

TOXTALK



PRESIDENT'S MESSAGE



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

As I write this, I have just returned from the SOFT Executive Committee meeting in Chicago. What a great two days in the windy city! For those of you unfamiliar with this summer meeting, it is a time when the members of the Executive Committee gather together for an in-person strategic working session. It's always a super productive meeting as we can really hunker down and get work done on our many initiatives – envision markers and a flip chart! Some of the highlights of this year included discussing member feedback on the proposed Bylaws updates, reviewing edits to the Ethics Committee procedures, writing draft mission and vision statements, developing a better performance evaluation process for SOFT staff, gathering ideas for an ERA/YSMA donation campaign, and discussing our

Diversity, Equity, and Inclusion (DEI) initiatives. More on all of this in the coming months! In addition to this meeting of the Executive Committee, the full Board of Directors has continued to meet, with most of our recent meetings dedicated to routine SOFT business (voting on new/retired members, SOFT financials, annual meeting updates, webinar approvals, etc.) and the Bylaws updates.

Speaking of the Bylaws updates, thank you to all members that took the time to provide feedback. I want you to know that we listened, and you will see some of the changes proposed in the previous redline version have been modified in response to these comments; refer to the updated redline version found [HERE](#). We identified some areas where we removed information that could remain; as it is always the goal to modify the Bylaws as little as possible, we changed course and kept the information in. We did receive some comments about adding in more detail. In general, we chose not to add in more information as the details are captured in our Policies and Procedures document.

TOXTALK

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BOARD OF DIRECTORS

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PRESIDENT'S MESSAGE CONTINUED

Updates of note:

- **Executive Director role:** The last Bylaws update was done when Beth had been here less than two years. As she is now coming up on her seven-year anniversary, we have a much better idea of how she can best serve SOFT and have updated the Bylaws to reflect that.
- **Membership Section:** This Chapter was reorganized as parts were redundant and unclear.
- **Selection of the Director for the Executive Committee:** One of the six Directors serves on the Executive Committee. Currently, the Directors themselves decide which one of them should serve in this role. Anyone that has served on the Board can tell you this is an awkward approach. We have two Directors that just joined the Board being asked to decide who the right person is to represent them. In addition, you can have multiple people interested in the position, but one or more feel uncomfortable campaigning for themselves. To resolve this, we

are instead proposing that the Executive Committee, comprised of those that have served the longest on the Board, be the ones to appoint this Director, as they have had the opportunity to evaluate their contribution and commitment to the Board.

- **Addition of the Past President to the Executive Committee:** This allows the individual with the longest tenure to continue to be involved in the most strategic discussion and working sessions of the Board; they will serve as a non-voting member.
- **Removal of the Committee Reports from the Business Meeting agenda:** Holding a separate virtual meeting allows the entire membership to hear these reports, and not just those who are able to attend the Annual Meeting in person. We also can now give the Committee Chairs sufficient time to give their reports; as we have grown to be an organization with more than 20 committees, it has been difficult to accomplish this within the time allotted for the business meet-

ing. We believe this is a win-win approach.

- **Lifetime term limit for Directors:** We are making a large push to get as much of our membership as possible involved in SOFT. With more than 1,000 members eligible to serve on the Board, we know we have plenty of qualified individuals to serve in this role, so there is no reason someone would need to be a Director for more than two terms. If a Director is asked to complete another Director's term (this can happen, for example, when a Director promotes to an Officer position before their term ends or if a Director decides not to complete their three year term), this does not constitute another term and would not count towards the two term lifetime limit.
- As many of us know from editing our own policies and procedures, upon our review we often catch errors, identify oversights, find areas where we could be more consistent, and realize things could be said slightly better, so there is some of that too.

If you have any remaining questions about the proposed updates, please reach out to a Board member. Any of us would be happy to discuss the changes with you.

With that, I will end my report by saying that I can't wait to see many of you in Denver. Safe travels to all, and don't forget your formal wear and masks!

Erin A Spargo



SOFT Board of Directors and Staff in Chicago for the annual in-person Board Meeting. Chicago is our host city for SOFT 2026!

**REVIEW THE
BYLAWS
HERE!**

FROM THE EXECUTIVE DIRECTOR'S DESK



BETH OLSON
SOFT EXECUTIVE DIRECTOR

By the time you read this, we will be only a few weeks away from SOFT 2023 in Denver. If registration trends hold true, our meeting will be back to its pre-pandemic attendance of 1,000-1,100. Although the pandemic seems to have had a lasting impact on the exhibit hall, with fewer exhibitors and sponsors we've had in the past, the submission of abstracts and workshop proposals along with the current levels of meeting registration indicate that people are as eager as always to participate in our annual meeting.

While we're only a few weeks away from the start of the meeting, we will have several opportunities for

engagement with SOFT in September.

The 3rd Annual SOFT Summer Book Club will feature Atomic Habits by James Clear. The Book Club is a joint effort of the Mentoring Committee and SOFTopics. If you weren't able to participate this year, we hope you'll keep an eye out for next summer's read!

We will be offering a **FREE webinar, the Current State of Culture, Values and Diversity** in SOFT at 10 am Pacific/1 pm Eastern on Friday, September 22. A recording of the webinar will also be available on-demand for those unable to attend in person. Topics include an update on Diversity, Equity, and Inclusion efforts within SOFT, as well as presentations on microaggressions, and unconscious bias in medicine. We hope that you all will join us for this important SOFT program.

On September 27, we will hold our **first Semi-Annual Committee Activity Update meeting**. All SOFT members are encouraged to attend. The meeting will be recorded and viewable

at a later date for those who aren't able to attend live. This meeting will include reports from SOFT's committees, including objectives and activities for the year for each committee.

Moving forward, these meetings will be held twice each year, once in the spring and once about a month prior to the SOFT meeting. Committees have traditionally presented reports at the two in-person Board meetings each year, as well as the Business Meeting at the SOFT Annual Meeting. Since these three opportunities have limited participation, we will now be holding these update meetings twice a year on a virtual platform. This will allow all members of SOFT, whether they are attending the Annual Meeting or not, to keep abreast of committee activities.

I am looking forward to seeing many of you virtually at our September programming and in person at Gaylord Rockies in October!



**Diversity
Equity
Inclusion**

Webinar The State of Culture, Values and Diversity in SOFT

Learning Objectives:

- Inform attendees of the work being done by the SOFT Culture, Values and Diversity committee
- Review training received by CVD committee and SOFT Board
- Learn how to identify and respond to microaggressions
- Discuss bias in forensic medicine and the impact on the work of toxicologists

💰 **FREE!** For SOFT Members

📅 Friday, September 22

🕒 10 am Pacific/1 pm Eastern

SEMI-ANNUAL COMMITTEE ACTIVITY UPDATE

WEDNESDAY, SEPTEMBER 27
10:00 AM PACIFIC/1:00 PM EASTERN

Join us for our first SOFT Committee Activity Update meeting! Committees have traditionally presented reports at the two in-person Board meetings each year, as well as the Business Meeting at the SOFT Annual Meeting. Since these three opportunities have limited participation, we will now be holding these update meetings twice a year on a virtual platform. This will allow all members of SOFT, whether they are attending the Annual Meeting or not, to keep abreast of committee activities.

FREE! REGISTER HERE!

