Society of Forensic Toxicologists, Inc.

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PRESIDENT'S MESSAGE

Submitted by **Ruth Winecker, Ph.D., F-ABFT**

Let me begin by saying that it has been a distinct privilege to serve as SOFT President this past year, and in particular, it meant a great deal to serve as President at the annual meeting in my old home town. I was born about one mile from the meeting site, grew up in the Atlanta area and went to college in the city. I am grateful that a girl like me, who graduated from a rural high school with fewer than 100 students in the graduating class, and where fewer than 25% of the class would go on to any kind of secondary education, could grow up to be President of this wonderful organization. In my last message for ToxTalk® I want to reiterate the comments I made at the Atlanta business meeting, because the BOD decisions made throughout the year and at this meeting affect the entire membership.

This past year we did some re-organizing of committees in order to serve the membership better. First, we changed the structure of the meeting resource committee. The original intent of this committee was to help make the annual meetings easier to plan and was composed of the VP, the current meeting hosts, and hosts from the most recent prior meeting. We also felt the committee mission was too limited and so we expanded the duties to include reviewing potential host cities and sites for future annual meetings. We added the meeting treasurers, the vendor liaison and Bonnie as automatic members. I feel that this new structure is already working to SOFT's advantage as the committee has done an admirable job of negotiating with potential sites for the 2020 meeting. We also

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PRESIDENT'S MESSAGE *(CONTINUED)*

restructured the strategic planning committee. The current Treasurer was traditionally the Chair of this committee, and while that makes sense, the Treasurer duties are burdensome and extensive. Moving the Treasurer to a committee member, adding the VP as a member, as plans put forth by this committee could impact the VP's presidential year, and appointing a member with business and organization skills as Chair was a logical change.

The last bit of committee restructuring that took place involves continuing education (CE). The original CE committee was formed to encourage and hold regional workshops and ensure one workshop at the annual meeting. But after adding CE credits to its tasks, and realizing that the CE credits were more complicated than originally estimated, we split this committee into two so that activities will become more focused. Also, to help streamline the issuance of CE certificates, the BOD approved funds for an upgrade to the meeting database which will now email attendees when their certificates are available and which will also house those certificates so that they can be accessed by the member at any time. Speaking of CE, I'm also pleased to announce that the BOD has approved funds for development of a CE activity that will be available FREE of charge to SOFT members through the website. The activity will involve reading a JAT article and answering a set of multiple-choice questions about the content. Participants will be granted ACCENT credit for completing the activity. The BOD is very excited about this new opportunity to invest in our membership and provide some CE to those who find it difficult to come to the annual meeting. Look for updates on the website!

It is not a surprise that the income from dues does not cover basic operations (e.g. employee salary, rent, phone, etc.). This information has been conveyed in ToxTalk® and the Treasurer's reports at the annual meeting. SOFT's Treasurers, SOFT's accountant, the professionals who conducted our last audit, and chairs of both the Audit Committee and the Strategic Planning Committee have all reviewed our finances. These experts all agree that SOFT must do a better job of balancing our income streams, and that relying on non-guaranteed income from the meeting profits to "cover the gap" between the cost of basic operations and dues income might be acceptable in the short term. However, as a long-term strategy for sustaining an organization of our size, it is incredibly risky and SOFT should increase dues to cover basic operations. Therefore, acting on these recommendations, the BOD unanimously voted to increase associate and full member dues to the "break even" level of $100. Rather than one big boost, the increase will take place over a two year period with dues going up to $80 in 2016 and $100 in 2017. Student member dues will remain at $15. Meeting profits will continue to be used for member professional investment by providing benefits such as CE, the JAT subscription, regional workshops, awards and financial support to committee activities.

The last audit also indicated that SOFT did not have adequate separation of duties or checks and balances in our financial transactions. Many procedures have been updated and changed to comply with the recommended changes to SOFT's financial practices, but these changes do not solve all of the issues. Further, the running of SOFT has become much more complex and the board spends an increasing amount of time on reactive duties rather than strategic duties. Two years ago the audit committee made the recommendation that SOFT hire an executive director and the BOD asked the strategic planning committee to study the issue. Their report to the BOD concluded that SOFT can and should hire an executive director on a contract basis. Based on the information in the report and the conviction that adding an executive director will help the board focus more on promoting forensic toxicology and expanding professional investment rather than the day-to-day running of SOFT, the BOD voted unanimously to have the Strategic Planning Committee develop a position description, posting and interview questions.

In closing, I'd like to thank everyone for their work and support this year: The BOD, committee chairs and members and in particular Bonnie Fulmer. Bonnie is a treasure and an invaluable asset to SOFT; I would have been lost without her. I also want to thank all of the volunteers who made the Atlanta meeting such a success. To my husband John, who has been the biggest helper and best support a partner could ask for, I love you dearly! Finally, I'd like to offer some advice to our younger members. Seize all of the opportunities that SOFT offers. Go to the

PRESIDENT'S MESSAGE *(CONTINUED)*

open meetings of the DFC and DUID committees. Ask the local hosts if you can volunteer to help. I love SOFT and I feel that the friends and mentors that have impacted my life and career the most are there as a direct result of being a member of this wonderful organization. Smarts, kindness and a strong work ethic run rampant throughout this organization and that's what makes SOFT so wonderful and why I am so proud to be a member. I can't wait to see what the future holds for SOFT!

2015 SOFT Atlanta Meeting Wrap-up

Submitted by **Lisa Holt and Robert Sears**, Meeting Hosts

The 2015 SOFT meeting in Atlanta this year was a great success, thanks to all who helped prepare and all who attended! The Fun Run had the highest attendance ever, the President's banquet was hugely entertaining, and the Aquarium event was marvelous. In addition to the fantastic social events, there were also many learning opportunities due to the excellent scientific program.

