

PRESIDENT'S MESSAGE



ERIN SPARGO, PH.D., F-ABFT SOFT PRESIDENT

Is anyone else finding it hard to believe that we are already two months into the new year? I'm not sure about all of you, but it has been a wild ride so far for me. I'm hoping that as we enter February, I will find a steady rhythm and be more adjusted to my 2023 new normal.

Luckily, when it comes to SOFT, I don't have to worry as I am surrounded by an amazing crew with this year's Board of Directors. We are truly fortunate to have a group that is open-minded, collaborative, and committed to making SOFT the best organization that it can be. Those that have joined us include our newest Counselor, Dr. Marilyn Huestis, who will be able to provide guidance from her long membership in SOFT and previous tenure as President, and our new Directors, Drs.

Robert Johnson and Dayong Lee, who have been actively involved in SOFT for years as committee chairs and planning committee members. Together with our returning Board members, we are ready to work hard this year for the betterment of SOFT.

At the end of last year, the new **SOFT** website was officially launched. Check out the Executive Director's report for information on many of the new features. Thank you to all the committee members (called out by name in Beth's report), as well as Beth and CC, for getting us over the finish line on this! With the new website up and running and the SOFT office handling our social media presence, President Sears formally disbanded the Communications Committee.

The beginning of a new year means we also have a new annual meeting planning committee that has started to meet. I am lucky to be included in their monthly meetings and I'll tell you, we have an enthusiastic group with lots of fresh ideas; it's going to be an amazing meeting. Get those dates - Oct. 30th to Nov 3rd – on your calendar now! And speaking of annual meetings, the Board voted on the Portland hosts (SOFT 2025) – congratulations to Sara Short



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PRESIDENT'S MESSAGE CONTINUED

and Amy Miles!

I am also excited to share that the Board voted to increase the amount of the Young Scientist Meeting Award and the Educational Research Award by \$500 to \$2500. The goal is for the monetary value to cover all costs associated with meeting attendance (basic registration is free for award winners), and with the increase in travel and lodging costs, we felt it was an appropriate time to raise the amount of these valuable awards.

In financial news, the Board voted on following the Finance Committee's recommendation to select Fiducient as our financial advisor firm. Taking this step means SOFT will move forward with a formal investment plan, in hopes of making our money "work" for us.

One of the most recent initiatives is the **Diversity Task Force**. Dr. Victor Vandell recently solicited applications for this new group that will work to increase awareness of SOFT amongst a diverse student population. This part of the Task Force's mission statement speaks volumes: "... SOFT dedicates itself to a commitment to identify, cultivate and support young scientific minds from a broad spectrum of backgrounds, cultures and creeds in the interest of furthering scientific achievements." We are excited to see what this group achieves!

Other areas that the Board will be focused on in the coming months include determining how we can diversify committee membership by reviewing term limits and the membership selection process; reviewing the Bylaws (last done in 2019) to see if updates should be proposed to the membership for approval; updating our code of conduct and mission statements; and improving our internal staff performance evaluation process to better serve both our staff and the organization.

That should bring everyone up to date on the Board's recent activities. I look forward to continually sharing our progress on these projects (and more that will likely pop up!) throughout the year. If you have any questions, please don't hesitate to reach out.

In closing, thank you again for entrusting me with the presidency of our illustrious organization and I hope to see everyone soon at the AAFS meeting in Orlando.

-Erin Spargo

Cax

SOFT OFFICE ETIQUETTE

Did you know it is not uncommon for the SOFT office to receive upwards of 200 emails a day? Beth and CC diligently work to respond to these emails, but they also have scheduled meetings, calls, project work, etc. that they must complete to ensure the organization runs smoothly. Due to this, we request that you be patient and follow just a few requests:

- Allow up to 48 hours for a response to an email before you follow up. Please plan accordingly, and do not wait until the last minute to request needed information/documentation!
- Please do not email Beth and then when you do not get an immediate response, also email CC (or vice versa). This often results in double the work as they both try to assist.
- Check the website first for general questions. You just may find what you need there!

Erin Spargo, SOFT President

FROM THE EXECUTIVE DIRECTOR'S DESK



BETH OLSON SOFT EXECUTIVE DIRECTOR

I hope by this time you have been able to visit the new SOFT website and log in to the members only area. The new website has been anxiously anticipated for several years. Thank you to the Communications Committee for their input on the new site:

- Matt Juhascik, Chair
- Kayla Ellefsen
- Rebecca Hartman
- Doug Rohde
- Nick Tiscione

If you haven't already checked out these new features on the website, please feel free to explore!

