportunity to submit written information; no additional information was submitted. The Executive Committee unanimously upheld permanent exclusion from SOFT membership and participation in SOFT activities. President Ropero-Miller encouraged members to review the Code of Conduct and its reporting procedures.

She closed by noting that three months remained in her presidential term and that important work would continue through the end of the year. She thanked the membership for its trust, support, and continued commitment to SOFT...

Click here to continue reading the SOFT Buisness Meeting minutes.

SOFT Heustis and Smith Travel Award Recap

Award Recipients' Report

The Huestis and Smith Travel Award was established by Dr. Marilyn A. Huestis and Dr. Michael L. Smith, in an effort to support professional development, international collaboration, and the exchange of ideas among forensic toxicologists. After attending the annual meeting, recipients of the travel award are tasked with sharing their experience with the rest of the community.

Elizabeth Pobee

Excerpt: "One of the greatest benefits of attending SOFT/TIAFT was the opportunity to broaden my understanding of current developments in forensic toxicology beyond my immediate research area. I attended scientific sessions covering different aspects of analytical and forensic toxicology and was able to see how researchers approach emerging challenges, new analytical technologies and toxicological interpretation. The workshop component was especially useful for developing my practical knowledge and for understanding how current methods and concepts are applied in forensic toxicology laboratories. The international nature of the meeting also allowed me to compare approaches from different laboratories and countries."

See what else Elizabeth had to say about SOFT -TIAFT 2026 here!



Brianna Stang

Excerpt: "This conference made me realize that, despite the geographical spread of forensic toxicologists, we are part of a remarkably tight-knit community. Conversing with leaders in the field and authors of numerous papers I have read was an incredible and humbling experience. Additionally, the conference featured a variety of engaging presentations spanning topics such as laboratory automation, high-resolution mass spectrometry (HRMS), wastewater analysis, pharmacology, and emerging NPS trends. These presentations provided me with new perspectives and ideas for future research, as well as opportunities to improve laboratory practices."

See what else Brianna had to say about SOFT -TIAFT 2026 here!



Regional Toxicology Liaison (RTL) Program

RTL Program Expands Impact Across the Forensic Toxicology Community

Submitted by Amy Miles, RTL Program Manager, Midwest Region

The Regional Toxicology Liaison (RTL) Program continued to grow and evolve during 2026, strengthening forensic toxicology laboratories and fostering collaboration among toxicologists, traffic safety professionals, law enforcement, prosecutors, judges, and public health partners nationwide. This year also marked the program's expansion to five regional RTLs, with the addition of Dr. Matthew Slawson as the Northwest RTL. Throughout the year, the RTLs provided technical assistance on laboratory operations, accreditation, testimony preparation, funding challenges, oral fluid implementation, workforce development, and toxicology data initiatives.

The team also played a key role in supporting laboratories facing complex scientific and legal issues, including participation in a Washington State *en banc* hearing focused on cannabinoid testing methodologies. One of the program's most visible successes remained testimony training. The RTLs delivered training programs nationwide, reaching more than 200 toxicologists through sessions in Maryland, New England, Texas, Oklahoma (SAT), North Dakota, Colorado, Nevada, and Minnesota (MAFS). These programs brought together toxicologists, prosecutors, Drug Recognition Experts, and Judicial Outreach Liaisons to strengthen courtroom communication and confidence in expert testimony.

RTLs also remained heavily engaged in emerging issues affecting the profession, including oral fluid testing, toxicology data integration, cannabis impairment, evolving drug trends, standards development, and laboratory sustainability. In addition, the program expanded efforts in wellness and workforce resilience, recognizing the growing need to support forensic toxicology professionals' long-term health and success.

Looking ahead, the RTL Program is preparing to launch the RTL Forensic Toxicology Leadership Lab: Developing the Skills to Lead People, Performance & Partnerships. Supported through Responsibility.org funding, the new leadership-development series will begin in January 2027 and provide structured leadership training for forensic toxicologists at all stages of their careers. The program reflects the RTLs' commitment not only to advancing science but also to cultivating the next generation of laboratory leaders. As the program enters another year, RTLs remain focused on supporting laboratories, advancing education, improving collaboration, and strengthening the forensic toxicology profession nationwide.

RTL REGIONAL TOXICOLOGY LIAISONS

Consortium of Forensic Science Organizations

SOFT CFSO Liaison

Marc LeBeau, Ph.D. F-ABFT

This fall, the Consortium of Forensic Science Organizations (CFSO) has focused on two fronts: preparing for the congressional turnover expected after the November 3 midterm elections and building support for new legislation to address the workforce crisis in medical examiner and coroner offices and in the forensic toxicology laboratories that support them.

As a reminder, SOFT is one of the six member organizations of the CFSO. The consortium enables its members to speak with a unified forensic science voice on matters of mutual interest, to influence national public policy, and to make the case for greater federal funding for public crime laboratories and medical examiner and coroner offices.

Election Brief: Congressional Turnover Ahead

The CFSO's November 2026 Election Brief assesses how the midterm elections could reshape the congressional committees most relevant to forensic science. Regardless of the outcome, significant turnover is coming. Members not returning include 14 on the House Judiciary Committee, eight on House Energy and Commerce, four on House Science, Space, and Technology, three each on Senate Judiciary and Senate Health, Education, Labor and Pensions (HELP), and two on Senate Commerce, Science, and Transportation.

Committee leadership may also change. If control of the House shifts, current ranking members would be positioned to chair key committees: Jamie Raskin (MD) on Judiciary, Frank Pallone (NJ) on Energy and Commerce, and Rosa DeLauro (CT) on Appropriations. Grace Meng (NY) would be positioned to lead the Commerce, Justice, Science (CJS) Appropriations Subcommittee. If control of the Senate shifts, Maria Cantwell (WA) would be positioned to lead Commerce, Science, and Transportation; Bernie Sanders (VT) to lead HELP; and Patty Murray (WA) to lead Appropriations. The Senate Judiciary Committee will have new Democratic leadership either way, as current ranking member Dick Durbin (IL) is retiring.

For toxicology laboratories and medical examiner/coroner offices, the appropriations subcommittees warrant the closest attention. CJS subcommittees fund the Department of Justice, including its forensic science grant programs, while Labor-HHS subcommittees fund CDC overdose surveillance programs (SUDORS and OD2A), which rely on postmortem toxicology data:

- **House CJS Appropriations Subcommittee:** No departures or vulnerable seats identified, offering welcome continuity.
- **Senate CJS Appropriations Subcommittee:** Two members not returning (Jeanne Shaheen, NH; Gary Peters, MI) and two seats considered vulnerable.
- **House Labor-HHS Appropriations Subcommittee:** Four members not returning (Julia Letlow, LA; Chuck Edwards, NC; Steny Hoyer, MD; Bonnie Watson Coleman, NJ).
- **Senate Labor-HHS Appropriations Subcommittee:** Two members not returning (Richard Durbin, IL; Jeanne Shaheen, NH) and two seats considered vulnerable.

New White Paper: Medical Examiner and Coroner Legislation

On October 31, the CFSO issued a white paper urging Congress to support proposed medical examiner and coroner legislation (the "MEC Bill") to increase the number and retention of forensic pathologists, certified medicolegal death investigators, and forensic toxicology staff. SOFT is listed as a sponsor, along with AAFS, ASCLD, IAI, and NAME.

The white paper notes that the Department of Justice identified a critical shortage of board-certified forensic pathologists as early as 2013. Since then, the shortage has reached crisis levels, leaving some offices unable to meet their statutory obligations on time. Only 750–800 full-time forensic pathologists currently practice in the United States

– roughly half the 1,600 needed for full national coverage. The National Commission on Forensic Science attributed the shortage to difficulties recruiting and retaining forensic pathologists.

Of particular interest to our membership, the white paper makes clear that this is not solely a pathology issue. It identifies staffing forensic toxicology laboratories as essential for detecting the growing range of novel drugs.

The white paper calls for legislation that would:

- **Forensic Pathology Pathways:** Attract and encourage qualified medical school graduates to pursue forensic pathology by expanding training and board certification opportunities.
- **Fellowship Programs:** Expand support for accredited forensic pathology fellowship programs, increasing both their number and geographic distribution.
- **Medicolegal Death Investigation:** Encourage and incentivize qualified individuals to enter the field and obtain board certification by expanding pathways to train, educate, and certify death investigators.
- **Toxicology Laboratory Funding:** Fund forensic medicine service providers and the toxicology laboratories that support them.