We would like to take this brief opportunity to thank the planning committee members, without whom the meeting could not have happened:

Meeting Treasurer
Bradford R. Hepler

Scientific Program Chairs:
Diane Boland and
Madeline A. Montgomery

Workshop Coordinators:
Deborah J. Denson and
Demi B. Garvin

Exhibitor Liaison:
Jarrad R. Wagner

Young Forensic Toxicologists Programs:
Sarah Urfer

Student Enrichment Program:
Elizabeth Kiely

Audio-Visual Coordinator:
Frank Wallace

Volunteer Coordinators:
Kimberly Dailey and
Melissa S. Kennedy

Karla Moore 5K Fun Run:
Brittany Gresham

Sunshine / Rieders Silent Auction:
Denise Schiller

Website Liaisons:
Russell Lewis and Mike Angier

Additionally, many thanks to our generous vendors, the SO-SOFT folks who worked tirelessly, all of the incredible volunteers who helped in so many ways, and of course, the incomparable Bonnie Fulmer. Words cannot express how significant she is to the success of the SOFT meetings, year after year.

Thank you all again for everything, and we look forward to seeing you in Dallas!

Lisa and Robert

Drugs and Driving Committee Scientific Session: Summary of Presentations at SOFT 2015 Annual Conference

Submitted by **Fiona Couper and Loralie Langman**

Case Study: A DUID Case with Flubromazepam and Other Drugs.

Mary Jo Brasher and Michael Morrison, F-ABFT
Georgia Bureau of Investigation Division of Forensic Sciences (GBI -DOFS) Decatur, GA 30039

Flubromazepam is a designer benzodiazepine similar to phenazepam. This long acting benzodiazepine is available on the internet as a "research compound" in pellet form. A 34 yo driver involved in an auto accident displayed manifestations of profound CNS depression (e.g. slurred speech, lack of balance and coordination, confusion) and performed poorly on FSTs. Testing on the submitted blood specimens found venlafaxine (and norvenlafaxine) and olanzapine. An unconfirmed CEDIA which was positive for benzodiazepines led to general GC/MS testing. An unknown benzodiazepine was identified that was later confirmed by GC/MS and LC/MS/MS as flubromazepam. Flubromazepam quantitated at 830 µg/L by LC/MS/MS.

Heroin in Wisconsin Drivers

Stephanie Weber and Lorrine Edwards
Wisconsin State Laboratory of Hygiene, Madison, WI

Heroin abuse is prevalent among Operating While Intoxicated (OWI) subjects in Wisconsin and causes impairment including sedation, poor balance, ptosis, and miosis. With a half-life of 2-6 minutes, heroin cannot be confirmed in the blood of drivers. Ingestion instead is determined by confirmation of 6-monoacetylmorphine (6-MAM), which quickly metabolizes to morphine. Clandestine production of heroin results in small amounts of codeine, and a morphine to codeine ratio (M:C) >1.0 in blood can indicate heroin use. Of 1013 Wisconsin OWI cases with morphine detected from mid-2012 to mid-2015, 270 cases had M:C >1 (no 6-MAM), and 6-MAM was confirmed in 15 cases.

Comparison of On-Site and Laboratory Based Techniques for the Analysis of Drugs in Oral Fluid

Allison Veitenheimer[1], Tara Valouch[2], Christine Moore[3] and Jarrad Wagner[1]
[1]School of Forensic Sciences, OSU Center for Health Sciences, Tulsa, OK, [2]City of Tulsa Police Department Forensic Laboratory, [3]Immunalysis Corporation, Pomona, CA

The Alere DDS®2 handheld rapid oral fluid screening device was used by police officers to detect drugs in oral fluid during routine patrol. Results from the on-site oral fluid screen were compared with laboratory based screening (ELISA) and confirmation (LC/MS/MS) techniques obtained using a Quantisal™ collection device. The LC/MS/MS results were used as the true values and the DDS®2 cutoffs were taken into account for accuracy determination. The DDS®2 provided accurate results (%) for all six classes of drugs: Cocaine (100%), Benzodiazepines (100%), THC (100%), Opiates (100%), Amphetamine (88.1%), and Methamphetamine (97.6%).

Preliminary Psychophysical Task Performance After Controlled Oral Cannabis A dministration

Matthew N. Newmeyer[1,2], Megan Taylor[1], Madeleine Swortwood[1], Agnes O. Coffay[3], Marilyn A. Huestis[1]*
[1]Chemistry and Drug Metabolism, Intramural Research Program, National Institute on Drug Abuse, National Institutes of Health, Baltimore, MD, [2]Program in Toxicology, University of Maryland Baltimore, Baltimore, MD, [3]Office of the Clinical Director, Intramural Research Program, National Institute on Drug Abuse, National Institutes of Health, Baltimore, MD

Ten frequent and ten occasional cannabis smokers were given oral placebo or active cannabis; performance on Modified Romberg Balance [MRB], One Leg Stand [OLS], and Walk and Turn [WAT] tasks was evaluated. Occasional smokers' estimates of 30 seconds during MRB were significantly shorter after the active dose than after placebo. Significantly more clues were observed during OLS 3.5h after active dosing when all participants were grouped together. During WAT, significantly more clues were observed at 1.5h after active dosing than after placebo for occasional smokers; significantly more clues were observed at 1.5h than at 3.5h after active dosing for frequent smokers.