- We have a searchable membership directory by name, organization, or location.
- You now have the ability to add and modify additional pieces of personal information within your profile.
- You can view all email messages that

FROM THE EXECUTIVE DIRECTOR'S DESK

were sent to you within your profile (click "Email History")

- You can view all forms you've submitted, including surveys, registrations, and renewals, they can be found within your profile (click "Forms I've Taken")
- You now have the ability to view all invoices, whether paid or balance due (click "My Profile" and then "Invoices")
- Forms will automatically populate with the information from your profile, saving time.
- If you're on a committee, you can click on "My Features" and then on "Committees" to find a list of committees that you serve on. You're able to message the members of your committee and post documents to share only with other committee members.
- A feature-rich Career Center that connects employers, job seekers and interns. If you're a job seeker, listings are now searchable, and you can sign up to be noti-

fied when new job openings are posted. You can even upload a resume and have it available to employers!

- We now have a robust calendar feature. At a glance you'll be able to see committee meetings, webinars, SOFTopics sessions, office closure dates and more.
- Our new Learning Management System will house all of our webinars, JAT CE opportunities, and certificates you've earned. There will no longer be a need for a separate AACC account to obtain CE certificates for ABFT.
- The dues process, from invoice creation to notices to taking payment is now automated.

Features that are coming soon:

- We will have an area for moderated discussion forums to post question and get information that is up-to-date and relevant to the field.
- You'll have the ability to connect with other members and message

directly through the website. You can add a profile picture to your profile now!

 All previous webinars will be loaded into the SOFT Learning Center. If you've already paid to view, they will automatically be accessible for you. If you weren't able to participate previously, you'll have the opportunity to register and view on demand.

The new website, database and learning management system will automate many processes for the SOFT office that are currently manual processes. Once all of the features are up and running, this will free up the office staff to put more time into developing more member benefits for SOFT.

If you have any questions, don't hesitate to reach out. We are here to help!

Beth Olson

VISIT THE NEW SOFT WEBSITE AND MEMBER ONLY AREA!



How to Promote Yourself in Your Career and in SOFT Webinar

Register now for the webinar How to Promote Yourself in Your Career and in SOFT on Thursday, February 23, at 10 am Pacific/1 pm Eastern.

Dan, Vanessa, and the entire planning committee are very excited to welcome you to the 2023 SOFT meeting in Denver, Colorado! The annual meeting will be hosted at the base of the Rocky Mountains, at the Gaylord Rockies Resort and Convention Center, the week of October 30 – November 3, 2023.

There are several reasons to attend the annual meeting, not to mention the sunshine and the lovely mountain views. So why should you attend the annual meeting?

- 1. TO NETWORK: The annual meeting brings forensic toxicology professionals together from all over the country and the world who share a passion for the field. Come see old friends, meet new ones, and learn about the latest and greatest advances in the field.
- 2. TO EXPAND YOUR KNOWL-EDGE AND FIND SOLUTIONS TO PROBLEMS: The annual meeting is the preeminent forensic toxicology conference, which allows for a unique learning opportunity. Learning of new techniques, new instrumentation, and hearing from the experts in the field allows you to solve problems or improve processes at your workplace.
- 3. TO PRESENT YOUR IDEAS AND WORK TO OTHERS: The SOFT meeting is an excellent place to share your research, data, or methods with your peers. Providing this information not only allows for your own professional development but helps to disseminate your ideas to a large audience.
- 4. FOR PEOPLE TO MEET YOU: The annual meeting is the best place to start introductions and get to know people in the field, regardless of where you are at. These relationships almost always lead to more relationships

which can help you throughout your professional career.

If you are considering attending the annual meeting and hope to extend your trip or explore Denver during the meeting, please be sure to check our regional bus and light rail options (rtd-denver.com). The RTD system can connect you from the airport to downtown Denver and is a great way to explore the city.

Below are some of the current happenings in preparation of the annual meeting including ways to become involved!