Members who meet with their congressional delegations are encouraged to use this white paper. Please contact me for a copy or visit the CFSO website (https://thecfso.org/).

Looking Ahead

Committee assignments for the new Congress are not expected to be finalized until February or March 2027. The CFSO will issue a full post-election report once the results and their implications are clearer. Timing matters: the incoming Congress will write the FY2028 appropriations bills, which will carry the CFSO priorities outlined in my July update, including CDC overdose surveillance funding and dedicated funding to close the drug-reporting gaps identified by the Government Accountability Office. Building relationships with new committee members and their staff early in 2027 will be essential. We will keep the SOFT membership informed as the CFSO's post-election strategy takes shape.

Committee Reports

Professional Mentoring Program

Another year in the books! The PMP wrapped up our 7th year with over 30 pairings and 18 return pairings, the largest number of return pairings we've ever had! For those of you in the program this year, please be on the lookout for the program survey so we can continuously improve the PMP activities.



2026 SOFT-TIAFT Joint Meeting Highlights
We were excited to meet so many past, present, and hopefully future mentoring program members in Chicago this year with many well attended activities.

Workshop: Beyond the Bench: Leveling Up Your Forensic Toxicology Career – took attendees through various career paths with stories and tools to help with career growth. This was the first workshop hosted by the PMP committee and was well received by the 45 attendees. Ashley Ann Johnson and Kaitlyn Palmquist-Orlando from the PMP chaired the workshop and we'd like to thank all the speakers for dedicating their time to present their career stories.





Poster: 2025 Assessment Outcomes and Trends for the continued monitoring and improvement of our program. This poster came from the results of our 2025 program survey and had much interest especially from the international attendees.

Breakfast: Program mentors, mentees, and committee members got to meet up for breakfast to catch-up with each other and discuss what the year has brought. Many of the conversations revolved around future goals and success stories from the program.



CALL FOR MENTORS!

The PMP Committee is seeking experienced toxicologists to shape the future of our field by joining our upcoming 2027 program as a mentor. As a forensic toxicology mentor, you will have the opportunity to guide toxicologists and students

through various areas of our field including method development/validation, career development, SOFT involvement, or certification studying. You do not have to have 20+ years of experience to be a mentor as our mentees range from students to those with 20+ years of experience. All you need is a desire to help shape the continuous growth of our field. If you are ready to invest your expertise, share your industry insights, and commit to fostering the professional growth of rising practitioners for the 2027 program year, please submit your background details through the program application.







2027 Professional Mentoring Program Schedule

- November 16, 2026: Applications Open for 2027 Program
- December 15, 2026: Applications Close for 2027 Program
- January 2027: Pairings Established
- February 2027: Mentoring Agreements & goals outlined
- Spring/Summer 2027: Mentoring Program Virtual Activity
- Fall 2027: SOFT Meeting Activities
- December 2027: Commencement; program assessment survey sent

Young Forensic Toxicologists

We hope that everyone had a wonderful time at the joint SOFT-TIAFT annual meeting in Chicago, Illinois this year!

YFT would like to thank everyone that attended and participated in the various YFT/YSC Committee activities! The meeting started with the YFT/YSC Symposium and Professional Development Fair (PDF) on Saturday, September 19th. The event was well attended by 10 organizations that participated in PDF and 230 attendees for the Symposium and PDF. Symposium attendees heard from Kayla Neuman speaking on Leadership as a Young Scientist, the 2025 TIAFT YS platform and poster winners, Natan Van Wichelen and Tarcisio Nascimento Correa, Brigitte Desharnais on AI in Forensic Toxicology, and the 2025 SOFT Leo Dal Cortivo poster winner, Katya Beltran. The SOFT and TIAFT Board Members were also introduced to the attendees through a fun bingo icebreaker! The night concluded with a panel discussion about Drug Early Warning Systems from around the world, including EDNAV, NPS Activity Assay Development, NPS Discovery, and UNODC. Special thanks go to Jennifer Schumann, Henrik Green, Brianna Stang, and Jared Brown for their presentations.

YFT/YSC activities continued on Sunday, September 20th with the YFT/YSC Night In! The event was a nice, casual night of networking with other young forensic toxicologists in the Hilton Chicago lobby.

YFT also hosted a workshop titled Abused and Misused: The Importance of Prescription, Over-The-Counter, and Lesser-Discussed Drugs in Human Performance Forensic Toxicology on Monday, September 21st. The workshop was well attended with 104 registered attendees. Two YFT members, Whitney Brown and Chase Perkins, were joined by Edward Zumaeta, Jessica Lynn Ayala, Nathalie Desrosiers, and Stefania Oliverio to discuss the international significance of antihistamines, methorphan, SSRIs, ketamine, and zolpidem to human performance forensic toxicology.

The YFT Committee concluded the annual meeting by presenting the Leo Dal Cortivo (LDC) Awards on Thursday, September 24th at the SOFT Business Meeting to platform presentation winner Lana Brockbals ("Native Peptide Analysis for the Detection of Sophisticated Synthetic Urine Products") and poster presentation winner Nancy Yeomans ("Presence of Novel Psychoactive Substances in Negative Confirmed Benzodiazepine Clinical Urine Specimens"). Each winner will receive a $1,000 cash prize and free registration to a future SOFT meeting. YFT received an exceptional volume of 69 applications this year, making the selection process highly competitive. Congratulations Lana and Nancy!

Lastly, the YFT Committee would like to recognize the committee members who will be rotating off at the end of this year: Elisa Shoff and Sara Walton. YFT would like to express their utmost appreciation for their time and commitment to YFT over the last few years and wish them well in their next endeavors!

YFT/YSC Symposium





Young Forensic Toxicologists

YFT/YSC Symposium



YFT Workshop Speakers



Young Forensic Toxicologists

President's Banquet and Gala: Feathers and Fedoras theme



LDC Platform Presentation Winner: Lana Brockbals



LDC Poster Presentation Winner: Nancy Yeomans



Where Have All the Cathinones Gone? A Question Posed to the Current Void in NPS Synthetic Stimulants