Drugs and Driving Committee Session Summaries *(CONTINUED)*

Cannabis and Low-Dose Alcohol Effects on Longitudinal Control in Simulated Driving After Controlled Administration

Rebecca L. Hartman[1], Timothy L. Brown[2], Gary Milavetz[3], Andrew Spurgin[3], David A. Gorelick[4], Gary Gaffney[5], and Marilyn A. Huestis[1]

[1]Chemistry and Drug Metabolism, Intramural Research Program, National Institute on Drug Abuse, NIH, Baltimore, MD; [2]National Advanced Driving Simulator, University of Iowa, Iowa City, IA; [3]College of Pharmacy, University of Iowa, Iowa City, IA; [4]Department of Psychiatry, University of Maryland School of Medicine, Baltimore, MD; [5]Carver College of Medicine, University of Iowa, Iowa City, IA

Blood THC concentrations in 18 participants significantly decreased mean speed (approximately 0.10mph/µg/L) and increased percent speed low ($p<0.0001$), but not significantly with SD speed. In contrast, BrAC significantly increased SD speed (0.05mph/0.01g/210L BrAC) and percent speed high ($p<0.0001$), but not mean speed. Neither THC nor BrAC affected longitudinal acceleration. Alcohol produced faster driving and decrements in ability to control speed, whereas cannabis decreased speed and increased time spent below the speed limit in a concentration-dependent manner. Drivers under the influence of cannabis may be more aware of potential impairment and attempt to compensate by driving more slowly.

Buprenorphine in Georgia: A 2 Year Case Review

Jon Stephenson

Georgia Bureau of Investigation, Division of Forensic Sciences

A 2 year review of all 67 cases containing buprenorphine at the Georgia Bureau of Investigation from the period of December 2012 to December 2014 was conducted, examining the concomitant consumption of drugs and the impairing effects observed by police officers. All cases analyzed were found to have at least one additional psychotropic drug despite the concerns, particularly with benzodiazepines, associated with combined use of buprenorphine. The drug classes buprenorphine was most commonly consumed with were 84% benzodiazepines, 32% antidepressants, 30% opioids, 26% amphetamines, and 24% antihistamines.

Six case histories were examined, with officers commonly reporting constricted pupils, slurred speech, and the subjects being unsteady on their feet. Decrements in field sobriety tests for all six cases were observed as well.

Given the sample population analyzed for this study (suspected DUI drivers) it is apparent that buprenorphine combined with other psychotropic drugs can lead to impairment even at therapeutic doses of both drugs.

Young Forensic Toxicologists (YFT) News

The Young Forensic Toxicologists Committee is pleased to announce the 2015 winners of the Leo Dal Cortivo Awards. The Leo Dal Cortivo Memorial Fund allows the YFT committee to present two awards, each with a cash prize of $1000 in addition to free registration at a future SOFT meeting. One award is presented for the best poster presentation and the other for the best oral presentation. The 2015 winners are:

Platform Presentation Winner

Karen Butler from the Department of Forensic Science at Virginia Commonwealth University for her presentation titled "Presumptive Analysis of Electronic Cigarette Aerosol Using Solid-Phase Microextraction for Analysis by Gas Chromatography Mass Spectrometry (SPME-GC-MS) and Direct Analysis in Real Time AccuTOF Mass Spectrometry (SPME-DART-MS)"

Poster Presentation Winner

Ann-Sophie Korb from Forensic Medicine and Science, University of Glasgow for her poster titled "Short-term Stability of Gamma-hydroxybutyrate (GHB) in Oral Fluid"

For more information on Leo Dal Cortivo please see the web site http://www.leodalcortivo.com/

ERA/YSMA News

Submitted by **Erin Spargo, Ph.D.,** Awards Chair

Our awardees did a great job of kicking off the scientific program at SOFT this year! We would like to once again congratulate our three award winners – Marissa Finkelstein, Matthew Newmeyer and Erin Ehrlinger.

Awardees are shown below receiving their plaques from President Ruth Winecker at the SOFT 2015 business meeting held in Atlanta:

Marissa Finkelstein – ERA winner

Matthew Newmeyer – ERA winner

Erin Ehrlinger – YSMA winner

With the 2015 meeting wrapped up, it's time to look forward to submitting applications for the meeting in Dallas next year. These competitive awards are an excellent way for students and bench level scientists to be able to attend the annual meeting where they can share their research and network with others in the field. I encourage you to look around your organization for candidates and to urge those that are eligible to apply.

As a reminder, the 2016 due date for applications is Friday April 1st. Applications and instructions for the ERA and YSMA can be found in the Features/Awards portion of the SOFT website. Please note that if the applicant is not a SOFT member, the mentor/supervisor must be a full or charter member. Please contact the Awards Chair, Erin Spargo, at erin.spargo@dallascounty.org or 214-920-5973 with any questions about the application process.

SOFT 2015 Fun Run Winners

Submitted by **Bonnie Fulmer**

The SOFT 2015 (Atlanta) Fun Run was our 19th! The first "Tox n Purge" 5k Fun Run was organized by Karla Moore at the Salt Lake City Annual Meeting in 1997. Since Dr. Moore's passing in 2008, this event took on her name and is now known as he "Karla Moore Memorial Tox n Purge Fun Run".

Brittany Gresham of the Georgia Bureau of Investigation (GBI) chaired this fun event for 2015. She designed the participation shirt, arranged for the event to be held at the Centennial Olympic Park, organized the volunteers needed to be sure the runners stayed on course, and oversaw the record-breaking sign-ups of 182 participants. In memory of Karla Moore, SOFT contributes 100% of the $10 per person sign-up fee to the American Cancer Society ($1,820).

So BIG Thank You's to Brittany, participants, the many volunteers that got up early to assist, and the 20 exhibitor / sponsors who also contributed funds that paid expenses of renting the park, and printing of the very cool custom participant Fun Run shirts!

Congratulations to the Fun Run Winners in Atlanta:

1st place men's category - Marcus Vaska
1st place women's category - Kelly Virkler
1st place walker - Eric Lavins

Thank You to the Exhibitor Fun Run Sponsors:
Agilent Technologies
Artel-USA
Campbell Science
Cayman Chemical
Cerilliant
Golden West Biologicals
JEOL, USA
Lin-Zhi, Inc.
Neogen Corporation
OraSure Technologies, Inc.
PerkinElmer
Randox Toxicology
Sciteck Diagnostics
Shamrock Glass
Sigma Aldrich
UCT
UTAK
Waters
Wiley
X-Link Bioscience, Inc.