- The Workshop Program Coordinators, Donna and Lisa, are busy soliciting the SOFT membership for workshops subject matter ideas in order to provide another successful year of focused learning opportunities. Workshop proposals are due in April and the deadline for the workshop program is in May.
- The Scientific Program Coordinators, Luke and Sara, are preparing for a complete program of platform and poster presentations that should be novel, diverse, and spark the curiosity of all attendees. Consider sharing your research and knowledge with your colleagues.
- Lastly, the JAT Special Editor, Sandy is calling for the abstract notifications in preparation of full manuscript submissions. Deadlines are right around the corner, please consider submitting your research as a manuscript.

SOFT's annual conference is only 8 months away and associated deadlines will be announced to the membership via e-mail or may be viewed on the website. We hope that you will make SOFT 2023 Denver Colorado your annual meeting of choice to attend! Hope to see you very soon!

Dan and Vanessa

2023 HOSTS





DAN ANDERSON

VANESSA BEALL

SCIENTIFIC PROGRAM COORDINATORS LUKE RODDA SARA SCHREIBER

WORKSHOP PROGRAM COORDINATORS DONNA PAPSUN

LISA REIDY

EXHIBITOR LIAISON LIZ KIELY

FOOD AND BEVERAGE ANN MARIE GORDON DENICE TEEM DELISA DOWNEY

YFT CHAIR MARISSA FINKELSTEIN

VOLUNTEER COORDINATORS STEPHANIE OLOFSON JENNIFER BECKSTROM

> MOBILE APPLICATION RUSTY LEWIS ROXANE RITTER SUNDAY HICKERSON

AV COORDINATOR FRANK WALLACE

FUN RUN COORDINATOR ARIA MCCALL

JAT SPECIAL ISSUE EDITOR SANDRA BISHOP-FREEMAN

OCTOBER 29-NOVEMBER 3, 2023



2023 PLANNING C OMMITTE m \leq m S ₿ m RS

We are seeking workshop proposals for the 2023 SOFT Annual Meeting in Denver, Colorado. We want to offer a broad spectrum of workshops - from novice to advanced, conventional to the novel. The most productive workshops can branch from individuals who want to learn more about a particular topic. It would be great to offer more advanced workshops for our more established toxicologists, so ideas in this arena are of special interest. This year we are also focusing more on half-day workshops or full days broken into two parts: beginner knowledge in the morning and advanced concepts in the afternoon.

The SOFT membership in the recent survey is hoping for workshops dedicated to cannabinoids, CNS depressants, and psychedelics while covering pharmacology, interpretation, analytical concepts, and testimony. Several topics revolving around laboratory management, such as implementing OSAC standards, method development/validation, and uncertainty of measurement calculations, are also of interest. It would be fantastic to incorporate some outside topics with an interest in poison control and clinical toxicology. Any ideas, including some more novel toxicology areas, would be fantastic. We would like a diverse program and options for all our attendees. Final Workshop Proposals are due by April 14, 2023.

Workshops have always been one of our favorite meeting components, so please help us give SOFT 2023 attendees a great set of options to develop and advance our expertise, expand our peer network, and broaden our knowledge. Please notify the workshop coordinators if you plan on submitting a proposal or have any questions about the submission process. Hope to see you in chilly Denver!

-Donna and Lisa

SUBMIT A PROPOSAL

EMAIL THE COORDINATORS

WORKSHOP PROGRAM COORDINATORS



DONNA PAPSUN



LISA REIDY

2023 HOSTS





DAN ANDERSON

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2023 EXHIBITING

Interested in exhibiting at SOFT 2023? Reserve your booth today!

We invite you to join us for SOFT 2023 in Denver, CO from October 29 - November 3, 2023! Please review the 2023 Prospectus for pricing and sponsorship opportunities. Reserve your SOFT 2023 Booth below. We look forward to seeing you and your team in Denver, CO.