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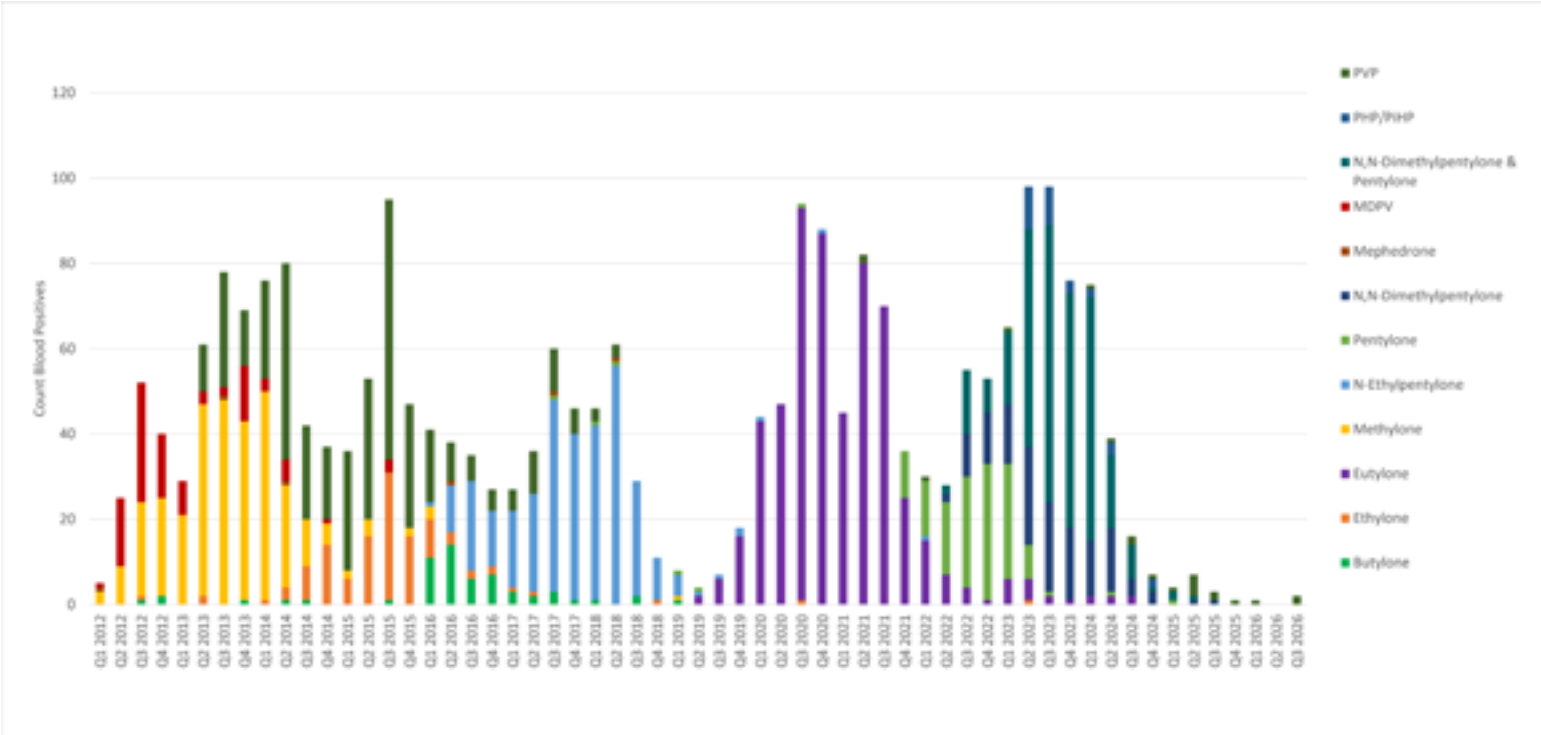
Synthetic cathinones were one of the first subclasses of novel psychoactive substances (NPS) to emerge in the mid-2000s. Individual compounds have appeared, achieved prominence, and disappeared rapidly, likely reflecting a combination of manufacturers' responses to regulatory controls, changes in precursor availability, shifts in consumer demand, and evolving distribution networks. Synthetic cathinone prevalence has been characterized by waves of individual compounds replacing their predecessors, first starting with mephedrone, methylone, and MDPV, followed by a later significant transition marked by the appearance of eutylone and its subsequent displacement by N,N-dimethylpentylone. Figure 1 depicts the transition of synthetic cathinones between 2012 and 2026, with a notable absence of a replacement cathinone in 2025.

Figure 1: The transition of synthetic cathinones between 2012 and Q3 2026 using number of positive blood reports per quarter (data provided by NMS Labs)



The decline of N,N-dimethylpentylone raises an important question: are we waiting for the next dominant synthetic cathinone, or has the stimulant market simply moved on? Historically, declining cathinones have often been followed by structurally related replacements that evaded regulatory controls (1). Yet, the current environment may be different. Synthetic cathinones have occupied only a small portion of the broader illicit stimulant landscape over the past twenty years. It is possible that synthetic cathinones may be losing market share to more readily available and "mainstream" substances with familiar stimulant, dissociative, or recreational effects, such as methamphetamine, cocaine, MDMA, and/or ketamine.

To further investigate the decline in cathinone positivity post N,N-dimethylpentylone, data from several laboratories was compiled. Particularly, four laboratories from Florida were surveyed due to the preponderance of case reports for NPS stimulants compared to other regions, including N,N-dimethylpentylone (2). Table 1 lists a summary of NPS cathinones reported from Florida counties between 2024 and Q3 2026, with focus on newly emerging substances reported more than 10 times. N-cyclohexyl butylone (n=9), N-cyclohexyl methylone (n=6), N-propyl butylone (n=1), and N-butyl butylone (n=3) were also reported during this time period. It is worthwhile noting for the 103 cases of N-isopropyl butylone reported from Miami-Dade County, 52 cases were reported in 2024, 50 in 2025, and only one case so far in 2026. This highlights how some compounds can be a relatively short-term regionally specific trend. In addition, some cases may feature more than one reported cathinone.

2024-2026 Reports	Miami-Dade County, FL	Pinellas County, FL	Palm Beach County, FL	Additional FL reports**
Alpha-PiHP			**7**	**33**
MDPiHP	**22**		**1**	**2**
Iso-PV8*	**11**		**4**	**13**
N-isopropyl Butylone	**103**	**2**	**6**	**12**
N-sec Butyl Butylone	**12**			**1**

Table 1: Summary reports of emerging synthetic cathinones (excluding N,N-dimethylpentylone) between 2024 and 2026 from Floridian counties (>10 reports); *Iso-PV8 is also known as alpha-pyrrolidinoisoheptanophenone/alpha-PiHpP/alpha PiHPP; **reports compiled from University of Florida and Axis Forensic Toxicology.

A diverse group of cathinones have been reported from Florida counties in this time period, featuring both legacy compounds and newer cathinone variants. In addition to the previously mentioned compounds, eutylone (=13), butylone (n=15) and alpha-PVP (n=1) were reported from Miami-Dade County and a mephedrone was reported from Pinellas. Between 2024 and Q3 2026, the CFSRE reported 48 detections of N-isopropyl butylone, a significant drop from the number of detections of N,N-dimethylpentylone, which was reported 286 times in 2023 and 155 times in 2024. NPS Discovery also reported numerous detections for methylmethcathinones (n=184) and chloromethcathinones (n=35) between 2024-2026; however, these reports are regionally specific to New York City. Limited case series featuring quantitative results have been published for N-isopropyl butylone, MDPiHP, and alpha-PiHP, with several cases originating from Florida (3,4). Data collected from laboratories with broader national coverage corroborates this overall decline in synthetic stimulant positivity. According to the Center for Forensic Science Research & Education's (CFSRE) NPS Discovery program, 2026 is on track for the lowest number of synthetic stimulant reports since the start of the program. Figure 2 shows structures for a subset of synthetic stimulants, highlighting the chemical diversity of compounds but structural similarity.

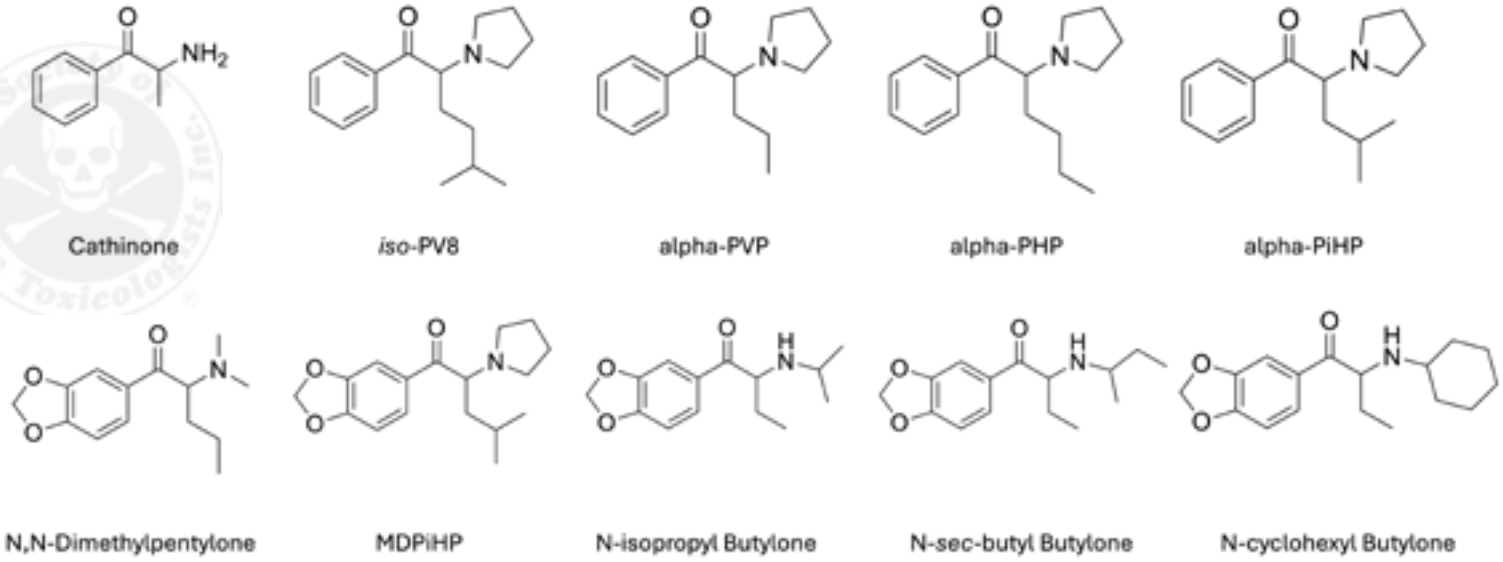


Figure 2: Chemical structures of cathinone and recently encountered synthetic cathinones.