> REGISTER NOW



2023 SLATE OF OFFICERS

The The Nominating Committee's task is to provide a slate of Officers and Directors to the full membership of SOFT at least 30 days prior to the annual Business Meeting. The President and President-Elect each serve a one-year term, while the Secretary and Treasurer serve a two-year term which expires on alternate years. Directors are elected for a three-year term.

The 2023 SOFT Nominating Committee was comprised of Robert Sears (Chair), Demi Garvin, and Dani Mata. We respectfully submit the following slate to be considered by the SOFT membership.

Please see below for Officer and Director bios.



PRESIDENT-ELECT

Chris Heartsill



SECRETARY

Madeleine Swortwood



DIRECTOR

Jen Colby



DIRECTOR

Rusty Lewis



Please join us for the Annual Business Meeting on Thursday, November 2 from 3:30-5:00 pm at the Gaylord Rockies!

NOMINATING COMMITTEE

CHRIS HEARTSILL is currently certified by the American Board of Forensic Toxicology as a Diplomate - Forensic Toxicology and received his B.S. degree in Chemistry from East Central University in 1991. Chris has been working in analytical chemistry for over 30 years with more than 28 years of forensic toxicology experience including the areas of human performance forensic toxicology, postmortem forensic toxicology, and forensic laboratory quality management. Chris is currently working as the Regional Toxicology Liaison for NHTSA Region 7. He was previously the Quality Manager for the Dallas Police Department Crime Scene Response Section and the Tarrant County Medical Examiner's Office in Fort Worth, Texas. He spent most of his career as a Toxicology Supervisor, Toxicologist, Quality Manager, and Breath Testing Technical Supervisor at the Dallas County Medical Examiner's Office in Dallas, Texas. Chris is an active member of the Society of Forensic Toxicologists, currently serving as the Secretary, Chair of the Membership Committee, Chair of the Policies and Procedures Committee, member of the Finance Committee, and Associate Editor of ToxTalk. Other professional organizations include the Southwestern Association of Toxicologists, serving two individual terms as President, Grant Committee Chair, and Historian, and the National Safety Council Alcohol, Drugs & Impairment Division, serving on the Executive Board as Secretary and performing duties on the Administrative Committee. Chris promotes the creation and advancement of forensic standards by serving on the Organizational Scientific Area Committees Toxicology Subcommittee.

MADELEINE SWORTWOOD, PH.D. is currently a Toxicology Expert at Robson Forensic. Previously, she was a tenured Associate Professor in the Department of Forensic Science at Sam Houston State University. Dr. Swortwood received a Bachelor's degree in Biochemistry from Duquesne University and a Ph.D. in Chemistry from Florida International University (FIU). She completed a postdoctoral fellowship with the National Institute on Drug Abuse under the mentorship of Dr. Marilyn Huestis. During graduate school, Dr. Swortwood served as an intern at the Food and Drug Administration's Forensic Chemistry Center and the Miami-Dade Medical Examiner's Toxicology Laboratory, where she was hired as a full-time forensic toxicologist.

Madeleine is currently on the Board of Directors for SOFT and is also Co-Chair of the SOFT/AAFS Oral Fluid Committee. Previously, she served on the SOFT Publications Committee and the SOFT/AAFS Drugs & Driving Committee. She is past Chair of the AAFS Toxicology Section and serves as the Executive Secretary of the OSAC Toxicology Subcommittee. Her research to date includes novel psychoactive substances, oral fluid drug testing, drug metabolism, in utero drug exposure, and analytical method development. She has authored and co-authored more than forty manuscripts and one book chapter. She has mentored dozens of MS and PhD students while at SHSU and continues to chair dissertation committees.

JENNIFER COLBY, PHD is the Scientific Director at Premier Biotech Labs, LLC, in Minneapolis, Minnesota. Dr. Colby received her bachelor's degree in biology from Vanderbilt University, her PhD in toxicology from UC Berkeley, and completed a postdoctoral fellowship in clinical chemistry and toxicology at UCSF. Dr. Colby is certified by the American Board of Clinical Chemistry in clinical chemistry and toxicological chemistry. Dr. Colby's research has twice won the Editor's Choice award from the Journal of Analytical Toxicology. Her work has also been recognized with awards from AACC Academy and SOFT. Within SOFT, Dr. Colby has served on the continuing education committee, the awards committee, and co-hosted the 2021 Nashville meeting. Outside SOFT, Dr. Colby serves as the chair of the TDM/Toxicology division of AACC, as the secretary/treasurer for the American Board of Clinical Chemistry, as the chair of the awards committee for the Toxicology section of AAFS, and she is an active peer reviewer for a number of journals.

NOMINATING COMMITTEE

RUSSELL "RUSTY" LEWIS, PHD is the manager of the Bioaeronautical Sciences Laboratory at the Federal Aviation Administration's Civil Aerospace Medical Institute in Oklahoma City, Oklahoma. There, he oversees the toxicological analyses of civil aircraft accident fatalities and select National Transportation Safety Board surface accidents, acts as the certifying toxicologist, and provides expert testimony for casework and final case reports. Dr. Lewis also serves as an Adjunct Assistant Professor of Forensics for Oklahoma State University Center for Health Sciences, School of Forensic Sciences, and holds the position of vice chair for the National Safety Council's Alcohol, Drugs and Impairment Division. Dr. Lewis' current research interests include investigating postmortem ethanol formation and developing novel tools for identification of impairment. Dr. Lewis has authored/co-authored over 85 scientific journal articles, book chapters, and government reports. Dr. Lewis is certified by the American Board of Forensic Toxicology as a board-certified Forensic Toxicologist. Prior to his life as a forensic scientist, Dr. Lewis received a Bachelor of Science degree with a dual major in Chemistry and Mathematics in 1991 (Black Hills State University, South Dakota), a Master's degree in Chemistry in 1994 (University of Oklahoma), a Specialization in Neuroscience in 1995 (University of Oklahoma Health Sciences Center), and a Ph.D. in Analytical Chemistry in 1997 (University of Oklahoma). Dr. Lewis lives on a small acreage in Newcastle, Oklahoma, which is a suburb of Oklahoma City. For enjoyment he spends much of his off-duty time in the outdoors where he enjoys hiking, camping, and pretending he's young.

REGIONAL TOXICOLOGY LIAISONS

The RTLs kicked off the free testimony training for publicly funded laboratories in June for NHTSA Regions 5, 7, and 9. There have been seven completed trainings, with three more scheduled. Responsibility.org has agreed to fund the training, and feedback has been extremely positive. This year will not be the last time this training is offered. As we grow the RTL program into more NHTSA Regions, we will provide services for even more publicly funded laboratories nationwide.

On June 22, the RTLs provided an all-region virtual meeting for the regions represented in the project. The training topic was an overview of OSAC, ASB, the Standards Checklists provided through a NIST Cooperative

Agreement, and the implementation of the checklists and standards. For more information on the ASB Checklists and implementation, please reach out to any of the RTLs or the Project Manager, Amy Miles.

The RTLs met in August to plan future training curriculum. On deck is to create a virtual training focused on method development and validation. Stay tuned for announcements as the curriculum is developed. If you have any suggestions for a training topic you would like to see, please contact the RTLs or Amy Miles.

The RTLs continue to receive requests for training and assistance from laboratories outside the project's current

scope. Keep your requests coming! It's the best way to show the need for RTLs in all NHTSA Regions and to champion for your region to be next.