Questions? If you have any questions please feel free to contact us below:

- Billing and Registration -<u>cc@soft-tox.org</u>
- Exhibiting and Hall Layout -<u>kielye@mcohio.org</u>

2023 PROSPECTUS

BOOTH RESERVATION

2023 EXHIBITOR PAGE

IMPORTANT EXHIBITING DATES AND DEADLINES

- Payment Due: April 1
- Registration and Room Block Open: June 1
- Exhibitor Kit Distributed: July 2023
- Sponsor Logo Due: July 1
- Program Book Ad Due: August 31
- Free Program Book Listing Due: August 31
- Booth Set Up: October 31, 7:00 am 4:00 pm
- Exhibit Hall Opens: October 31, 6:30 pm
- Booth Tear Down: November 2, Finished by 3:30 pm
- SOFT 2023: October 29 November 3, 2023

2023 JAT SPECIAL ISSUE

EDITOR

Sandra C. Bishop-Freeman, PhD Interim Chief Toxicologist North Carolina Office of the Chief Medical Examiner (NCOCME)

SUBMISSION

MARCH 3: Title and abstract submitted by email to: sandra.bishop@dhhs.nc.gov MARCH 17: Final paper submitted through JAT Manuscript Central (please designate SOFT Special Issue)

Happy 2023 to the SOFT Community! This is just a friendly reminder of the upcoming deadlines for the JAT Special Issue. As Emily Dickinson once said, *"March is the Month of Expectation!"* I do not know what submissions are coming my way, but please send me an email by March 3rd with the title and abstract. Your final manuscript is expected to JAT Manuscript Central by March 17th.

I expect to be busy this spring helping to publish an amazing 2023 special issue!

Take care, Sandy

TITLE & ABSTRACT

FINAL PAPER

2023 HOSTS





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SOFT 2023 IMPORTANT DATES & DEADLINES

- ToxTalk Publication: February 15
- Special Issue Titles/Abstracts Due: March 3
- Special Issue Papers Due: March 17
- ERA/YSMA Deadline: April 7
- Workshop Submission Deadline: April 14
- ERA/YSMA Winners Announced: May 15
- Reviewer Applications Due: May 22
- ToxTalk Publication: June 7
- Abstract Submission Deadline: June 8
- Registration & Room Block Open: June
- Late Registration Begins: September 1
- ToxTalk Publication: September 8
- Workshop Handouts and Presentations Due: September 29
- Onsite Registration Begins: October 11
- SOFT 2023: October 29 November 3

BE SURE TO CHECK OUT THE SOFT WEBSITE DURING THE YEAR FOR ANNUAL MEETING UPDATES!



EXHIBITORS

HOTEL

2023 HOSTS





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VANESSA BEALL

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YOUNG FORENSIC TOXICOLOGISTS (YFT)

Hello SOFT members!

The Young Forensic Scientist (YFT) committee is looking forward to 2023!

We welcome Marissa Finkelstein as our 2023 Chair. Marissa has been in the toxicology field for over 12 years, currently working at the Miami-Dade Medical Examiner Department. She is excited for this upcoming year as YFT chair and looks forward to furthering YFT's mission of engaging and networking with young forensic toxicologists. The YFT committee is also excited to welcome two new committee members, Edward Zumaeta from the Palm Beach County Sheriff's Office and Erika Phung from the Houston Forensic Science Center. Both will be great additions to this committee.

YFT has some upcoming changes to our traditional activities at the SOFT annual meeting. The Student Enrichment Program (SEP), hosted on Monday of the annual meeting for students in the area interested in the field of forensics/ forensic toxicology, has some exciting changes! Plans are being made to invite students from school districts in Denver to tour a local forensic science institute and toxicology section so they can observe a day in the life of a forensic toxicologist rather than just hear about it from guest speakers.

Also, the committee plans on making some minor changes to the Young Forensic Toxicologist Symposium, our Sunday night event at the annual meeting, by having the Professional Development Fair (PDF) play a larger role.

Stay tuned for more information about these changes!

For those young forensic toxicologists that want help with interviewing and how to prepare a CV, attend our co-hosted webinar with the Membership Committee, titled "How to Promote Yourself in SOFT and in Your Career" on Thursday, February 23, 2023 beginning at 1:00 PM EST. <u>Register Here!</u>

HOW TO PROMOTE YOURSELF IN YOUR CAREER AND IN SOFT

SPONSORED BY THE SOFT YFT AND MEMBERSHIP COMMITTEES

THURSDAY, FEBRUARY 23, 2023 10:00 AM PACIFIC/1:00 PM EASTERN FREE TO SOFT MEMBERS!