The CFSRE's NPS Discovery program and the SOFT NPS Committee publish quarterly NPS scope recommendations to provide updated guidance for laboratories who are seeking to stay current with their scope of NPS testing. The stimulants & hallucinogens category has been particularly dynamic since 2024, when N,N-dimethylpentylone started to decline in positivity. N-isopropyl butylone was added to tier one recommendations in Q4 2024 and alpha PiHpP/alpha-PHpP was added in Q2 2025 (5,6). N-sec butyl butylone was added to tier one recommendations in Q2 2026 (7). The latest Q3 NPS Scope Recommendations features a mix of both legacy synthetic cathinones (alpha-PVP, eutylone, N,N-dimethylpentylone) and more recently emerged compounds but overall reporting for this subclass is lower compared to previous years (8,9).

There are significant limitations to assessing synthetic stimulant data in seizure prevalence and toxicological positivity, specifically related to the variability in surveillance, testing, nomenclature, and reporting for emerging substances. Isomers are a significant issue commonly encountered with synthetic cathinones, with recent examples including MDPiHP/MDPHP, alpha-PHP/alpha-PiHP, N-sec butyl butylone/N-butyl butylone and N-isopropyl butylone/N,N-dimethylpentylone. Branched alkyl chain and straight alkyl chain variants of compounds have been encountered in casework in many instances. Chromatographic separation is critical for distinguishing isomers, as many share the same molecular formula and produce similar or indistinguishable mass spectral fragmentation patterns. Structural isomers may be reported collectively when a laboratory is unable to analytically distinguish the individual compounds; this approach has been used for the chloromethcathinones, as there are 2-, 3-, and 4- position positional isomers. Further, the appearance of new synthetic stimulants may outpace the availability of certified reference material and standardized nomenclature, adding to complexity for the evaluation of changing patterns.

Although synthetic cathinones remain a component of the evolving NPS landscape, their prevalence in forensic casework has declined substantially from periods of peak positivity. This decline does not necessarily signal the disappearance of the NPS subclass but rather reflects the dynamic nature of the illicit stimulant market. The assortment of different reported cathinones highlights chemical diversity, but there is a noticeable lack of a single analogue emerging with the sustained prominence observed during earlier cathinone waves. Their declining prevalence may signal a shift in which established stimulant drugs have become sufficiently available and conventional that there is little market incentive for further product diversity. While synthetic cathinones may currently represent a smaller proportion of forensic casework, continued surveillance remains critical, as new analogues and isomers can emerge

rapidly and may introduce new analytical and interpretive challenges.

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Evaluation of External Drug Residue Transfer to an Oral Fluid Collection Device

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Introduction

The use of oral fluid as a biological sample for impaired driving investigations continues to gain traction in the United States and has seen even more widespread use internationally. During these investigations, oral fluid can be collected for screening at roadside and/or for laboratory-based confirmatory testing. For confirmatory testing in the United States, one of the most widely used collection devices is the QuantisalTM Oral Fluid Collection Device (Figure 1). Per the device manufacturer's instructions, donors (subjects) should hold the stem of the Collector and insert the Collector pad under the tongue until the sufficiency indicator turns blue. We wanted to evaluate whether there was any risk of drug residue being transferred to a donor's hands through the handling of drug products, and subsequently onto the stem or pad of the collection device which could result in a false positive, but confirmable test result. To investigate this possibility, we conducted a series of experiments designed to simulate real-world exposure scenarios.

Materials and Methods

Drug powders were obtained from Cayman Chemical Company (Ann Arbor, Michigan), while the QuantisalTM Oral Fluid Collection Device devices were obtained from Abbott (Chicago, IL). Marijuana dried plant reference material was sourced from the laboratory-controlled substance training materials. Prior to any contact with the Collector (pad or stem), an aliquot of buffer solution was removed from each collection device and analyzed as a negative control. Drug powders or marijuana were briefly brought in contact with gloved fingertips, followed by direct contact with either the pad or the stem of the Collector. In a separate scenario, after handling the drug, the gloved fingertips were lightly wiped with a Kimwipe® prior to contact with the stem of the Collector. Within one minute of contact, the collection device (pad and stem) were placed in the collection tube containing the Quantisal buffer solution, in accordance with the manufacturer's instructions.
Following sample collection, each specimen was inverted five times to simulate the movement and mixing that may occur during handling or transport to the testing laboratory. Samples were analyzed using validated laboratory testing protocols. Analyses were performed using a SCIEX TripleTOF 5600+ mass spectrometer coupled to a Shimadzu ultra-performance liquid chromatography (UPLC) system, following a basic liquid–liquid extraction (LLE). For delta-9-tetrahydrocannabinol (Δ9-THC), samples underwent an acidic LLE and were analyzed using an Agilent 6495 Tandem Mass Spectrometer coupled to an Agilent 1290 UPLC.

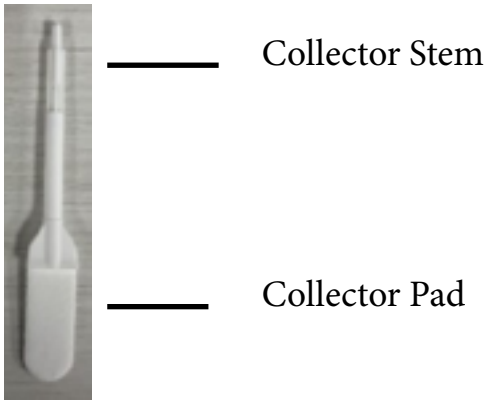

Figure 1. QuantisalTM Oral Fluid Collection Device Collector Pad and Stem

Results

A total of 13 samples were analyzed using the LC-QTOF-MS screening method, and the corresponding peak areas were recorded for each target analyte (Table 1). An additional three samples were analyzed using a targeted quantitative method for Δ9-THC. No target analytes were detected in any of the negative control buffer aliquots collected prior to the drug residue transfer experiments. The minimum peak area thresholds and cutoffs required for a positive identification of each analyte are also provided in Table 1.

Analyte	Transfer Method	Area/Quant	Cutoff
Methamphetamine	Direct Collector Pad contact	48,550,266	50,000
Methamphetamine	Direct Collector Pad contact	29,056,692	50,000
Methamphetamine	Direct Collector Stem contact	9,557,784	50,000
Methamphetamine	Direct Collector Stem contact	10,415,994	50,000
Cocaine	Direct Collector Stem contact	43,857,658	150,000
Cocaine	Direct Collector Stem contact	Not detected	150,000
Cocaine	Direct Collector Stem contact	Not detected	150,000
Cocaine	Direct Collector Stem contact	232,970,317	150,000
Cocaine	Direct Collector Stem contact	82,019,536	150,000
Cocaine	Direct Collector Stem contact	134,901,287	150,000
Cocaine	Direct Collector Stem contact after wiping hands	75,709,027	150,000
Cocaine	Direct Collector Stem contact after wiping hands	46,424,118	150,000
Cocaine	Direct Collector Stem contact after wiping hands	34,428,072	150,000
THC	Direct Collector Stem contact	90 ng/mL	6 ng/mL
THC	Direct Collector Stem contact	30 ng/mL	6 ng/mL
THC	Direct Collector Stem contact	58 ng/mL	6 ng/mL

Table 1. Transfer method with area counts and cutoffs for each analyte

Direct contact of methamphetamine with the pad of the Collector resulted in area counts of 48,550,266 and 29,056,692, approximately 971 and 581 times the validated positive reporting threshold. Although lower peak areas were observed following direct contact with the stem of the Collector compared with the Collector pad, all samples produced responses substantially exceeding the established positive threshold.