If there are any questions or feedback, please reach out to Amy Miles, the Project Manager, or any of the RTLs.
Amy Miles, Project Manager
amy.miles@slh.wisc.edu

Sabra Jones, Region 5
sabra@soft-tox.org

Chris Heartsill, Region 7
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AMY MILES
Program Manager



SABRA JONES
Region 5



CHRIS HEARTSILL
Region 7



KRISTEN BURKE
Region 9

ANNUAL MEETING UPDATE - DENVER, CO

Amazing! It's absolutely amazing how time is flying by this year. The summer is almost in the far distance and SOFT Denver 2023 is right around the corner. The planning committee is working diligently to create the best program for the SOFT attendees. We are excited to welcome you to Denver, CO for the Rocky Mountain experience!

The city of Denver, CO is known as the Mile-High city for a reason as we are 5,280 feet from sea level. If you travel to the mountains, you will be much higher, potentially at 10-14,000 feet. Visitors to the Mile-High city and to higher elevations west of Denver, may experience symptoms from the high altitude. Altitude or mountain sickness occurs because the pressure of the air, also known as barometric or atmosphere pressure drops as you increase elevation making less oxygen available. When you travel to Colorado, you will notice its harder to exercise and breathe; you may be out of breath simply walking up stairs. Often, it takes time to adjust to the high altitude, and we highly recommend you hydrate several days before and during your visit to minimize any of these symptoms- headache, dizziness, nausea, fatigue with loss of energy, and loss of appetite. During your first few days in Colorado, avoid strenuous exercise, and limit alcohol intake as alcohol binds to oxygen and water and robs your body of these two important nutrients. Denver is considered a high desert, and thus the air is drier. Drink lots of water to avoid dehydration. Many Colorado residents have central humidifiers in our homes to keep the moisture in as humidity is scarce.

The annual meeting will take place at the Gaylord Rockies Resort & Convention Center, located in close proximity to Denver International Airport. The week will begin on Sunday evening with the Young Forensic Toxicologists (YFT) Symposium and Professional Development Fair and continue on Monday with their sponsorship of the Student Enrichment Program (SEP). Monday and Tuesday are education filled days with 16 half-day workshops to choose from, as well as sponsored Lunch and Learns. Wednesday is the official beginning of the annual meeting. The Plenary speaker will kick-off the meeting, and was selected alongside SOFT's Cultural, Values, and Diversity (CVD) Committee. Dr. Iris Wagstaff is a chemist, educator, researcher,

and science policy advisor, who currently serves as a STEM Program Director in the Diversity, Equity, and Inclusion Department of the American Association for the Advancement of Science (AAAS). From 2015-2017, she served as an AAAS Science and Technology Policy Fellow at the National Institute of Justice's Office of Investigative and Forensic Sciences where she developed and led an agency-wide diversity and inclusion initiative. It was here that she worked with one of the co-chairs of the CVD committee. Dr. Wagstaff is uniquely positioned as both a research chemist as well as a social scientist to address the complex issues of diversity, equity, and inclusion in the sciences, including micro aggressions, implicit bias, metrics, and how organizations can change.

The scientific session is Wednesday through Friday (half-day) and includes 52 oral presentations in 9 sessions titled Cannabis, Alternative Matrices, Post-mortem, Clinical, Novel Psychoactive Substances (NPS), Analytical Methods, Award recipients, Drugs & Driving, and Best Practices. There are also 2 poster sessions that will contain 127 poster presentations with sufficient space and time to meet with the authors.

Networking opportunities are plentiful. Tuesday evening includes several events: the Welcome Reception with the exhibitors, the Elmer Gordon Forum and the Nite Owl Reception. The off-site event schedule for Wednesday evening will take place at Dry Dock North Brewery, a short drive away from the Gaylord Resort. Early Thursday morning begins with the Karla Moore Fun Run and the evening culminates with the President's Reception Masquerade Ball, featuring a large, multi-piece band, "Radio Band."

A successful SOFT meeting involves so many hard working and dedicated members and volunteers. Please consider volunteering a little bit of your time while attending. Volunteering is a great way to become more involved, meet new people, and give back to SOFT.

We cannot thank the 2023 Denver Planning Committee and the SOFT office, Beth and CC, for their tireless efforts and commitment to a successful annual meeting. Thank you all and we hope to see you all in Colorado real soon!

Dan and Vanessa

2023 HOSTS



DAN ANDERSON



VANESSA BEALL

SCIENTIFIC PROGRAM COORDINATORS

LUKE RODDA
SARA SCHREIBER

WORKSHOP COORDINATOR

DONNA PAPSUN
LISA REIDY

VOLUNTEER COORDINATOR

STEPHANIE OLOFSON
JENNIFER BECKSTORM

SOCIAL COORDINATOR

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FRANK WALLACE

FOOD & BEVERAGE

ANN MARIE GORDON
DENICE TEEM
DELISA DOWNEY

YOUNG FORENSIC TOXICOLOGISTS

MARISSA FINKELSTEIN

EXHIBITOR LIAISON (2018-2023)

THE LATE LIZ KIELY

2023 PLANNING COMMITTEE MEMBERS



SOFT 2023 WORKSHOPS

MONDAY, OCTOBER 30 &
TUESDAY OCTOBER 31

MONDAY, OCTOBER 30, 8:00 AM - 12:00 PM

[Workshop 1: Pharmacology, Detection, and Control Actions of Synthetic Drugs](#)

- Chairs: Jonna Berry/Justin Grodnitzky
- Audience Knowledge: Intermediate

[Workshop 2: The Human Brain and Factors Affecting the Neurobiological Development from Adolescent to Adulthood Exploring the Intersection of Mental Illness, Addiction, and the role of Laboratory Science](#)

- Chairs: Michael Wagner/Tom Kupiec
- Audience Knowledge: Intermediate

[Workshop 3: QTOF 101: A Guide to Successful Development and Validation \(Part I\)](#)

- Chairs: Kaitlyn Palmquist/Christina R. Smith
- Audience Knowledge: Basic/Intermediate

[Workshop 4: Pediatric Toxicology Part I: From Bottle to Backpack - Introduction to Pediatric Toxicology \(Part I\)](#)

- Chairs: Jennifer Swatek/Kari Midthun
- Audience Knowledge: Basic

MONDAY, OCTOBER 30, 1:30-5:30 PM

[Workshop 5: Lessons Learned from Implementing QTOF Analysis into Routine Workflow \(Part II\)](#)

- Chairs: Dani Mata/Brittany Casey
- Audience Knowledge: Basic/Intermediate

[Workshop 6: Pediatric Toxicology Part II: From Bassinet to Body Bag - Postmortem Challenges and Considerations in the Investigative Process \(Part II\)](#)

- Chairs: Jennifer Swatek/Kari Midthun
- Audience Knowledge: Intermediate

[Workshop 7: Cannabis Testimony in Today's Environment](#)

- Chairs: Jennifer Limoges/Stephanie Olofson
- Audience Knowledge: Intermediate

[Workshop 8: beMUsed by Measurement Uncertainty? Let's Talk](#)

- Chairs: Sue Pearring/Tate Yeatman
- Audience Knowledge: Basic

TUESDAY, OCTOBER 31, 8:00 AM - 12:00 PM

[Workshop 9: Win, Lose or Withdrawal: The Pharmacology, Management, and Interpretation of Drug Withdrawal](#)

- Chairs: Aaron Shapiro/Nathalie Desrosiers
- Audience Knowledge: Advanced

[Workshop 10: "Steady as She Goes": Mastering Stability in Forensic Toxicology](#)