Chair Marissa Finkelstein

> Vice Chair Erin Strickland

> > Secretary Elisa Shoff

Immediate Past Chair Amanda Rausch

Members

Whitney Brown Sara Dempsey Lindsay Glicksberg Kristin Kahl Alex Krotulski Kayla Neuman Erika Phung Lauren Wolfe Edward Zumaeta



In the inaugural year of the RTL project, much has been accomplished but still much more needs to occur. In each of the three regions, every lab has been contacted, and meetings have been held either virtual, in-person, or both. As predicted, each laboratory faces challenges unique enough that it is impossible to determine one solution for all laboratories. As we move into 2023, the RTLs will begin drilling down to why each lab faces specific barriers and issues and work to address them.

Supply chain issues persisted throughout the last quarter of 2022. Region 7 RTL, Chris Heartsill, successfully found an alternate gray top tube and headspace vial vendor. Finding another vendor will alleviate the bottleneck labs and law enforcement experienced when procuring gray top tubes for legal blood draws. Chris is working with labs to validate the gray top tubes from the new supplier and will look to publish the findings.

Region 9 RTL, Kristen Burke, continues to meet with various partners to outline and strategize the University of California DUID Surveillance Project. This project will model the work NHTSA has done with Level 1 Trauma Centers and the collection of blood samples from drivers involved in crashes. The RTL project will monitor the progress of the UC-Davis work to see if it can serve as a model for other states to run surveillance efforts in DUID.

Feedback from the laboratories on the need for training continues. In response, the RTLs, created, organized, and executed a training course for the Indiana State Department of Toxicology. This was a one-day, in-person training that focused on courtroom testimony. Topics included alcohol and drug impairment, Drug Recognition Expert (DRE) information and update, and a legal update from the Traffic Safety Resource Prosecutors (TSRP). The feedback on the training event from the lab was extremely positive. The RTLs will be using this information to continue to create a curriculum that will be offered to all labs in all three regions in 2023. Stay tuned for more information on upcoming training events!

Upcoming events:

March 21-23: Quarterly regional training webinar

Regional Testimony Training – Throughout 2023 in NHTSA Regions 5, 7 and 9

Amy Miles



DRUGS AND DRIVING COMMITTEE

The Florida TSRP Program and the Society of Forensic Toxicologists (SOFT) / American Academy of Forensic Sciences (AAFS) Drugs & Driving Committee have collaborated on a multi-session and multi-disciplinary webinar series that will provide prosecutors, law enforcement officers and toxicologists a background to Drug DUI Cases. Sessions will go into details about effects, duration, ingestion, and other information about each individual DRE Drug category from both a Law Enforcement and a Toxicology perspective. The series includes 20 hours of online contact hours and

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is intended to assist prosecutors, law enforcement officers and toxicologists to better handle the many difficult aspects of Drug DUI cases and to understand the complimentary roles of DREs and Toxicologists.

All 19 webinars are free to attend and will be presented on Wednesdays from January 4 to May 3, 2023, beginning with an introduction to the DRE program, covering the seven drug categories, ploy-drug use, and ending with two sessions on the DRE case and testimony. Further information, including descriptions, presenters, and links to register can be found in the Member Only Area of the SOFT Website.

The course content has been reviewed by the ABFT and determined to be acceptable for submission to the ABFT for continuing education credit. All sessions can be attended live or viewed on demand (24 hours after live presentation) by using the session registration link in the Member Only Area of the SOFT Website. For any questions please contact Dayong Lee (DLee@hfsctx.gov) or Nick Tiscione (TiscioneN@pbso.org).

1/4/2023 DRE Basics – How a DRE Becomes a DRE & Introduction to the Matrix

Session Information:

- 1/11/2023 CNS Depressants, Part 1 The DRE
- 1/18/2023 CNS Depressants, Part 2 The Toxicologist
- 1/25/2023 CNS Stimulants, Part 1 The DRE
- 2/1/2023 CNS Stimulants, Part 2 The Toxicologist
- 2/8/2023 Hallucinogens, Part 1 The DRE
- 2/15/2023 Hallucinogens, Part 2 The Toxicologist
- 2/22/2023 Dissociative Anesthetics, Part 1 The DRE
- 2/22/2023 Dissociative Anesthetics, Part 2 The Toxicologist
- 3/1/2023 Narcotic Analgesics, Part 1 The DRE
 - 3/8/2023 Narcotic Analgesics, Part 2 The Toxicologist
- 3/15/2023 Inhalants, Part 1 The DRE
- 3/22/2023 Inhalants, Part 2 The Toxicologist
- 3/29/2023 Cannabis, Part 1 The DRE
- 4/5/2023 Cannabis, Part 2 The Toxicologist
- 4/12/2023 Poly-Drug Use, Part 1 The DRE
- 4/19/2023 Poly-Drug Use, Part 2 The Toxicologist
- 4/26/2023 Bringing a DRE Case Alive
 - 5/3/2023 Forensic Toxicology Testing & Testimony