Cocaine similarly produced substantial analytical responses. Of the six samples subjected to direct stem contact, four produced area counts above the cutoff of 150,000, while two were reported as not detected. The positive responses ranged from 43,857,658 to 232,970,317, corresponding to approximately 292 to 1,553 times the established cutoff. The variability between these samples suggests that material transfer may not occur uniformly but may depend on factors such as the amount of drug material transferred, the nature and duration of the contact, and the distribution of transferred drug material on the collection device. However, the available data does not establish which factors account for the degree of differences in signal between individual samples.

An additional finding was that cocaine remained detectable following contact with the Collector stem after the hands had been wiped with a Kimwipe. The three samples tested using this procedure produced area counts of 75,709,027, 46,424,118, and 34,428,072. Each response exceeded the cocaine cutoff by more than 200-fold. This observation suggests that a subject wiping their hands after touching drug material may not eliminate detectable cocaine under the conditions examined.

Discussion

The findings described above have important implications for forensic toxicology and drug-impaired driving investigations. Oral fluid collection devices are intended to obtain biological specimens for subsequent laboratory-based testing. If drug material is inadvertently transferred to a collection device, the resulting analytical signal may not necessarily reflect drug ingestion by the individual providing the sample. This distinction is particularly important when toxicology findings contribute to decisions regarding impairment, in legal proceedings, custodial testing, during court ordered drug abstinence orders, or other consequential outcomes. The peak areas observed indicate that the transfer through external contact can produce analytical responses exceeding the screening thresholds established for this assay.

The results highlight the importance of maintaining appropriate evidence-handling procedures throughout specimen collection and transportation. Collection devices should be protected from contact with hands, surfaces, or any materials that may have come into contact with drug material. Particular attention should be given to components that may be touched inadvertently, including the Collector pad and stem. The study's findings support minimizing unnecessary handling of collection devices and limiting direct contact with exposed collection components. These findings also highlight the potential risk of inadvertent drug residue transfer during donor self-collection. To mitigate this risk, specimen collection should be performed by a trained officer or other authorized individual wearing appropriate gloves, rather than by the donor, whenever feasible.

This preliminary assessment has some limitations. First, the investigation included 16 samples and evaluated a limited number of scenarios involving the potential transfer of drug material through external contact. Although the testing was performed using the QuantisalTM device, the potential for external drugs residue transfer may also exist with any similar handheld collection device. Accordingly, the findings provide preliminary evidence of drug residue transfer under the conditions examined rather than a comprehensive assessment of its frequency or magnitude. Secondly, the observed analytical responses exceeded the established thresholds, in some cases substantially. However, these findings do not quantify the amount of drug residue transferred to the collection device or establish how much drug could subsequently be introduced into an oral fluid specimen (with the exception of Δ9-THC). Finally, the experiment used direct contact with drug material and simulated transportation. Although these procedures provided a controlled model for evaluating potential transfer of drug residues, they may not represent the full range of conditions encountered during routine specimen collection and handling.

Conclusion

As oral fluid continues to gain interest as a sample type for impaired driving investigations, individuals using these collection devices should be aware of the risks of allowing subjects to touch the collection devices or handling the collection devices themselves without wearing clean gloves. To minimize the potential for external drug residue transfer and subsequent challenges to positive test results, best practices may warrant collection by a trained individual other than the donor (subject), even when this differs from the manufacturer's instructions for use. Any deviation from those instructions should be appropriately documented.

SOFT-DFC Snapshot – Lorazepam

By Kenson Jean, B.S., NRCC, for the SOFT DFC Committee

SOFT-DFC Snapshots are short reports of critical information about the more common drugs associated with drug-facilitated crimes (DFCs). They are not complete literature reviews about the drug or drug class. One key aspect is their focus on the ability to detect a drug after a single-dose administration, as is often the situation in DFC investigations. As such, these summaries also point out instances in which available data is limited in the hopes that this will encourage further research studies. Finally, SOFT-DFC Snapshots point to the use of these drugs in actual DFC cases, as cited in the medical and open literature.

Lorazepam is an intermediate acting 3-hydroxy benzodiazepine central nervous system depressant. It is widely prescribed and used to treat anxiety disorders, insomnia, seizure disorders, and can be used as a pre-operative sedative. It can be also used to help restrain aggressive patients in the hospital.[1] Lorazepam can be misused for its euphoric effects. Side effects of lorazepam may include sedation, drowsiness, dizziness, anterograde amnesia, fatigue, muscle weakness, disorientation, incoordination, and slowed reaction time.[1]

Lorazepam has been detected in cases of DFCs such as robbery and sexual assault worldwide. The amnesic properties and rapid onset of the effects can be exploited to maximize a victim's vulnerability. Unfortunately, lorazepam and its glucuronide metabolite have not demonstrated significant cross-reactivity with many commercially available immunoassay products, which poses detection challenges for toxicology laboratories. Further analytical complications arise with urine screening (without enzymatic digestion) for lorazepam due to its lack of excretion as unchanged parent drug in the urine, as the compound is highly conjugated. Lorazepam is thermally unstable and present at low concentrations in urine making it difficult to detect by GC/MS. Glucuronidase hydrolysis of the glucuronide conjugate and using LC-MS or LC-QTOF greatly improves the detectability of lorazepam in urine.

Drug Class:	Central Nervous System Depressants
Generic Name:	Lorazepam
Brand Name(s):	Ativan®, Loreev XR®, Temesta®, Larpose®
Dosage Forms:	Oral tablet (0.5 mg, 1 mg, 2 mg); oral capsule, extended release (1 mg, 1.5 mg, 2 mg, 3 mg); oral concentrate (2 mg/mL); injectable liquid (2 mg/mL, 4 mg/mL)[2]

FDA Approval:

Oral administration of lorazepam was approved for the treatment of anxiety or anxiety associated with depressive symptoms in 1970. IV and IM administration were approved for the management of status epilepticus or as a preanesthetic in adults 18 years and older in 1980.[3,4]

Pharmacodynamics:

Lorazepam binds to GABA-A liganded gated Cl- channel neurons within the central nervous system. This leads to hyperpolarization caused by an increase of chloride ions entering the neurons, which ulti-

mately increases the inhibitory effects of GABA. The inhibitory effects on the amygdala manage anxiety disorders while the effects on the cerebral cortex help treat seizure disorders.5

Pharmacokinetics:

Lorazepam is well absorbed orally with peak concentrations observed 2-4 hours post-administration with 90% bioavailability. Lorazepam is highly protein bound (~85-90%). It freely crosses the blood-brain barrier via passive diffusion.[5]

Lorazepam is rapidly conjugated to form lorazepam glucuronide, which is an inactive metabolite. Unlike other benzodiazepines, it does not undergo cytochrome p450 metabolism prior to glucuronidation. It's primarily eliminated in the urine with negligible amounts excreted unchanged.[5]

Single Dose Studies:

Both the SOFT DFC Committee and the Academy Standards Board (ASB) have established the importance of testing urine samples from alleged victims of drug-facilitated crimes for lorazepam at a decision point concentration of 5 ng/mL or lower.[6,7] Urine is easily collected, straightforward to analyze, and provides a longer window of detection of lorazepam ingestion compared to blood.