- Chairs: Karen Scott/Lorna Nisbet
- Audience Knowledge: Intermediate

[Workshop 11: Forensic Interpretation of Novel Psychoactive Substances in Challenging Cases](#)

- Chairs: Alex Krotulski/Dani Mata
- Audience Knowledge: Intermediate

[Workshop 12: Drug-Facilitated Crimes \(DFC\) Analytical Methods and Statistics \(Part I\)](#)

- Chairs: Laureen Marinetti/Celeste Wareing
- Audience Knowledge: Intermediate

TUESDAY, OCTOBER 31, 1:30 - 5:00 PM

[Workshop 13: Drug-Facilitated Crimes \(DFC\) Case Presentations \(Part II\)](#)

- Chairs: Laureen Marinetti/Celeste Wareing
- Audience Knowledge: Intermediate

[Workshop 14: Principles of Lean Six Sigma and Their Application to Forensic Toxicology Laboratories](#)

- Chairs: Marissa Finkelstein/Joe Kahl
- Audience Knowledge: Basic

[Workshop 15: Oral Fluid Testing: An Automatic Answer?](#)

- Chairs: Robert Lockwood/Kristin Tidwell
- Audience Knowledge: Intermediate

[Workshop 16: Career Development and Leadership Techniques for the Forensic Toxicologist](#)

- Chairs: Kristin Kahl/Erin Strickland
- Audience Knowledge: Basic



SCIENTIFIC PROGRAM

WEDNESDAY, NOVEMBER 1 -
FRIDAY, NOVEMBER 3



SCIENTIFIC PROGRAM SCHEDULE

WEDNESDAY, NOVEMBER 1

POSTER:

- Poster Prep, 7:00 - 11:00 am
- Poster Session #1, 12:00 - 2:00 pm

PLATFORM:

- Presentations, 9:00 am – 5:00 pm

THURSDAY, NOVEMBER 2

POSTER:

- Poster Prep, 7:00 - 11:00 am
- Poster Session #2, 12:00 - 2:00 pm

PLATFORM:

- Presentations, 8:00 am – 3:00 pm

FRIDAY, NOVEMBER 3

POSTER:

- No presentations

PLATFORM:

- Presentations, 8:00 am – 12:00 pm

PLATFORM PRESENTATIONS

52 Platform Presentations

9 Platform Sessions:

- Cannabis, Alternative Matrices
- Postmortem
- Clinical
- Novel Psychoactive Substances (NPS)
- Analytical Methods
- Award Recipients
- Drugs & Driving
- Best Practices

PRESENTATIONS ARE DUE BY OCTOBER 2!

POSTER PRESENTATIONS

127 poster presentations

2 Poster Sessions

PRESENTATIONS ARE DUE BY OCTOBER 6!

REGISTRATION

ON-SITE REGISTRATION BEGINS OCTOBER 11



	Early Bird (June 1 - Aug 31)	Late (Begins Sept 1)	Onsite (Begins Oct 11)
Member	\$599	\$799	\$899
Student	\$299	\$499	\$699
Non-member	\$799	\$999	\$1,099
Exhibitor	\$599	\$599	\$599
Guest - Social/Meal Package	\$500	\$500	\$500
Workshop (Member)	\$150	\$175	\$200
Workshop (Non-Member)	\$200	\$225	\$250
Workshop Only	(workshop fee only)	(workshop fee only)	(workshop fee only)
Fun Run	\$30 Donation	\$30 Donation	\$30 Donation

EVENTS & NETWORKING

SUNDAY, OCTOBER 29

YFT Symposium and Professional Development Fair
5:00 - 9:00 pm

MONDAY, OCTOBER 30

Lunch & Learns with Sponsors
12:00 - 1:30 pm

TUESDAY, OCTOBER 31

Lunch & Learns with Sponsors
12:00 - 1:30 pm

Elmer Gordon Forum Dessert Reception
8:30 pm -10:00 pm

Welcome Reception and Exhibit Hall Opening
6:30 - 9:30 pm

MilliporeSigma Nite Owl Reception
10:00 pm -12:00 am

WEDNESDAY, NOVEMBER 1

Exhibit Hall
9:30 am - 4:00 pm

Lunch with Exhibitors
12:00 - 2:00 pm

Dry Dock Brewing
6:00 pm - 10:00 pm
Off-site Event

THURSDAY, NOVEMBER 2

Karla Moore Fun Run/Walk
6:30 - 8:00 am

Exhibit Hall
9:30 am - 3:30 pm

Lunch with Exhibitors
12:00 - 2:00 pm

SOFT Business Meeting
3:30 - 5:00 pm

President Spargo's Cocktail Hour
6:00 pm - 7:00 pm

President Spargo's Masquerade Ball
7:00 pm - 12:00 am



ELMER GORDON FORUM

MODERATED BY SOFTOPICS



SOFTopics and the Elmer Gordon Forum are teaming up this year at the 2023 SOFT Meeting in Denver, CO! Join us on Tuesday night after walking through the Welcome Reception and meet some of the people you've gotten to know over our virtual discussions. Check the app or program for exact time and location.

Similar to previous years, don't be shy in asking your fellow toxicologists in the room your burning questions or interesting observations from your laboratory. However, this year, we are also taking any suggestions for topics or questions you'd like to submit for discussion during the forum before the meeting.

Please submit your questions and topics to the right or onsite at Elmer Gordon Question Box, located at the check-in desk. We look forward to seeing you in Denver!



SUBMIT
HERE

HOTELS

Thank you for your patience while SOFT has worked to secure additional hotels for SOFT 2023. Our host hotel, Gaylord Rockies, has declined to add additional rooms to our room block. SOFT utilizes the services of INNOV8 Meetings + Events to assist with our annual meeting site selection and contract negotiations. INNOV8 was able to assist us in securing three additional hotels, The Courtyard, Hyatt House, and The Woolley's Classic Suites. Free shuttle transportation will be provided to the Gaylord Rockies Resort and Convention Center. A shuttle schedule will be posted at a later date.

Again, thank you for your patience, we are thrilled to have so many attendees for SOFT 2023 in Denver, CO!

GAYLORD ROCKIES RESORT & CONVENTION CENTER

Host Hotel and Convention Center

6700 N Gaylord Rockies Blvd

Aurora, CO 80019

Room Rate: \$239/night (no resort fee)

COURTYARD DENVER AIRPORT

6901 Tower Road

Denver, Colorado 80249

Room rate: \$164/night, includes free airport shuttle

HYATT HOUSE DENVER AIRPORT

18741 E 71st Avenue

Denver, Colorado 80249

Room rate: \$159/night, includes free airport shuttle

WOOLLEY'S CLASSIC SUITES

16450 E. 40th Circle

Aurora, CO 80011

Room Rate: \$189/night, includes free airport shuttle



BOOK
A
ROOM
HERE

EXHIBITING

BOOTH SPACE IS STILL AVAILABLE!

We still have room in the SOFT 2023 Exhibit Hall! 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.

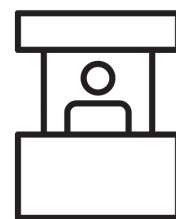


RESERVE YOUR BOOTH!