SOFT Annual Meeting October 16-21st, 2016
Dallas Sheraton
Committee Co-Chairs: **Erin Spargo and Chris Heartsill**

Scientific Program Chairs
Sabra Botch-Jones, Karen Scott

Workshop Chairs
Susan Howe, Elizabeth Kiely

Treasurer
Laurel Farrell

Vendor Liaison
Jarrad Wagner

Food and Beverage
Ann Marie Gordon, Denice Teem

YFT/SSEP
Sarah Urfer

Volunteer Coordinators
Dani Mata, Samantha Tolliver

SOFT 2016 Website Liaison
Russell Lewis

Silent Auction Coordinators
Delisa Downey, Robert Johnson

Fun Run
Aria McCall

We can't wait to welcome you to the Big D in 2016! Our fantastic committee is assembled and already hard at work planning what we're sure will be an exciting meeting full of science and fun-filled events!

October is a great month to visit Dallas. It is almost always sunny here in Texas and temperatures are generally in the 60s and 70s at this time of year – although you never know, we were in the 90s this year in mid-October! There are plenty of ways to enjoy this warm weather – Klyde Warren Park and the largest urban arts district in the country are just a few blocks away from the hotel, or you can travel a little further and visit the nationally acclaimed Dallas Arboretum and Botanical Gardens or Southfork Ranch from the 80s television show Dallas. If you have free time early in the week, the State Fair of Texas is just a short DART (light rail) ride away; you can enjoy such tasty fare as fried s'mores and corny dogs on a stick and see Big Tex, the tallest cowboy in Texas! Dallas also has its fair share of historical sites, including the Sixth Floor Museum (JFK), George W. Bush Presidential Center and Dallas Heritage Village. If you're a sports fan, you may want to attend a Dallas Stars hockey match or Mavericks preseason basketball game or plan a visit out to AT&T Stadium, home of "America's Team"– the Dallas Cowboys.

Dallas is centrally located and within a four-hour flight from most North American destinations. Two airports service Dallas: Dallas/Ft. Worth International (DFW) and Dallas Love Field (DAL). You can grab a taxi or shuttle from the airport or use the easily accessible and economical DART, which has a stop right by the hotel; the DART trip from DFW is around 60 minutes and from DAL it is about 20 minutes.

The Dallas Sheraton will be our meeting hotel and conference venue. The hotel has had a complete renovation in recent years. The hotel offers incredible city views and free Wi-Fi will be offered in all guest rooms. The Sheraton has a large green initiative; you can enjoy a $5 voucher at participating food and beverage outlets or 500 Starpoints® awarded at checkout for each night you decline housekeeping (except the day of departure).

The Sheraton houses a restaurant (be sure to check out their sweet potato fries with blue cheese and honey), bar, and coffee shop on-site. Casual fare for lunches also can be found in the nearby Plaza of the Americas as well as at food trucks in Klyde Warren Park. In the evening, you may want to travel a few DART stops and explore numerous dinner options in surrounding neighborhoods.

Last but not least, we'll have an exhibit hall like you've never seen before! You will walk through the exhibit area to attend the scientific sessions; this will make it convenient to go back and forth between interacting with vendors and listening to our speakers.

See y'all in Dallas!

Erin and Chris

Call for Papers: Journal of Analytical Toxicology Special SOFT Edition 2016

Submitted by **Robert D. Johnson, Ph.D., F-ABFT**

Since 1977 the Journal of Analytical Toxicology (JAT) has played a vital role in the advancement of our field. Thousands of articles have been published in JAT and each allows for the global dissemination of information. Annually the editors and publisher of JAT allow the Society of Forensic Toxicologists (SOFT) to create a special issue of the journal that coincides with the SOFT annual meeting. It is a great honor for me to be chosen as the guest editor of the special issue of JAT that will be published for the 2016 annual meeting to be held in Dallas, Texas. I would like to sincerely thank incoming SOFT President, Ms. Jennifer Limoges, for this tremendous opportunity. The success of this edition of the special issue will depend on all of you. First we need everyone to submit a manuscript for consideration. You all do excellent work and the publication of that work can greatly assist other laboratories. Second we will need volunteers to perform thorough reviews of each submitted manuscript. The timeframe allowed for those reviews is condensed for this issue, so active and timely participation is a must. All submitted manuscripts will be reviewed for originality, technical content, and scientific design. One benefit of the special issue is that all accepted manuscripts that have a SOFT member as the first author are eligible for the 2016 Experimental Design and Impact on Toxicology (EDIT) Award. This prestigious annual award recognizes the lead author of the manuscript chosen to have superior scientific design and a wide impact on the field of forensic toxicology.

Please submit your manuscript at http://jat.oxfordjournals.org/ and designate the manuscript for the SOFT special issue.

DEADLINES:

February 29, 2016: Title and abstract submissions due to Robert Johnson: rdjohnson@tarrantcounty.com

March 14, 2016: Completed manuscripts due at JAT.

Oct. 16-21, 2016: SOFT Annual Meeting in Dallas and Distribution of Special Issue to Attendees

Thank you in advance for your contributions towards a successful special issue.

Call for Workshop Proposals

Proposals for the 2016 Dallas meeting are due no later than March 11, 2016. The submission form is located on the SOFT website under the “Annual Meetings” tab. Completed forms should be emailed to the 2016 Workshop Co-Chairs listed below. If you anticipate submitting a proposal, please contact Liz or Sue prior to submission to let them know that a proposal is in the works. They will also be happy to answer questions about workshops or the submission process. Thank you!