With sufficiently low detection limits (0.02 ng/mL) and with hydrolysis, lorazepam use may be detectable for over 6 days in urine after a single 2.5 mg dose of lorazepam. Lorazepam was orally administered to two volunteers at a dosage of 2.5 mg, and 13 urine specimens were collected every 12 hours up to 144 hours after exposure. Its peak concentration in urine was detected after 24 hours exposure with concentrations of 411 and 880 ng/mL and remained positive with a concentration of 2-4 ng/mL at 144 hours after exposure. Hair was collected 4 weeks after drug exposure. At a limit of detection of 0.5 pg/mg, lorazepam was not detected. This study concluded that hair analysis following a single exposure doesn't provide useful information.[8]

Lorazepam reaches blood peak concentrations in 2 to 4 hours after oral administration and has a half-life ranging from approximately 8 to 20 hours. In a study of individuals receiving a single dose of 2 mg lorazepam, peak plasma concentrations averaged 16.2 ng/mL.[9]

Blood concentrations will also vary widely depending on the dose used. In patients stabilized on the recommended maximum dose of 6 mg per day in divided doses, the average maximum plasma concentration attained was 88 ng/mL.[10] In that same study, the average maximum plasma concentration among subjects receiving 10 mg/day was 164 ng/mL. In a similar study of 9 subjects, the maximum plasma concentration measured among individuals taking 10 mg/day was 240 ng/mL.[11]

One study involved twelve healthy volunteers who were given a single 2 mg oral dose of lorazepam. This study was randomized, double-blind, and placebo controlled. Tests explored mood, vigilance, psychomotor performance, and memory. Blood samples were collected before administration and twelve times over the course of 48 hours. Samples were centrifuged, and plasma separated and stored. Maximum concentration was observed to be 33 ng/mL. This study demonstrated significant sedation, psychomotor impairment, and anterograde memory deficits after ingestion of 2 mg oral dose of lorazepam.[12]

In another double-blind cross-over study, twenty student subjects were given either a single 1 mg or a single 2.5 mg oral dose of lorazepam with subjects serving as their own controls. Self-rated mood, bodily symptoms, and performance were assessed through several tests. Subjects were tested before oral administration, at 1.5 hours and 4 hours after administration. For both doses, there was a significant increase in physical and mental sedation based on self-rating. Performance tests such as simple reaction

time and verbal learning demonstrated impairment for both doses, with more notable effects associated with a 2.5 mg dose. Impairment was more pronounced at 4 hours compared to 1.5 hour.[13]

In this study, fifteen healthy subjects were given 0.5 mg, 1.0 mg, 2.0 mg oral dose of lorazepam, 10.0 mg oral dose of diazepam, or placebo on five occasions weekly. Eash session lasted 3 hours with testing schedule 0.8 hours after administration. The tests evaluated memory, choice reaction time, and novel vigilance tasks. Lorazepam demonstrated a dose-dependent increase in sedation and impairment for memory, choice reaction time, and novel vigilance task.[14]

For this double blind, single dose study, seven healthy subjects were given 1.5 mg or 3.0 mg dose of lorazepam, or placebo. Blood was collected 1, 2, 4, 6, 8, and 24 hours after dosing. Sedative effects and mood state of subjects were based on self-ratings at the same time intervals as the blood collection. Learning and recall were evaluated at 3 and 24 hours after dosing. Lorazepam produced significant sedative effects that increased in proportion to dose. At the higher dose, sedation persisted for 8 hours. Lorazepam appeared to depress learning and recall, and the effect was dose dependent.[15]

In this study, twelve volunteer subjects were given either 0.03 mg/kg dose of lorazepam, 0.03 mg/kg dose of GHB, 12.5 mg/kg dose of GHB, or placebo dose. The subjects' psychomotor performance was evaluated at baseline and at 15, 60, 120 and 180 min after treatment. Mood was assessed before administration and 120 min later. Psychomotor performance was evaluated using these tests: choice reaction time, visual vigilance task, critical flicker fusion, response competition test, and critical tracking task. This study demonstrated impairment of psychometric functions after lorazepam ingestion. For 83% of subjects, lorazepam caused nausea and drowsiness.[16]

In another study, twelve volunteer subjects were provided with a 2 mg oral dose of lorazepam or 0.5 mg oral dose of alprazolam for seven days. Tests administered included critical flicker fusion threshold, choice reaction time, simulated car tracking, and subjective ratings of perceived sedation and of sleep behavior. Subjects provided the 2 mg lorazepam dosage demonstrated impairment on all tests. Subjects perceived themselves as feeling more sedated after administration of lorazepam than with baseline. Subjects believed that there was an increase in the ease of falling asleep and overall improved quality of sleep after ingestion of lorazepam, however, they experienced a state of grogginess after waking.[17]

The last study involved several benzodiazepines separately dosed to thirty-nine volunteer subjects. They received oral doses of either 1 mg of alprazolam, 2 mg of lorazepam, 20 mg of prazepam, or placebo. Subjective self-ratings and digit symbol substitution tests were evaluated over the course of 24 hours post-dosing. Blood samples were collected at 0.5, 1, 2, 3, 4, 6, 8, 24 hours post-administration. Significant increases in sedation compared to baseline were noted for lorazepam. Peak sedative effects were observed 3 hours post administration of lorazepam and remained significantly higher than baseline at 6 hours. Average peak plasma concentration of 17ng/mL were noted 1-2 hours after oral administration of lorazepam.[18]

DFC Cases:

In the southeast of France, a husband confessed to drugging his wife for about a decade. He crushed lorazepam pills (Temesta®) and added them to her food and drinks between the years 2011 to 2020. Evidence included over 20,000 photographs and video footage of numerous men, including himself, sexually abusing his wife. The husband confessed that he obtained satisfaction from observing other men rape his unconscious wife. There were 72 suspects, however, only 51 (including her husband) tried for rape in the year 2024. All 51 men were convicted; 46 were found guilty of rape, two guilty of attempted rape, two guilty of sexual assault, and her husband sentenced to 20 years in prison for aggravated rape.[19, 20]

Another case involved a dead body that was found in a canal. Antemortem drowning was ruled the cause of death; however, it was reported that lorazepam was detected in all visceral samples, however, there was no mention on the concentrations of lorazepam. Four people were arrested for trying to sell the car of the deceased who was a professional taxi driver. They confessed that they had hired him with the intent of stealing the vehicle. During the drive, they offered him some of the biscuits that they were eating. The driver soon felt drowsy and stopped the car and lost consciousness. They removed him from the car and threw him into the canal. They confessed they bought 2 mg tablets of lorazepam, crushed them and mixed them with water. Then they soaked the biscuits in the water, dried them, and placed them at the bottom of a packet of unsoaked biscuits.[21]

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Investigation of Orphine Performance on ELISA Kits

Ashley Pluer

Introduction

Orphines are an emerging class of synthetic opioids belonging to the benzimidazol-2-one family, a group of compounds originally investigated during pharmaceutical research programs in the 1960s and 1970s (1,2). The inclusion of brorphine in a 2018 study by Kennedy et al. caused a resurgence in the illicit drug supply in Europe and the United States in 2019 and 2020, respectively (2, 3, 4). The continued rise in orphine prevalence can be attributed to controlling of nitazene analogues by the Chinese government in 2025 (3).

The aim of this study was to investigate the enzyme-linked immunosorbent assay (ELISA) performance of eight different orphine-class drugs against the opiates, oxycodone/oxymorphone, fentanyl, and dextromethorphan Immunalysis ELISA kits. Though orphine-class drugs are likely to be observed in authentic specimens in the range of <1 to 10 ng/mL (3), target compounds were analyzed at eight different concentrations from 1 to 2000 ng/mL to evaluate both expected and significantly higher concentrations for performance. An additional single concentration analysis at 1000 ng/mL was performed across fourteen other commonly used ELISA kits to rule out cross-reactivity.

Methods

Chemicals and Reagents

Analytical reference standards for orphine, fluorphine, chlorphine, brorphine, iodorphine, N-propionitrile chlorphine (cychlorphine), R-6890 (spirochlorphine), and SR-17018 (5,6-dichloro desmethylchlorphine) were purchased from Cayman Chemical. Methanol was purchased from VWR Scientific. ELISA immunoassay kits for amphetamine, barbiturates, benzodiazepines, benzoylecgonine (cocaine metabolite), buprenorphine, carisoprodol, dextromethorphan, diphenhydramine, fentanyl, methadone, methamphetamine, opiates, oxymorphone/oxycodone, phencyclidine (PCP), THC carboxylic acid, tramadol, tricyclic antidepressants, and zolpidem were purchased from Immunalysis.

Stock Preparation

Stock solutions were created by dissolving the analytical reference standards in methanol to a concentration of approximately 1.0 mg/mL. Slight solubility issues were observed for SR-17018 (5,6-dichloro desmethylchlorphine) requiring the stock solution to be prepared at a concentration of approximately 0.20 mg/mL. Working standards of approximately 20 ng/mL, 200 ng/mL, and 2000 ng/mL were created by diluting stock solutions with methanol.