10' X 10' BOOTH

\$2,500 PER BOOTH

OCTOBER 29-NOVEMBER 3



RESERVE
HERE

VOLUNTEERS

Volunteers (both members and non-members) are needed for a variety of tasks throughout the annual meeting. Be front and center with attendees by helping them at the Check-in Desk or assist behind the scenes with registration preparation. Interested in learning a new skill? Volunteer with Audio Visual and support workshop AV needs. Are you an early bird? Rise and shine *EARLY* on Thursday morning to help direct the participants during the Karla Moore Fun Run! Volunteering is great opportunity to meet friends, both old and new, while helping SOFT host another successful meeting!

VOLUNTEER OPPORTUNITIES

- Registration Preparation (Sat)
- YFT Symposium (Sun)
- Check in Desk/Registration (Sun-Thur)
- Workshop AV (Mon/Tue)
- Workshop Registration/Monitor (Mon/Tue)
- Poster Session (Wed/Thur)
- Dry Dock Brewing (Wed, Off-site Event)
- Fun Run (Thur)
- SOFT Business Meeting (Thur)
- President's Banquet(Thur)



VOLUNTEER
HERE

FUN RUN/WALK

The original Tox 'N Purge run was created by Dr. Karla Moore in 1997 for the Salt Lake City meeting. In addition to her involvement in the field of toxicology and participation in SOFT, she was an officer in the United States Air Force.

After her passing in 2008, the run was memorialized in her honor. The proceeds from the run are donated to the American Cancer Society in Dr. Moore's memory and

expenses for the event are supported by our SOFT exhibitors. Please help us thank them for their support of Dr. Moore's vision!

Thursday, November 2, 6:30 - 8:00 am
\$30 Donation - Lapel pin & Shirt included
Fun Run Coordinator: Aria McCall



REGISTER
HERE

SPONSORS

THANK YOU TO OUR 2023 SPONSORS!

WE APPRECIATE YOUR SUPPORT OF SOFT AND LOOK FORWARD TO SEEING YOU IN DENVER!

TIER I SPONSORS - \$15,500



TIER II SPONSORS - \$7,500



SPONSORS

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THANK YOU TO OUR 2023 EXHIBITORS! WE ARE GRATEFUL FOR YOUR SUPPORT OF SOFT!

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President Spargo's
MASQUERADE BALL

Enjoy an Evening with Dinner, Dancing and Masquerading!

Formal Attire and Masquerade Masks are Requested

NOV
2
2023

Soft 2023
GAYLORD ROCKIES RESORT
DENVER, CO

THU
7:00
PM

What to expect at the **MASQUERADE BALL**

Attendees may bring their own mask or use one provided by SOFT.
You are encouraged to be fancy with your mask and attire!



YOUNG FORENSIC TOXICOLOGISTS (YFT)

Hello Young Forensic Toxicologists!

We are only a few weeks away from the annual meeting in Denver, Colorado, and YFT is hard at work putting the final touches on the YFT Symposium, the Professional Development Fair (PDF), and the Student Enrichment Program (SEP)!

SYMPOSIUM

The **YFT Symposium will be held on Sunday, October 29th from 5:00–9:00PM**. This year's event will begin with a social hour that consists of drinks, hors d'oeuvres, and an opportunity for professional networking with peers. During this hour, attendees will also be able to check out the Professional Development Fair with representatives from educational programs, professional certifications, and professional organizations available to talk about their offerings. **New to this year's Professional Development Fair: YFT will be providing resume and CV review services!!** Please bring a paper copy of your resume/CV if you would like to participate.

The symposium will continue with an update from last year's Leo Dal Cortivo Poster Award recipient, Joe Kahl, followed by a panel presentation on topics ranging from higher education to certifications and everything in between. The evening will include a visit from SOFT's Board of Directors, a presentation by Dr. Lawrance Mullen about RTI International and the National Laboratory Certification Program (NLCP) and will conclude with a panelist discussion. Please submit your questions or topics you may have to discuss with our panel or other young forensic toxicologists. **YFT would like to thank our panelists for joining us this year!**

- **Dr. Michelle Peace** - *Higher Education*
- **Dani Mata** - *Public Labs*
- **Dr. Rachel Lieberman** - *Industry*
- **Dr. Dan Isenschmid** - *ABFT Certification*
- **Dr. Madeline Swortwood** - *Professional Organizations*

LEO DAL CORTIVO

Abstracts are in! If your abstract was accepted and you marked yourself eligible for the Leo Dal Cortivo Award, you will be receiving

an email from YFT to submit your application for the award. **Applications are due by September 30! APPLY HERE!** Once all applications are in, the committee will review the applications/abstracts as part of the judging process. We look forward to listening to your presentations and discussing your posters with you! The winner for best poster presentation and best oral presentation will be announced at President Spargo's Masquerade Ball on Thursday evening.

YFT WORKSHOP

YFT is excited to host the workshop, ***Career Development and Leadership Techniques for the Forensic Toxicologist***. This half-day workshop will be held on Tuesday, October 31st from 1:30 – 5:00 PM. We will discuss various career paths in forensic toxicology, career development in public and private organizations, leadership principles applicable to the forensic toxicologist, and tips and tricks for managing time and stress within career growth. We hope to see you there!

STUDENT ENRICHMENT PROGRAM

The Student Enrichment Program will be held Monday, October 30th and is **NOT** open to SOFT meeting attendees. This year YFT has partnered with the Colorado Bureau of Investigation and Aurora County Public Schools to welcome the second-year forensic science students from Rangeview High School. The students will spend the day learning about forensic toxicology through presentations, virtual laboratory tours, and hands-on activities in partnership with SOFT's Diversity Task Force.

EMPLOYMENT BOARD

Stop by the new employment opportunity board located by the check-in desk! Bring your resume/CV and any open forensic toxicology positions to post for all attendees to see!



EXECUTIVE BOARD:

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TOXTALK CONTRIBUTOR:

LINDSAY GLICKSBERG



YFT SYMPOSIUM

 Sunday, October 29

 5:00-9:00 PM

The symposium begins with a social hour that consists of hors d'oeuvres, drinks and networking with peers. Visit the Professional Development Fair to discuss continuing education, professional training, board certification, and academic and career opportunities. Followed by an update from the 2022 Leo Dal Cortivo Best Poster Award Recipient, Joe Kahl and a visit from the SOFT Board of Directors. We hope to see you there!

**SUBMIT YOUR PANEL
QUESTIONS HERE!**



SOCIETY OF FORENSIC TOXICOLOGISTS
Young Forensic Toxicologists

PANEL SPEAKERS



**Dan
Isenschmid**
Certification



**Dani
Mata**
Public Lab



**Madeleine
Swortwood**
Professional Oranziations



**Michelle
Peace**
Higher Education

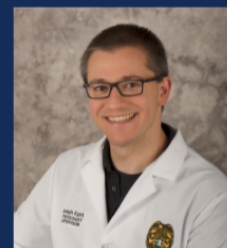


**Rachel
Lieberman**
Industry

LEO DAL CORTIVO

**Joe
Kahl**

2022 Leo Dal
Cortivo Winner



2023 ERA AND YSMA RECIPIENTS

Congratulations to our 2023 Educational Research Award and Young Scientist Meeting Award Recipients!

This award is to be used by the recipients to offset travel expenses incurred for the annual SOFT meeting so they may present their research.

If you are attending SOFT 2023 please stop by the Awards session to hear from our 2023 Award Recipients.