MENTORING COMMITTEE

Dear SOFT Members,

One of our goals for the Mentoring Program is to provide our participants with additional resources throughout the year. We curate content in different formats to accommodate individual preferences and time commitment. Participants of the program receive a quarterly email that can be accessed at their convenience that we wanted to share. Below are five resources to help kickstart your personal and professional development in the new year.

- Online Short Articles: <u>5 Relationships You Need to Build a Successful Career</u>
- Book: Boundaries by Henry Cloud
- Podcast:Simon Sinek: What is Leadership, How to be a Great Leader, & Game Theory
- Online short videos: The Explainer: How to Collaborate Effectively If Your Team is Remote
- Long online document: <u>10 Tips for Mentees</u>

We hope that you find these resources helpful. We look forward to new and returning members of the Mentoring Program in 2023! "Gas-Station Heroin": The Repurposing of Tianeptine in an Unregulated Drug Market Kristopher W. Graf¹, MS, D-ABFT-FT; Donna M. Papsun^{1 3}, MS, D-ABFT-FT; Alex J. Krotulski^{2 3}, PhD ¹NMS Labs, Horsham, PA ²Center for Forensic Science Research & Education, Willow Grove, PA

³SOFT NPS Committee

Recent media reports of "gas-station heroin" have warned the public about accessible products that are being marketed as dietary supplements but contain the psychoactive drug tianeptine. Tianeptine is a short-acting tricyclic anti-depressant as well as an atypical opioid agonist, with mu opioid receptor activity. It was originally discovered and patented by the French Society of Medical Research in the 1960s. It is approved for use and prescribed as an antidepressant in much of Europe, Latin America, and Asia. Therapeutic doses of tianeptine have been investigated to treat major depression, depressed bipolar disorder, dysthymia, and adjustment disorder, while high doses have been reported to cause euphoria which has likely led to its repurposing and off-label use (Wagstaff et al.; Springer and Cubała; Nabil et al.; Karim and Io-annou; Lauhan et al.) The United States (US) Food and Drug Administration (FDA) has not approved tianeptine for clinical use but it can be readily obtained online or in some shops without a prescription.

Since tianeptine is sold under the guise of a "dietary supplement", a nootropic, or with other misleading labels such as "not for human consumption", it evades certain regulations and monitoring (Karim and Ioannou; Dempsey et al.). Tianeptine is prescribed under the trade names of Coaxil® or Stablon®, but has also been sold in unregulated environments under brand names "Zaza" and "Tianna Red" (Rushton et al.). Our poison center experienced an increase in calls relating to this xenobiotic. The goal of this report is to describe the characteristics of acute tianeptine intoxication and withdrawal. Methods: All calls to a statewide poison center regarding tianeptine were reviewed from January 1, 2015 to March 15, 2020. Cases were identified using the American Association of Poison Control Centers' substance code for "other types of tricyclic antidepressants." Cases were excluded if they did not involve tianeptine. Date of call, patient demographics, symptoms, cardiac intervals if available, and disposition were recorded. Results: Eighty-four cases of atypical tricyclic antidepressants were identified in the study period. Forty-eight cases involving tianeptine met inclusion criteria and were reviewed. Of these, 37 (77%) were tianeptine. Over the past 10-20 years, there has been an increase of tianeptine reports to the Center for Disease Control and Prevention (CDC) National Poison Data System (Rushton et al.; Zahran et al.; Marraffa et al.) Tianeptine is another example of a drug that individuals are self-administering with little to no medical guidance and therefore are at increased risk for adverse events, which include addiction, withdrawal, and fatal overdose (Dempsey et al.; Rushton et al.; Krishnan; Bakota et al.

Adverse effects of tianeptine use have reportedly included agitation, dizziness, drowsiness, confusion, sweating, rapid heartbeat, high blood pressure, nausea, vomiting, and decreased respiratory function that may progress to coma and death. In 9 reported cases of tianeptine exposure, 5 patients complained of symptoms consistent with opioid withdrawal and, in one case, naloxone was used for successful mental status and respiratory improvement (Marraffa et al.). In addition, there have been documented reports of fatal tianeptine overdoses. In two fatal cases of tianeptine intoxication in the US, postmortem blood concentrations were 2000 and 8400 ng/mL; pulmonary edema and congestion were noted at autopsy (Bakota et al.).