Workshop Co-Chairs

Liz Kiely
kielye@mcohio.org

Sue Howe
srhowe@tarrantcounty.com

Call for Abstracts, Moderators and Reviewers for the SOFT 2016 Annual Meeting in Dallas, TX—October 16-21st, 2016

ABSTRACT SUBMISSION DEADLINE IS MAY 2nd, 2016

The SOFT 2016 Scientific Program Committee is requesting abstracts on all topics related to forensic toxicology. The Committee will select appropriate abstracts to be presented as either a 15-minute platform presentation or poster presentation. Please refer to the SOFT website for additional information on abstract requirements and submission (http://www.soft-tox.org/meeting).

In addition, the Leo Dal Cortivo Memorial Fund is allowing the Young Forensic Toxicologists Committee to present two awards to young forensic toxicologists at the SOFT 2016 Annual Meeting. The best platform presentation and the best poster presentation will be chosen from among the eligible entries, and the presenting author will be awarded a cash stipend of $1000 in addition to a free registration for a future SOFT meeting. The judging takes place from October 19-21, 2016. For eligibility requirements and instructions on how to apply, go to the Young Forensic Toxicologists tab on the SOFT website (www.soft-tox.org/yft).

If you would like to serve as an abstract reviewer or moderate a session at the meeting, please contact the Scientific Program Committee Chairs at SOFTScience2016@gmail.com.

The SOFT 2016 Scientific Program Committee Chairs are:
Sabra Botch-Jones
Karen Scott

Midwestern Association of Forensic Scientists' Annual Meeting

October 3-7th, 2016

Hilton Branson Convention Center
(417) 336-5400
conventioncenter.hiltonsofbranson.com
Room Rate: $139/night
Group Code: MAFSMO

Hosted by The Missouri State Highway Patrol
Contact: Program Chair Abigail Lehman 573-526-6134 x2529 abigail.lehman@mshp.dps.mo.gov
http://www.mafs.net/news-feeds-1/mafs-2016-meeting

Description of Event: The MAFS 2016 Fall Meeting will be held October 3rd - 7th, 2016 in Branson, Missouri. Hosted by The Missouri State Highway Patrol, the meeting will consist of workshops, break-out sessions, and posters for analysts in Drugs, Toxicology, Trace Evidence, Crime Scene, Biology, Questioned Documents, Latent Prints, and Firearms/Toolmarks.

DRUGS IN THE NEWS

Send interesting *"Drugs In The News"* articles to Section Editor

Laureen Marinetti, Ph.D., F-ABFT
Lmarinetti@redwoodtoxicology.com

Drug Facilitated Sexual Assault Survey Results

Submitted by **The SOFT DFC Committee, Laureen Marinetti,** Chair

The Drug Facilitated Crimes (DFC) Committee, formerly the Drug Facilitated Sexual Assault (DFSA) Committee, designed a survey for laboratories that analyze specimens in suspected drug facilitated sexual assault cases. An email broadcast was sent to the SOFT membership in the latter half of 2013, and to members of the American Society of Crime Lab Directors (ASCLD) in early 2014, asking laboratories that perform this work to complete the survey. The purpose of the survey was to gain insight into: 1) the type of specimens laboratories routinely analyze; 2) the drugs that are targeted; 3) utilized drug cut-off concentrations in urine; 4) the time spent in court on these cases; 5) the drug(s) most commonly encountered; and 6) the assistance required to improve the laboratory's ability to analyze these cases. The survey questions covered: 1) general demographic information; 2) the number of DFSA cases worked per year; 3) the type of specimens analyzed; 4) the DFSA cases with relevant "positive" findings; 5) the number of DFSA cases worked that resulted in court proceedings and the analytical findings in those cases; 6) the analytical techniques used to analyze the specimens to achieve the desired sensitivity; and 7) the top ten drugs most commonly encountered in DFSA case work. The laboratories were also asked if they had an interest in proficiency tests modeled after DFSA cases and whether or not they analyzed hair.

Data were received from 15 participating laboratories which covered a representative cross-section of the United States. One additional survey participant was received from a laboratory in France. The type of laboratories represented are shown in Table 1. Seventy-six percent of the laboratories covered populations of 1,000,000 to more than 5,000,000, with the remaining 24% covering populations of <99,999 to 999,999. The number of DFSA cases analyzed per year ranged from 5 to 250, with percent positive cases ranging from 20% to 87% with an average of 64% and a median of 65%. The most common specimens analyzed were blood and urine from each case. Some laboratories reported receiving a few cases with urine only. Laboratories reported testimony in court of up to 10 cases per year with ethanol being the most common drug involved followed by cannabis, benzodiazepines (diazepam and alprazolam) and zolpidem. As Table 2 illustrates, a wide variety of drugs were reported in the top ten. The number 1 and 2 most common drugs encountered were fairly uniform, after that the responses were more diverse. In order to capture all the drug mentions, categories were chosen to define them and the categories were ranked based on the number of mentions of a drug within that category. This resulted in the top 9 most common drug/classes detected. The participants were asked to respond if their laboratory could achieve the recommended performance limits for drugs listed in SOFT's Recommended Minimum Performance Limits for Common DFC Drugs and Metabolites in Urine samples. Laboratories could meet some of the recommended detection limits but this question identified several problem drugs. Drugs for which 40% or more of the laboratories could not meet the recommended detection limits in urine were: THC-COOH, clorazepate, phenazepam, gabapentin, cyclobenzaprine, zaleplon, zopiclone, hydroxyzine, tetrahydrozoline, scopolamine, secobarbital, butalbital, amobarbital, phenobarbital, pentobarbital, valproic acid, phenytoin, ziprasidone and clonidine.

The type of assistance that the survey respondents stated was required to meet these recommendations included more sensitive instrumentation and/or methods, and additional staff. A minority of the laboratories required revalidation of existing methods. Laboratories used GC/MS, LC/MS, LC/MS/MS and low sensitivity opiate and benzodiazepine "plates" to augment traditional specimen screening and expand their menu of detected drugs. In addition, reference laboratories were used by 33% of the participants.