**AWARDS SESSION
THURSDAY, NOVEMBER 2
2:00 - 3:00 PM**

AWARD RECIPIENTS



Bridget O'Leary

ERA - MASTERS



Jessica Ayala

ERA-DOCTORATE



Ashley Pokhai

YSMA



Katie Diekhans

YSMA

**CONGRATULATIONS TO OUR
2023 AWARD RECIPIENTS!**



BRIDGET O'LEARY - ERA MASTERS

Congratulations on winning this year's YSMA award! How did it feel when you found out that you had won? I was so excited and could not believe it! It means so much to me to be receiving this award, and is so validating for all the hard work I have put into this project.

Can you briefly explain what your submission was about? My research focused on the stability of cannabinoids in blood in different blood collection tubes at different temperatures and time intervals. As cannabis continues to be legalized throughout the United States having a better understanding of how collection conditions can affect the concentration of cannabis is important when evaluating specimens, especially in DUI cases.

What did you hope to achieve when you decided to enter a submission to the awards program? When I applied for this award I hoped people would see the hard work I had put into my own research and get interested in ideas for their own. I also hoped to get valuable feedback on my research from other scientists who have more experience and have been in this field longer than I have.

What does it mean to you to receive this award? This will be my first SOFT meeting I am able to attend so receiving this award will make it that much more special. I had no idea two years ago I would be where I am today and am so proud of all I accomplished and the people who helped me along the way.

What continuing education are you currently participating in/taking? As this is my first time at a SOFT meeting I am very excited to take advantage of everything that it has to offer. I am particularly interested in the workshop on Cannabis testimony in Today's Environment as it pertains to my research.

Tell us about a teacher/mentor that had an impact on you or set you on your present career Path? Dr. Marta Concheiro has had such a positive impact on me and my academic career. Working alongside her in her research lab taught to always try my best, to always ask questions and overall how to be a better scientist.

How would you use being the recipient of this award to influence others and how would it impact your career? I will use this award to influence other students who are just starting on their research. I hope this award drives them to become better researchers and to find a project that interests them. I also hope this award will open up conversations with other researchers which may potentially become further research projects down the road. This award is important to me as I graduate and start my job search as it will hopefully allow me to be looked at in a more professional light.

JESSICA AYALA - ERA-DOCTORATE

Congratulations on winning this year's YSMA award! How did it feel when you found out that you had won? I was completely shocked! It honestly made me feel validated by my peers. I left my job as Deputy Chief Toxicologist at the Harris County Institute of Forensic Sciences in Houston, TX to pursue my PhD. In the beginning of my return to academia, I worried that I may have made the wrong decision. However, seeing the positive response to the work I have completed makes me feel like it was all worth it!

Can you briefly explain what your submission was about? This phase of my project focused on the application of a supported liquid extraction method in whole blood using liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF-MS) for the analysis of classic drugs of abuse and new and emerging compounds by comparing the results of authentic samples previously analyzed by immunoassay.

What did you hope to achieve when you decided to enter a submission to the awards program? I was really hoping that the impact of my doctoral work would be understood. Since new psychoactive substances are becoming more commonplace, many laboratories are currently assessing the cost benefit of purchasing high resolution instrumentation such as a liquid chromatography quadrupole time-of-flight mass spectrometer (LC-QTOF-MS) as an alternative to immunoassay. This phase of my project highlights the benefits of broadening the scope of analysis as compared to immunoassay testing.

Tell us about a teacher/mentor that had an impact on you or set you on your present career path? I would not be where I am today without Dr. Sarah Kerrigan. She has been my mentor, friend, and confidant for almost 17 years! This statement ages the both of us! Whenever I have made a major decision in my life, she has been there. She was the person who cemented by passion for forensic toxicology. Her teachings and the bond I have with her helped me to progress in my education, career, and personal life.

What advice would you give to future award applicants? Keep making the effort to make a difference. The greater the impact and applicability of your work to operational laboratories helps to improve the forensic toxicology field. Your work matters, and it's okay to be competitive because it drives you to do better!

ASHLEY POKHAI - YSMA

Congratulations on winning this year's ERA award! How did it feel when you found out that you had won? I was a bit surprised at first when I received the email. I didn't expect to receive the award but I was immensely grateful that I did receive it and felt proud that my work was worthy of such an award.

Can you briefly explain what your submission was about? My submission was the work I completed for my Master's thesis project. I evaluated the cross-reactivity of various cannabinoid analogs on current immunoassay screening methods used for the detection of Δ^9 -COOH-THC in urine.

What does it mean to you to receive this award? I am immensely grateful to have been selected to receive this award. It proves to myself that I have done a great deal of work to get where I currently am and shows that I have the potential to keep achieving greater things.

What continuing education are you currently participating in/taking? I recently completed my Master's degree at VCU in May of 2023 in Forensic Chemistry with a concentration in Toxicology and Drug Analysis. I plan on taking a gap year before returning to school again to complete my PhD in either Forensic Toxicology or Pharmacology.

Tell us about a teacher/mentor that had an impact on you or set you on your present career path? My PI, Dr. Wolf, and professor Dr. Peace at VCU have had an immense impact on my present career path. During my time at VCU whilst completing my Masters, they have been extremely supportive and guiding throughout that journey.

How would you use being the recipient of this award to influence others and how would it impact your career? As a woman and a person coming from my particular ethnic background, growing up you don't see many faces that are similar to my own within the field. I would like to inspire upcoming future scientists who come from a similar background.

How do you think the SOFT Awards Program impacts students in Forensic Toxicology? I think it is extremely beneficial to students that may not have the financial resources at hand to attend a conference on their own. Attending conferences can be costly, therefore many students may not be able to afford it. Additionally, attending conferences presents students with a great opportunity to network and potentially start connections that can create a lasting impact on their careers. To be able to do this without a financial burden is huge opportunity.

KATIE DIEKHANS - YSMA

Congratulations on winning this year's ERA award! How did it feel when you found out that you had won? When I heard that I had won the ERA/YSMA award, I felt honored, proud, and grateful. I feel honored to receive this award from such a distinguished organization and appreciate the opportunity to share this project with fellow toxicologists. I feel proud to have been part of this project, as it has already provided pivotal data on the prevalence of different novel synthetic opioids in San Francisco, which in turn benefits public health. Lastly, I feel grateful for the opportunity to represent the San Francisco Office of the Chief Medical Examiner (SFOCME) and the work that is being done for the City and County of San Francisco. I am extremely grateful to all of my colleagues at the SFOCME, because they all played a critical part in this project.

Can you briefly explain what your submission was about? This submission is about the development and validation of a selective LC-MS/MS method for the detection of over 250 novel synthetic opioids (NSO) in blood and urine. This method has been implemented into routine use at the SFOCME, which has greatly increased scope of testing and has been beneficial in identifying NSO trends in San Francisco to inform public health initiatives and provide a more targeted approach to the opioid crisis.

What did you hope to achieve when you decided to enter a submission to the awards program? When I decided to enter a submission to this awards program, I hoped to achieve the opportunity to present this project to fellow forensic toxicologists and encourage research and testing for novel synthetic opioids. I also hoped to achieve recognition for those in method development and highlight the significant work that is being conducted at the SFOCME.

What does it mean to you to receive this award? This award means a lot to me personally, because it has greatly increased my confidence as a forensic toxicologist. This project gave me the opportunity to participate in something that not only benefits public health in general, but also victims of drug abuse and their families.