Tianeptine use is likely underestimated due to underreporting because it is often not included in routine drug screening at hospitals or toxicology labs. At NMS Labs, tianeptine is monitored through a secondary library after screening by LC-TOF/MS. Confirmatory testing is performed using LC-MS/MS. Authentic specimens are first extracted using an acetonitrile protein precipitation followed by a solid-phase extraction. Quantitation is determined using 3 levels of standard addition. For labs testing for tianeptine, toxicological analysis is most commonly being performed using liquid chromatography based screening and confirmatory methods due to ease of sample preparation and better chemistry pairing. Tianeptine is thermally labile which means analysis by GC/MS requires either monitoring of breakdown products consistent with tianeptine degradation or derivatization – for toxicology labs performing quantitation, the latter may be required.

Of 80 blood samples quantitatively reported by the laboratory between 2018 and 2022, the mean and median concentrations were 4279 ± 6634 and 2100 ng/mL, respectively. The range of concentrations reported was 25 to 47,000 ng/mL. Most of the reported cases were from blood samples submitted from a death investigation; only one reported concentration was from a suspected impaired driving case, with a reported concentration of 1600 ng/mL. One limitation with the data set is that not all cases were able to be classified due to limited case information. The concentrations in this data

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set are well above studied therapeutic concentrations. Average plasma concentrations following repeated 21.5 mg doses were 350-400 ng/mL; the blood to plasma ratio for tianeptine is not known (Demotes—Mainard et al.). Of the 80 reported blood samples, 68% of blood cases reported concentrations >1000 ng/mL.

According to tianeptine exposure calls evaluated between 2000-2017, most tianeptine exposures occurred among persons aged 21-40 years; this is corroborated with the data of population reported herein (Zahran et al.). In 57 cases that included date of birth, mean and median age was 35 and 33 years, respectively, with a wide age range spanning 2 to 67 years. Tianeptine use does not appear to be regionalized, although prevalence is poorly understood due to lack of comprehensive toxicology testing. In the reported data set, tianeptine was reported in 28 states, with the most cases reported from Mississippi, Tennessee, Illinois, Louisiana, and Colorado. Figure 1 shows a heat map of the originating states of blood samples that reported tianeptine.

Evaluation of poison control data, media reports, and internal postmortem data suggest an increase in tianeptine use. Figure 2 shows an increase in confirmed tianeptine cases between 2018 and 2022. Tianeptine seems to be one of the latest products in which end users are either knowingly or unknowingly self-administering large doses compared to its original intended use, therefore putting themselves at higher risk for adverse gastrointestinal, neurological, and cardiovascular effects and those consistent with opioid toxicity. Tianeptine follows loperamide (an over-the-counter medication) and kratom (mitragynine, an unregulated psychoactive herbal preparation) – two substances that can also be abused for opioid-like effects, especially when used in large doses inconsistent with intended use. The intentional mislabeling and questionable marketing practices of tianeptine, as well as the dangers that tianeptine can pose have prompted several states to take action by banning the sale and use of tianeptine. Tianeptine does not seem to fall under the definition as a "dietary supplement", especially since it is prescribed as an antidepressant in other countries. Tianeptine in the US is another drug in the unregulated supply, and eventually a government agency such as the FDA or the Drug Enforcement Administration (DEA) will likely step in to curb the sale and use of "gas station heroin"; however, until then, toxicology laboratories should include tianeptine in their testing protocols.



Figure 1: Heat map for submitted Tianeptine cases

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Structure of Tianeptine

Nominal Mass: 436.12236

[M+H]⁺: 437.1292

GC/MS Spectrum:

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[Source: Agilent 5975 GC/MS, NPS Discovery, Center for Forensic Science Research & Education, PA]



LC-QTOF-MS Product Ion Spectrum:

[Source: Sciex TripleTOF [®] 5600+ LC-QTOF-MS, NPS Discovery, Center for Forensic Science Research & Education, PA] **Pharmacological Drug Class:** atypical tricyclic antidepressant, atypical opioid agonist

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