Drug Facilitated Sexual Assault Survey Results *(CONTINUED)*

Sixty-seven percent of laboratories indicated a willingness to purchase a DFSA-specific proficiency test, which the College of American Pathologists now offers.

Hair analysis was performed by only 13% of the laboratories. The reasons provided for not testing hair varied, but centered on lack of protocols, instrumentation, and adequate staffing. One laboratory responded that hair testing results were not accepted in their courts.

In summary, ethanol was the number one drug involved in DFSA cases. Many laboratories do not have the instrumentation and staff necessary to meet the recommended detection limits in urine for a significant number of drugs. The number of different drugs mentioned is a testament to the wide variety of drugs that are detected in DFSA case work, however exactly what role each drug plays in a DFSA case is not always clear. Most of the laboratories do not utilize hair as an additional specimen for testing. No respondent mentioned increasing the sample size in order to achieve a lower detection limit for any drug. It is clear from the results of this survey that assistance is required for more laboratories to effectively perform toxicological analyses in DFSA cases. Any comments or questions regarding this data can be directed to a member of the DFC Committee.

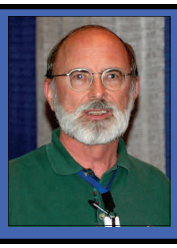
Table 1. Laboratories represented in the survey, N=15

LABORATORY TYPE	% OF RESPONDENTS
FEDERAL	7.5
STATE	54
COUNTY	31
PRIVATE	7.5

Table 2. Most common drug/drug classes mentioned

ORDER OF PREVALENCE	DRUG OR CLASS
1	ETHANOL
2	CANNABIS
3	BENZODIAZEPINES[1]
4	STIMULANTS[2]
5	OPIOIDS[3]
6	OVER THE COUNTER[4]
7	ANTIDEPRESSANTS/ANTIPSYCHOTICS[5]
8	SEDATIVE HYPNOTICS[6]
9	NOVEL PSYCHOACTIVE SUBSTANCES[7]

[1]To include alprazolam, clonazepam, 7-aminoclonazepam, lorazepam, diazepam, nordiazepam, oxazepam, temazepam and bromazepam
[2]To include methamphetamine, amphetamine, MDMA, MDA, phentermine and cocaine
[3]To include oxycodone, hydrocodone, codeine, morphine, hydromorphone, tramadol and methadone
[4]To include diphenhydramine, dextromethorphan, doxylamine, cetirizine and norchlorcyclizine
[5]To include citalopram, fluoxetine, sertraline and desalkylquetiapine
[6] To include zolpidem, GHB, meprobamate, carisoprodol and butalbital
[7] To include methylone



CASE NOTES

Send interesting *"Case Notes"* to Section Editor

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Synthetic Cannabinoids in Drivers: A Comparison Based on Drug Recognition Expert (DRE) Evaluations

Submitted by **Kayla Neuman, M.S.**

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Synthetic cannabinoids (SC), also known as synthetic marijuana, Spice, or K2, are mixtures of plant material sprayed with chemical substances that are pharmacologically similar to Δ-9-tetrahydrocannabinol (THC). These drugs are commonly used as alternatives to THC for many reasons, two of the most common being to avoid a positive drug test and SC are of a greater potency than THC, making the "high" more desirable (1). SC are commonly smoked or ingested like THC (2) and the potency varies greatly depending on the specific chemical. Of late, there has been an increase in calls to poison control centers in the United States due to the ingestion of these substances (2). New substances appear on the market faster than law enforcement can regulate their use and the lack of quality control during manufacturing is an added health concern because it is impossible to know how much drug is in any given dose. In operating while intoxicated (OWI) cases it is common to call in a Drug Recognition Expert (DRE) when it is suspected that the driver is under the influence of something other than alcohol. The common category called in SC use cases is Cannabis even when the indications of impairment can point to other drug classes. Below is a comparison of two cases each involving different types of SC's.

Subject A

A 19 year old male was stopped for speeding and the officer detected an odor of marijuana in the vehicle. A DRE performed an evaluation on the individual and determined that he was under the influence of Cannabis and therefore unable to operate a motor vehicle safely. He was arrested and a legal blood draw was conducted.

The DRE evaluation indicated that the man had poor coordination and moved slowly. He had bloodshot and watery eyes with droopy eyelids. His pupils were dilated in all room settings and his eyes failed to converge. He did not have horizontal gaze nystagmus (HGN). His eyes also displayed rebound dilation but reaction to light was normal. During the Modified Romberg balance test, he exhibited a 1 inch lateral sway as well as eyelid and full-body tremors. He estimated of the passage of 30 seconds in 25 seconds indicating his internal clock was normal. During the Walk and Turn test he exhibited 2 of 8 total clues, including raised arms for balance and an improper turn. He also laughed excessively during this test. On the One Leg Stand test the man displayed 1 of 4 total clues which was swaying while balancing on his right leg. The subject's pulse was elevated while his blood pressure, body temperature, and muscle tone were all within normal limits.

The subject admitted to smoking 5 -6 bowls of "spice" after work in his vehicle and that he smokes the substance because he is on probation and the drug tests do not detect the strain that he smokes.

Subject B

A 27 year old male was found parked in a lot slumped over the steering wheel and unresponsive. It took several minutes for officers to awaken the subject. The man had very slow speech and very glassy eyes. He seemed confused and was unable to indicate how he came to be in the parking lot. A DRE performed an evaluation on the individual and determined that he was under the influence of a central nervous system depressant and therefore unable to operate a motor vehicle safely. He was arrested and a legal blood draw was conducted.