Tell us about a teacher/mentor that had an impact on you or set you on your present career path? A mentor that has had a significant impact on my career path is my supervisor at the SFOCME, Dr. Luke Rodda. I greatly appreciate his willingness to recruit and mentor entry-level scientists and his commitment to fostering a healthy, fun work environment. Under Dr. Rodda's leadership, I have learned more than I thought I could in this position in multiple areas including forensic toxicology, method development, quality assurance, and general lab practices. This has impacted my future career by allowing me to become a well-rounded scientist and by providing me with unparalleled experience.

FROM THE TOXTALK TEAM - NEW FORMAT

Each year we receive numerous wonderful submissions for inclusion in ToxTalk. We appreciate each submission and are grateful to our submitters for their time and effort in creating their article.

As SOFT has continued to grow each issue of ToxTalk has also grown in size. To continue to accommodate ToxTalk submissions we will be moving to a new format for future issues. An explanation of the new format is included here, and we have included an example of the new format below. We have also included this information on the ToxTalk webpage.

We look forward to your future submissions!

- Robert, Chris, and CC

NEW FORMAT OVERVIEW

ToxTalk will be formatted to include organizational information such as SOFT updates, Annual Meeting information, committee updates, award opportunities and continuing education opportunities. All science related submissions will now be included on their own webpage on the SOFT website. They will be stored there indefinitely and can be accessed at any point by both members and non-members. Scientific submissions will now need to include an abstract, a template has been included on the ToxTalk Webpage. The abstract will be included in the issue of ToxTalk and a link will be included to direct readers to the full article.

EXAMPLE FORMAT

Abstract Title Author(s)

Introduction: A short introduction will be included.
Objectives: At least one objective should be included.
Methods: A description of the methods used.
Results: A description of the results will be included along with any applicable graphs, tables and images.
Conclusion: A conclusion will be included.

View the submission [HERE](#)

SCIENTIFIC SUBMISSIONS

ALL OTHER SUBMISSIONS

TOXTALK WEBPAGE

SOFT/AAFS DRUGS AND DRIVING COMMITTEE

LITERATURE TASK GROUP - SUBMITTED BY SARA DEMPSEY AND STEPHANIE OLOFSON

The SOFT/AAFS Drugs and Driving Committee has a Literature Task Group that maintains a list of relevant literature references that are posted to the SOFT website. The intent is to provide a concise resource that can be used for review when preparing for testimony. Members of the task group include Michael Corbett, Sara Dempsey, Rebecca Hartman, Kristin Kahl, Erin Karschner (Chair), Kayla Neuman, and Tate Yeatman. The group performs biannual reviews to evaluate both new and existing articles to ensure the reference list continues to be a valuable resource for toxicologists involved in drug-impaired driving investigations.

The reference list is available for download as a Word document and an Excel file of archived references is also available for download (<https://www.soft-tox.org/drugs-and-driving-literature>). Recent updates to the literature list include several new references for CNS Stimulants and Zolpidem.

The group is currently reviewing existing references for General Benzodiazepines and will be updating the

webpage to focus on compounds in ANSI/ASB Standard 120, *Standard for the Analytical Scope and Sensitivity of Forensic Toxicological Testing of Blood in Impaired Driving Investigations*. To aid in the work of the task group, please submit relevant references for these compounds that may be considered for inclusion to [Erin Karschner](#).

SOFT-DFC SNAPSHOT – DIPHENHYDRAMINE

BY LAUREEN J. MARINETTI, PH.D., F-ABFT, AND TIMOTHY ROHRIG, PH.D., F-ABFT, 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.

Diphenhydramine is indicated for use as an antihistamine, sedative, and antiemetic. It is available over the counter in several different preparations such as elixirs, tablets, capsules, and creams ranging in concentration from 12.5 to 100 mg. Its antihistaminic properties were first described in 1946, and it has been suspected or confirmed in numerous drug-facilitated crime (DFC) investigations. The elixir formulation is especially easy to use to spike a drink. A 2019 review of toxicological findings in urine from 1000 drug-facilitated sexual assault (DFSA) cases from the United States found the prevalence of diphenhydramine to be 9% using a lower detection limit of 50 ng/mL¹. The Drug Facilitated Crimes Committee's recommended limit of detection in urine is 10 ng/mL²; therefore, the incidence of diphenhydramine in this study could be underreported.

Drug Class: Antihistamine, antiemetic, sleep aid, sedative, CNS depressant.

Generic Name: Diphenhydramine

Brand Name(s): Benadryl®, Unisom® Sleepgels, Dytuss®, Dramamine®.

Dosage Forms:

Oral, injected, and topical forms are available as pills, liquids, or creams. As an antihistamine, the recommended dose for adults is 25-50 mg of diphenhydramine every 6-8 hours, not exceeding 50-100 mg every 4-6 hr. 12.5-25 mg three or four times daily is recommended for children. As a sleep aid, the dose is 50 mg at bedtime. Adults can be given 10-50 mg intravenously or intramuscularly, up to a maximum daily dose of 400 mg.²

Pharmacodynamics:

Diphenhydramine is a first-generation antihistamine and is an H₁ receptor antagonist. Antagonism is achieved by blocking the effect of histamine more than blocking its production or release. Diphenhydramine inhibits most smooth muscle responses to histamine and histamine's vasoconstrictor effects. The antagonism may also produce significant anticholinergic, antiemetic, and sedative side effects. First-generation H₁ antagonists can stimulate and depress the central nervous system (CNS). Stimulation results in restlessness, nervousness, and inability to sleep, while depressive effects include diminished alertness, slowed reaction time, and somnolence. Diphenhydramine is particularly prone to cause marked sedation. Drowsiness, reduced wakefulness, altered mood, and impaired cognitive and psychomotor performance may also be observed. Side effects may include agitation, anticholinergic side effects such as dry mouth, confusion, dizziness, drowsiness, fatigue, disturbed coordination, irritability, paresthesia, blurred vision, and depression. In overdose, symptoms may include excitement, ataxia, tremor, sinus tachycardia, fever, hallucination, athetosis, convulsions or seizures, hypotension, deep coma, cardiorespiratory collapse, and death. Fixed and dilated pupils are also observed. Gastrointestinal symptoms are less with diphenhydramine than with other H₁ antagonists. The duration of effects is dose-dependent. Some tolerance may develop to the sedative effects of diphenhydramine with repeated oral dosing. No reported dependence or withdrawal effects were associated with the recommended doses. The co-ingestion of ethanol, MAOIs, benzodiazepines, hypnotics, sedatives, tranquilizers, and other CNS depressants increases the sedative effects of diphenhydramine. Ethanol enhances the effects of drowsiness, sedation, and decreased motor skills. These decrements are more pronounced in the elderly. Additionally, MAOI's prolong and intensify the anticholinergic effects of diphenhydramine.