Sample Preparation and Analysis

Samples were prepared for each target in triplicate at eight different concentrations – 1, 10, 50, 100, 250, 500, 1000, and 2000 ng/mL. Samples were fortified with working standard solutions for the target concentration, solvent was evaporated under nitrogen and reconstituted in 100 µL of target free blood. Samples were then analyzed using the opiates, oxycodone/oxymorphone, fentanyl, and dextromethorphan ELISA kits according to the Drug Screening by ELISA procedure within the Virginia Depart-

ment of Forensic Science (VA-DFS) Toxicology Procedures Manual (5). Negative, low positive, positive, and high positive controls were analyzed with each plate to evaluate assay performance (Table 1).

Additional analysis of each drug was performed in triplicate at 1000 ng/mL on the amphetamine, barbiturates, benzodiazepines, benzoylecgonine (cocaine metabolite), buprenorphine, carisoprodol, diphenhydramine, methadone, methamphetamine, phencyclidine, THC carboxylic acid, tramadol, tricyclic antidepressants, and zolpidem ELISA kits to evaluate for potential interferences.

Results and Discussion

Optical density values for each analysis were compiled, and data were normalized to the negative control and expressed as a percentage for comparison. For each analysis, the triplicate values for each compound at each concentration were averaged and plotted again the control values for review. The opiates, oxycodone/oxymorphone, fentanyl, and dextromethorphan evaluations were done across the 1 to 2000 ng/mL concentration range (Figure 1) while the remaining fourteen assays were plotted at the single concentration analyzed (Figure 2). As ELISA results are inversely proportional to the concentration of drug present, normalized results below that of the low positive or positive control would be indicative of cross-reactivity, while values near 100 correspond to the negative control.

No orphine-class compounds demonstrated significant cross-reactivity with any of the eighteen ELISA kits evaluated. Slight evidence of potential cross-reactivity was observed for SR-17018 (5,6-dichloro desmethylchlorphine) with the fentanyl ELISA kit (Figure 3). However, the compound never produced a response that met the assay cutoff required for a positive result, even at the highest concentrations tested. In accordance with VA-DFS ELISA quality control requirements, only responses that meet or are below the established cutoff (positive control) are classified as presumptively positive, which did not include any results in this study. Additionally, none of the compounds generated values less than the low positive control, which serves to monitor responses approaching, but not reaching, the assay's presumptive positive threshold. These findings suggest that the evaluated compounds are unlikely to produce analytically significant cross-reactivity on the ELISA kits examined.

Conclusion

This study expands the current understanding of the analytical behavior of emerging orphine-class synthetic opioids in commonly used ELISA screening kits. The findings demonstrate minimal potential for cross-reactivity under the conditions evaluated, supporting the specificity of these assays while also showing that these compounds are unlikely to be detected by routine ELISA screening. As novel synthetic opioids continue to emerge, the inability of standard screening panels to detect these potent substances may result in their presence remaining unrecognized in forensic casework, highlighting the need for targeted screening methodology capable of detecting new psychoactive substances.

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Figure 1. Performance of chlorphine on the opiates, oxycodone/oxymorphone, fentanyl, and dextromethorphan ELISA kits across eight different concentrations (ng/mL). Chlorphine is used as a representative of the trend observed with the orphines analyzed. Positive control (PC) and low positive control (LPC) values for each kit included for comparison.

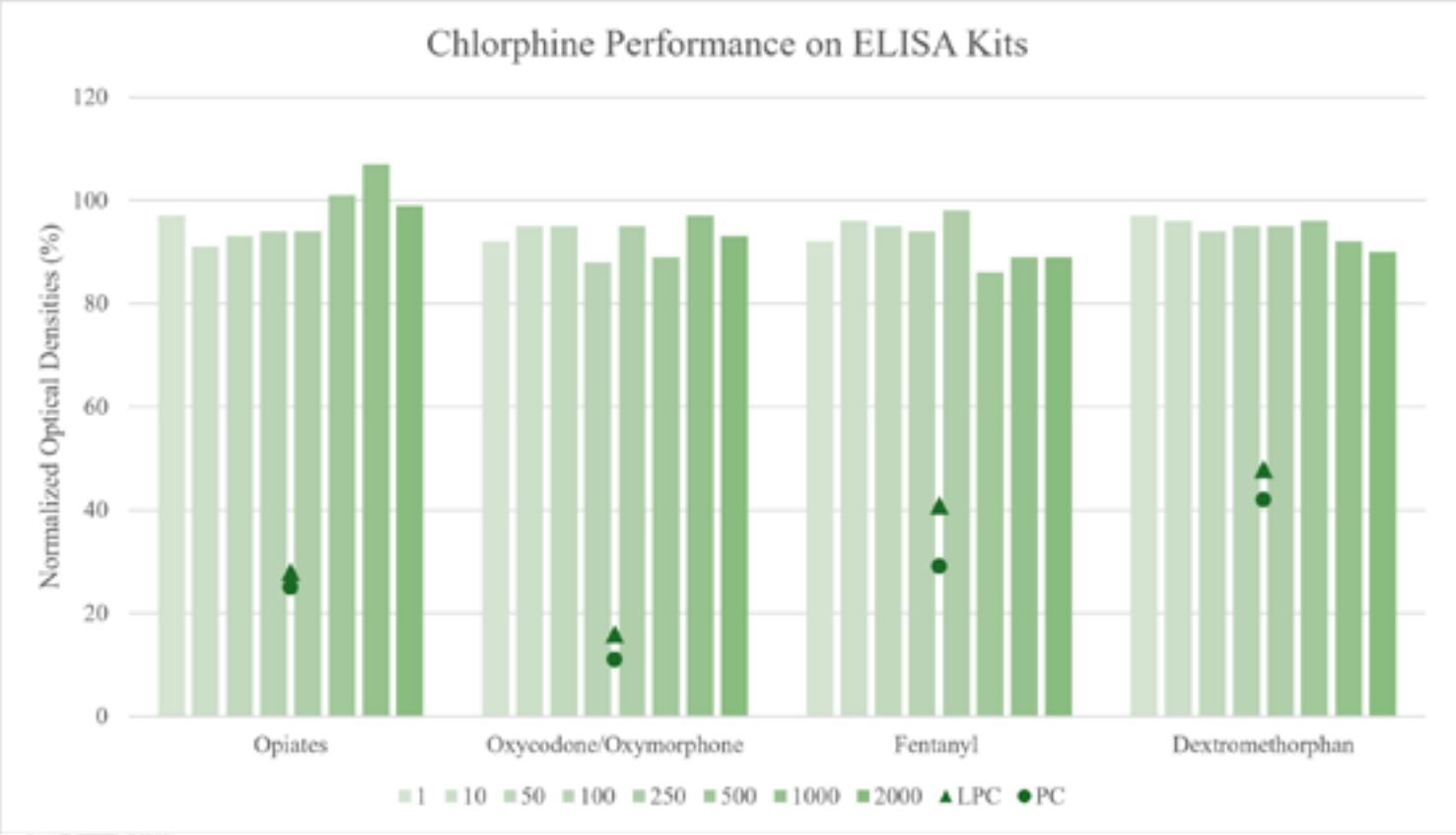


Figure 2. Performance of orphine compounds on commonly used ELISA kits. Positive control (PC) value for each kit included for comparison.