The DRE evaluation indicated that the man was unsteady and moved slowly. He was confused and

Synthetic Cannabinoids in Drivers *(CONTINUED)*

spoke slowly with slurred coarse speech. His pupils were normal under all lighting conditions and his eyes were able to converge. HGN was present in both eyes, displaying 6 of 6 clues and an angle of onset of 35 degrees. Vertical Gaze Nystagmus (VGN) was also present. His eyes did not display rebound dilation and reaction to light was normal. During the Modified Romberg balance test he had a 1 inch sway and estimated 30 seconds in 50 seconds indicating that his internal clock was slow. During the Walk and Turn test he displayed 5 of 8 clues including poor balance, missing heel -toe, stepping off the line, taking too many steps, and performing an improper turn. On the One Leg Stand test he displayed 4 of 4 clues including putting his foot down, swaying, hopping, and using his arms for balance. The subject's pulse and body temperature were normal but his blood pressure was low and his muscle tone was flaccid.

The subject stated that he was on his way to meet his probation officer and was not taking any drugs. The officers found two empty boxes of snack cakes and wrappers in the vehicle (10 cakes total were consumed).

Results

Initial comprehensive toxicology testing was performed at the WSLH with negative results for both specimens.

Subject A

The specimen was sent to NMS Labs in Willow Grove, PA for SC testing. The following substances were detected:

JWH-018 (0.46 ng/mL), JWH-019 (positive), JWH-122 (positive), JWH -250 (0.32 ng/mL), (AM-2201 (8.7 ng/mL), and RCS-4 (0.35 ng/mL)

The time between the subject being stopped by police and the DRE evaluation was 113 minutes and the blood sample was collected immediately before the evaluation.

Subject B

The specimen was sent to AIT Laboratories in Indianapolis, IN for SC testing. The following substances were detected:

AB-PINACA (0.9 ng/mL) and AB-CHMINACA (5.1 ng/mL)

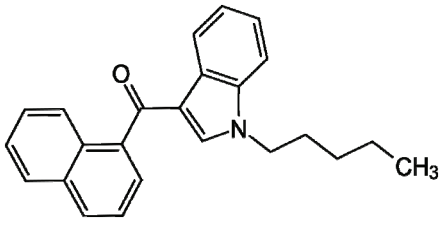
The time between the subject being stopped by police and the DRE evaluation was 72 minutes and the blood sample was collected immediately following the evaluation (approximately 32 minutes after the evaluation began).

Conclusion

Even though many DREs opine Cannabis when SC's are present, there are instances when the impairment shown is unlike that typically seen with marijuana use. Subject A had six different SC's detected but the symptoms of impairment closely mirrored those of THC, while Subject B had two different SC's detected and exhibited several differences in impairment. These differences included the presence of HGN and VGN; the convergence of the eyes; normal pupil sizes and pulse rate; low blood pressure; and flaccid muscle tone.

Furthermore, structural differences between the SC's detected may account for some of the variation in impairment. Subject A used compounds in the naphthoylindole family of SC's, whereas Subject B used indazole-based SC's. JWH-018 (Figure 1), a naphthoylindole, is altered in various ways to produce JWH-019, JWH-122, JWH-250, AM-2201, and RCS-4. These compounds all have the same base structure but slight alterations in structure can affect how each compound binds to the CB1 cannabinoid receptor and therefore affects the potency of the compound. AB-PINACA and AB-CHMINACA (Figure 2) are variations on the indazole structure and are anecdotally more potent than the indole SC's. While these two drugs do bind to the CB1 receptor like the indole compounds (3), the binding affinities of AB-PINACA and AB-CHMINACA are smaller than the binding affinity of JWH-018 (4) which suggests that less drug is needed to feel its effects.

Figure 1.



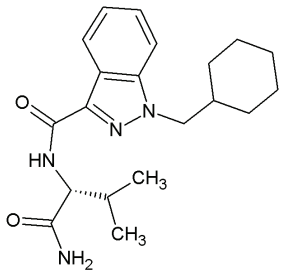
JWH-018

The clinical differences between the two cases may all be attributable to the molecular structural differences in the types of compounds used. As SC substances

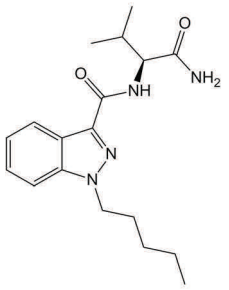
Synthetic Cannabinoids in Drivers *(CONTINUED)*

evolve, the pharmacological effects resemble those of THC less and less. Therefore it is important for DRE officers to call drug categories based on what they personally observe and not rely on the subject's admissions of use or what is collected from the vehicle.

Figure 2.



AB-CHMINACA



AB-PINACA

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FROM THE TOXICOLOGY LITERATURE

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Journal of Forensic Sciences
September 2015
Volume 60, Issue 5
The Effects of Dextromethorphan on Driving Performance and the Standardized Field Sobriety Test

Perry et al. report the results of a study that assessed performance while driving with and without ingesting dextromethorphan. Participants were dosed with a single dosage of 120 mg dextromethorphan and performance in a driving simulator and post 1-hour drug ingestion standard field sobriety tests were assessed. A second group was dosed with 400 mg of guaifenesin and subjected to the same driving simulator and field sobriety tests. When compared to the participants who consumed guaifenesin, the participants who consumed the dextromethorphan did not demonstrate driving impairment on the driving simulator or an increase in field sobriety test failures. The authors noted that doses of dextromethorphan necessary to affect driving behavior were greater than the recommended daily maximum dose of 120 mg.