Metabolism/Elimination:

There is rapid absorption of diphenhydramine after oral administration, with effects starting within 15 to 30 minutes and fully developing within 2 to 3 hours and lasting from 3

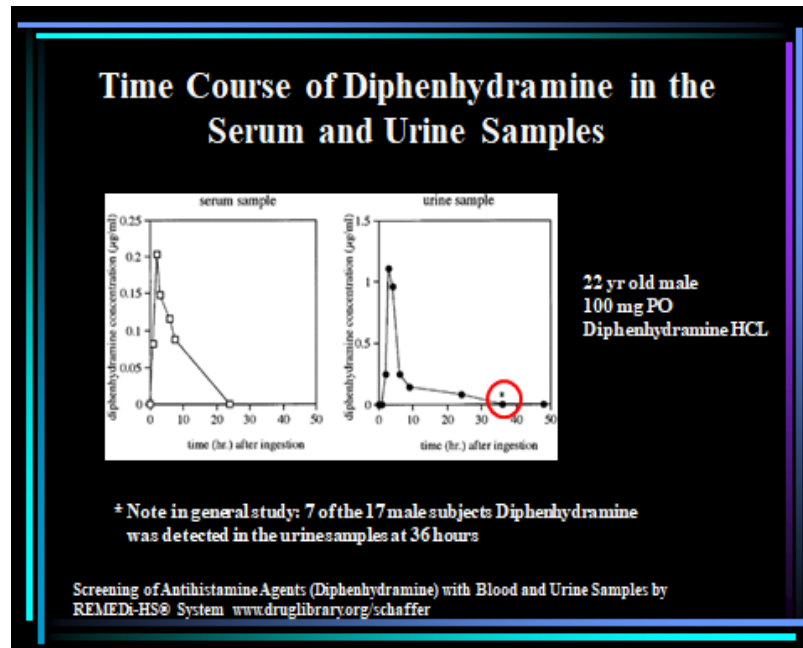
SOFT-DFC SNAPSHOT – DIPHENHYDRAMINE

BY LAUREEN J. MARINETTI, PH.D., F-ABFT, AND TIMOTHY ROHRIG, PH.D., F-ABFT, FOR THE SOFT DFC COMMITTEE

to 6 hours.^{6,7} Diphenhydramine is widely distributed throughout the body and can pass through the blood-brain barrier. The oral bioavailability is 61%, and 78% is bound in plasma. Diphenhydramine is metabolized to nordiphenhydramine (active metabolite), dinordiphenhydramine, and diphenylmethoxyacetic acid. The plasma half-life is 8.5 ± 3.2 hr.; shorter and longer half-lives have been reported for children and elderly subjects, respectively. Urinary excretion of unchanged diphenhydramine is 1.9% in the 24-hour urine, while 11% is eliminated as the diphenhydramine glucuronide conjugate. Diphenhydramine is metabolized via cytochrome P450 2D6 (CYP2D6) isoenzyme. Potential inhibitors of CYP2D6 could decrease the rate of drug elimination if administered concurrently, while potential inducers could increase the rate of drug elimination.

Single Dose Studies *Urine:*

The SOFT DFC Committee² and the AAFS Standards Board⁴ have established the importance of testing urine samples from alleged victims of drug-facilitated crimes for diphenhydramine at a decision point concentration of 10 ng/mL or lower. Urine is easily collected, straightforward to analyze, and provides a longer window of detection of diphenhydramine ingestion compared to blood. There are limited single-dose studies of diphenhydramine with measurements made in urine over time. In one study of 17 male subjects, a 100 mg oral dose was detected in urine for up to 36 hours in 7 subjects. The graph below shows one of the subjects' elimination kinetics in serum and urine.⁵



Blood/Plasma/Serum:

Blood, plasma, and serum specimens allow for more meaningful quantitative assessments of positive findings; however, diphenhydramine may no longer be detectable if these specimens are collected more than 8-12 hrs. after the alleged ingestion of a single dose. Conventional therapeutic doses will produce sedation in 50% of those treated. Following a single oral dose of 50 mg, average peak plasma concentrations of 83 ng/mL diphenhydramine were detected at 3 hours, declining to 9 ng/mL by 24 hours. A single oral 100 mg dose resulted in average peak plasma concentrations of 112 ng/mL at 2 hours post-dose. Effective antihistamine concentrations are greater than 25 ng/mL, drowsiness can be observed at 30-40 ng/mL, and mental impairment may be observed with concentrations above 60 ng/mL³.

One study characterized diphenhydramine in 42 subjects following a single oral dose in children aged 2-17 yr. and using a weight and age-based dose. Plasma samples were collected for up to 48 hr. The maximum serum concentration ranged from 48-92 ng/mL, depending on the age and dose of the subject⁷.

SOFT-DFC SNAPSHOT – DIPHENHYDRAMINE

BY LAUREEN J. MARINETTI, PH.D., F-ABFT, AND TIMOTHY ROHRIG, PH.D., F-ABFT, FOR THE SOFT DFC COMMITTEE

Hair: Hair allows for the longest window of detection for diphenhydramine. However, hair testing has the disadvantage of being more difficult to analyze, the requirement of methods is about 1,000-1,000,000 times more sensitive than what is needed for analyzing blood or urine, and the general inability to differentiate ingestions from one week to the next.

DFC Cases:

Reviewing case studies presentations demonstrates that diphenhydramine is reported in drug-facilitated toxicological findings. Scott-Ham published a summary finding of DFC cases, where 6 cases of diphenhydramine findings were published in association with this type of casework. Subsequently, two were determined as known administrations to facilitate sexual assault⁸.

Black Cab Rapist John Worboys was convicted in 2009 for attacking 12 victims, with law enforcement officers believing he may have been responsible for more than 100 victims in the UK. He would pick up his victims in his cab late in the evening. He would tell them he was celebrating winning a large amount of money at a casino or lottery. Mr. Worboys would show the victim a bag of money and ask them to join him in celebrating by drinking champagne; unbeknownst to them, he had spiked the champagne with a sedative drug, in some cases diphenhydramine. He would continue to drive around until the drug-alcohol mix took effect and then sexually assaulted them.⁹

One of the most high-profile cases involved an American actor and comedian, William (Bill) Cosby – who was accused of the drugging and sexual assault of a woman in 2004. In this case, Mr. Crosby had asked his victim to take three diphenhydramine pills to relax. In his own words, he knew the pills would put her to sleep. The victim described her symptoms as; feeling unusual, a “little spacy,” blurry vision, unable to focus or keep her eyes open, difficulty speaking, body incoordination, dry mouth, drowsiness, and sleeping with memory loss. Mr. Cosby was found guilty in April 2018 of three counts of aggravated indecent assault for drugging and sexually assaulting a woman in 2004 and was sentenced to 3 to 10 years in state prison. On 30 June 2021, Mr. Cosby’s conviction was vacated. The Pennsylvania Supreme Court justices found Cosby relied on a promise when he agreed to testify without invoking his Fifth Amendment right against self-incrimination in a lawsuit brought against him. The Court concluded that the prosecutor who later brought the charges was obligated to stick to the non-prosecution agreement. Thus, the conviction could not stand.¹⁰

Special Juice Predator: Commonwealth [PA] v Barry McOwen. Law enforcement investigating child pornography identified three young female victims ages 4 to 10 yrs. old being assaulted over five years. McOwen had committed the assault while babysitting the girls. McOwen would talk about “sleep assaulting” the girls in online chats. During the first day of the trial, testimony revealed he drugged the girls with Benadryl [diphenhydramine], referring to the drug as “half a roofie” and “my special juice.” On the second day of the trial, McOwen took the stand and confessed to the crimes. He then accepted a plea agreement and was sentenced to 50.5 to 101 years in jail.¹¹

SOFT-DFC SNAPSHOT – DIPHENHYDRAMINE

BY LAUREEN J. MARINETTI, PH.D., F-ABFT, AND TIMOTHY ROHRIG, PH.D., F-ABFT, FOR THE SOFT DFC COMMITTEE

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