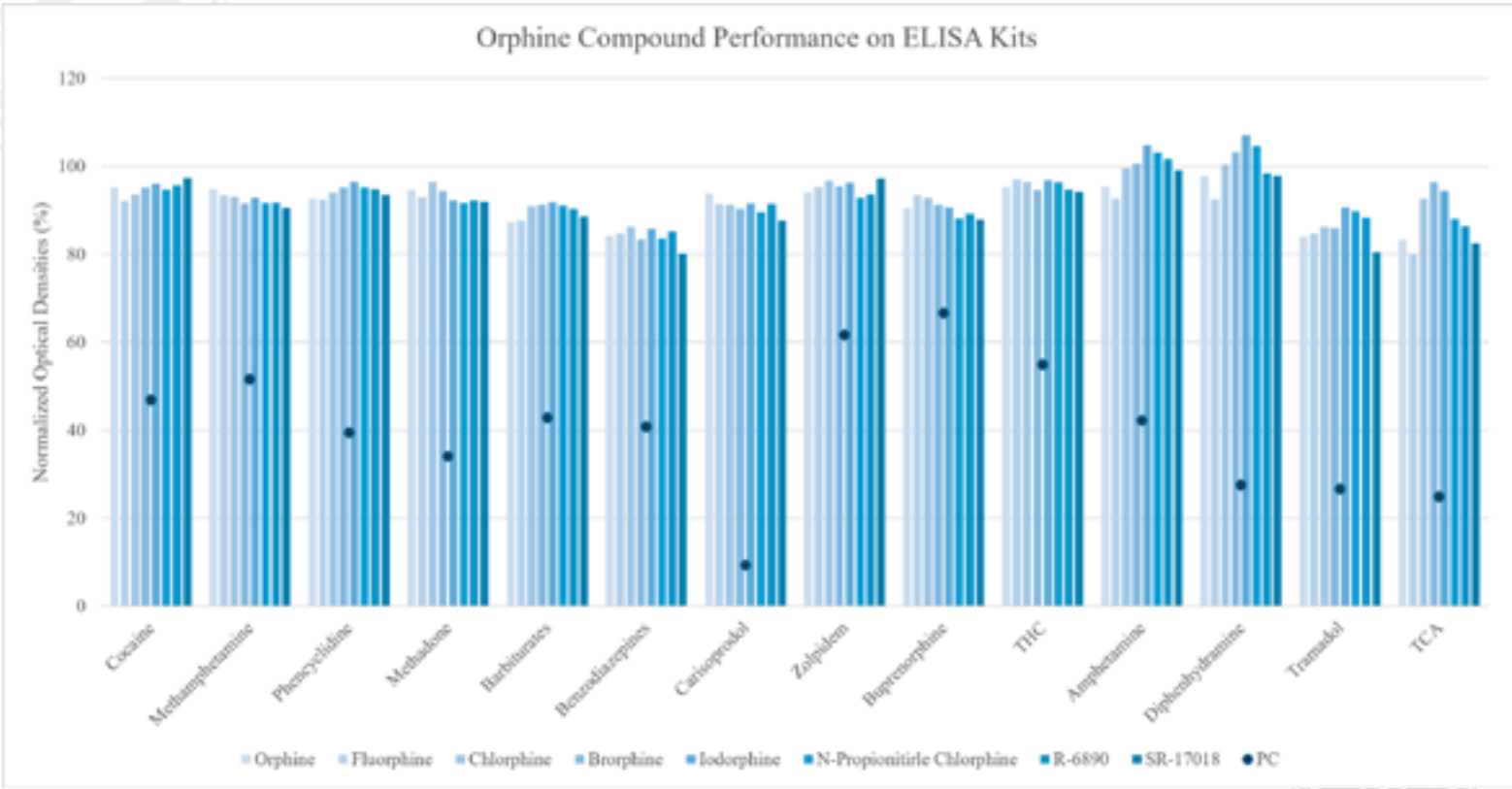
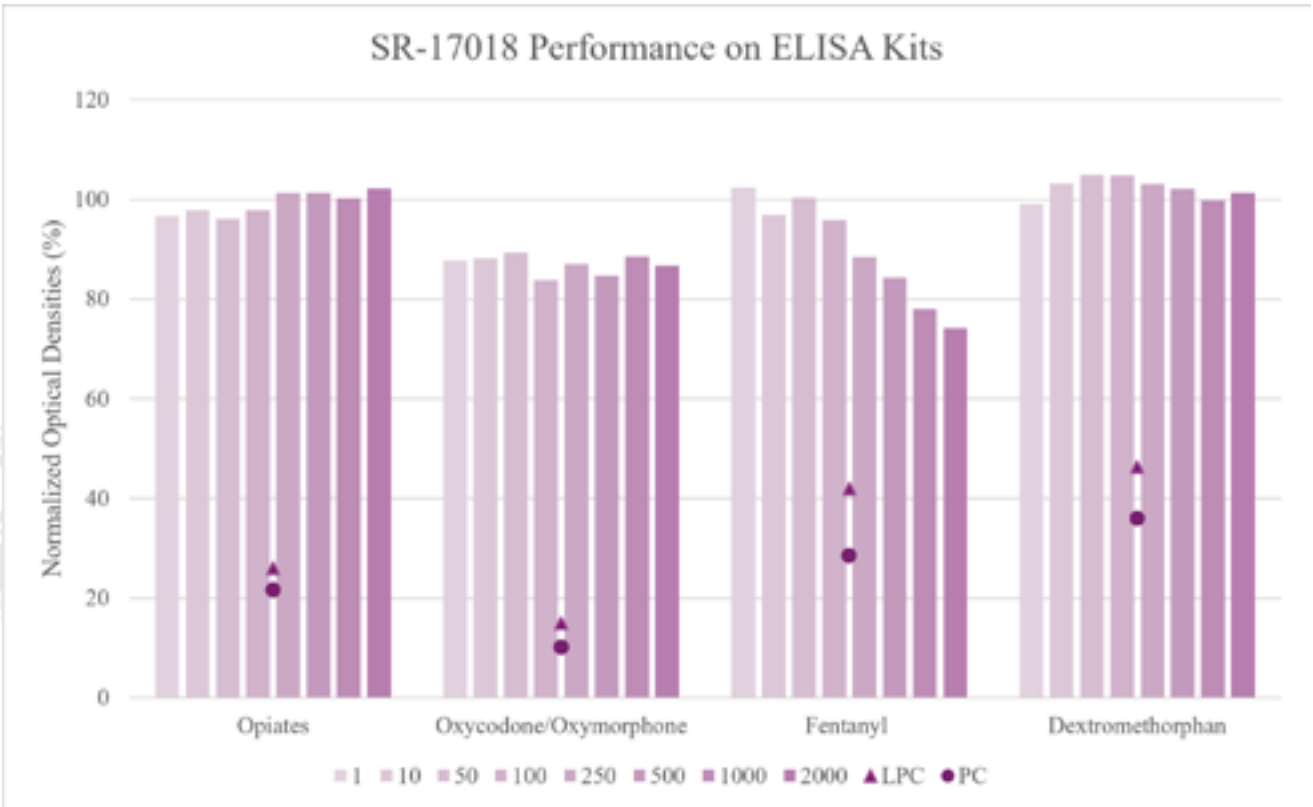


Figure 3. Performance of SR-17018 on the opiates, oxycodone/oxymorphone, fentanyl, and dextromethorphan ELISA kits across eight different concentrations (ng/mL). Positive control (PC) and low positive control (LPC) values for each kit included for comparison.



ELISA Kit	Control Analyte	Level 1 - Negative Control (ng/mL)	Level 2 - Low Positive Control (ng/mL)	Level 3 - Positive Control (ng/mL)	Level 4 - High Positive Control (ng/mL)
Amphetamine	Amphetamine	0	25	50	500
Barbiturates	Butalbital	0	500	1000	10000
Benzodiazepines	Clonazepam	0	20	40	400
Benzoylecgonine (Cocaine Metabolite)	Benzoylecgonine	0	25	50	500
Buprenorphine	Buprenorphine	0	1	2	20
Carisoprodol	Meprobamate	0	2000	4000	40000
Dextromethorphan	Dextromethorphan	0	25	50	500
Diphenhydramine	Diphenhydramine	0	50	100	1000
Fentanyl	Fentanyl	0	1	2	20
Methadone	Methadone	0	25	50	500
Methamphetamine	Methamphetamine	0	25	50	500
Opiates	Morphine	0	20	40	400
Oxycodone / Oxymorphone	Oxymorphone	0	20	40	400
PCP	Phencyclidine	0	5	10	100
THC Carboxylic Acid	THC-COOH	0	10	20	200
Tramadol	Tramadol	0	125	250	2500
Tricyclic Antidepressants	Nortriptyline	0	25	50	500
Zolpidem	Zolpidem	0	25	50	500

Table 1. VA-DFS ELISA control analyte and control concentrations.


Happy
HOLIDAYS
From the SOFT Office
Wishing you a safe and
happy holiday season!
The office will be closed from December 18th - January 1st.
We'll see you in the New Year!