Journal of Analytical Toxicology
October 2015
Volume 39, Issue 8
Concentrations of AB-CHMINACA and AB-PINACA and Driving Behavior in Suspected Impaired Driving Cases

FROM THE TOXICOLOGY LITERATURE *(CONTINUED)*

Peterson and Couper reported a series of 58 suspected impaired driving cases in which the synthetic cannabinoids AB-CHMINACA or AB-PINACA were detected in either the state of Washington or Alaska. Ninety five percent of the suspected impaired drivers were male. Age ranged from 18 to 61 years old (median age was 28 years). AB-CHMINACA was detected in 33 cases with blood concentrations ranging 0.6-10 ng/mL. AB-PINACA was detected in 25 cases with blood concentrations ranging 0.6-41.3 ng/mL. There was a drug recognition expert present to evaluate the case in 20 total cases (10 for AB-CHMINACA and 10 for AB-PINACA). Common observations included slurred speech, lack of coordination, lack of dexterity, lethargy, and confusion. The authors reported that in the majority of cases, poor driving was evident and subjects were either involved in motor vehicle collisions/ accidents or found unresponsive/ passed out in the vehicle. Horizontal gaze nystagmus (HGN) was observed in 50% of the AB-CHMINACA cases and 60% of the AB-PINACA cases.

Clinical Toxicology (Philadelphia)
Volume 53, Issue 9
Death Following Intentional Ingestion of E-Liquid

Chen *et al*. report the death of a 24 year old woman who committed suicide by intentionally ingesting a maximum of 3,000 mg of liquid nicotine, which was meant for use in an electronic cigarette. She was found unresponsive and pulseless by emergency personnel. Next to her body was a suicide note, a bottle of alcohol (whiskey), and two empty 15 mL bottles of 100 mg/mL nicotine e-liquid. After resuscitative attempts she became responsive with a systolic blood pressure of 100 mm Hg and 120 beats/minute pulse rate. She was transported to the hospital and admitted to the intensive care unit. After admission, she developed uncontrollable limb myoclonus. Observations after EEG included generalized suppression consistent with profound generalized cerebral dysfunction. Magnetic resonance imaging (MRI) on the second day of admission revealed multiple acute infarcts consistent with anoxic brain injury. She continued to be unresponsive and died 3 days post ingestion of e-liquid. Toxicology performed on the serum specimen collected at hospital admission was positive for Nicotine and Cotinine (both >1,000 ng/mL). No further quantitation was attempted. The authors note that this case report highlights the potential for lethal overdose by liquid nicotine ingestion, and while still rarely reported in published literature, these types of poisonings are concerning because of nicotine e-liquid's prevalence and increasing popularity.

Forensic Science International
November 2015
Volume 256
Assessment of the Stability of Mephedrone in Ante-Mortem and Postmortem Blood Specimens

Paolo Busardo *et al*. reported a study on the stability of the substituted cathinone, 4-methylmethcathinone, or mephedrone, in both antemortem and postmortem blood matrices at 1 mcg/mL. Storage temperatures monitored were -20^{0}C (frozen), 4^{0}C (refrigerated), and 20^{0}C (ambient). Storage tubes contained either EDTA, sodium fluoride/potassium oxalate, or no preservative. Results were that the -20^{0}C storage environment was best for both antemortem and postmortem blood matrices with and without storage tube preservatives. Antemortem specimens showed better stability than postmortem specimens at all tested conditions. The data and results suggested that specimens stored with sodium fluoride/potassium oxalate were more stable than specimens stored with EDTA. Mephedrone stored in sodium fluoride/ potassium oxalate or EDTA were both more stable than specimens stored without preservative.

Journal of Analytical Toxicology
November/December 2015
Volume 39, Issue 9
Ethyl Glucuronide Positivity Rate in a Pain Management Population

Johnson-Davis and Slawson reported a study in which retrospective analysis was performed to evaluate the rate of ethanol use in a pain management population. The results of the study revealed that 12.6% of patients in this population were positive by immunoassay for ethyl glucuronide (EtG), a biomarker of ethanol use. Cutoff for positive/negative determination of EtG was 500 ng/mL. Of that 12.6% of patients, 86% were positive for both EtG and other prescription pain medications and/or illicit substances. The authors conclude that the study highlights the importance of evaluating ethanol use in the pain management population of patients.

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TOXTALK® **Deadlines** for Contributions:

February 1 for March Issue

May 1 for June Issue

August 1 for September Issue

November 1 for December Issue

Future SOFT Meeting Destinations:

2016:	Dallas, TX	Oct. 16-21st, 2016	Chris Heartsill/Erin Spargo
2017:	Boca Raton, FL	Sept. 10-15th, 2017	Ruth Winecker/Dan Anderson
2018:	Minneapolis, MN	Oct. 7-12th, 2018	Loralie Langman
2019:	San Antonio, TX	Oct.13-18th, 2019	Veronica Hargrove/Brad Hall

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TOXTALK®

Volume 39, Issue 4
December 2015

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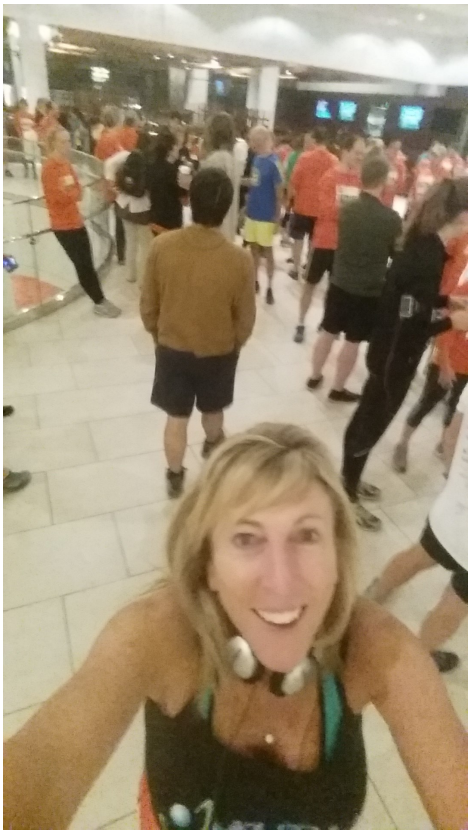

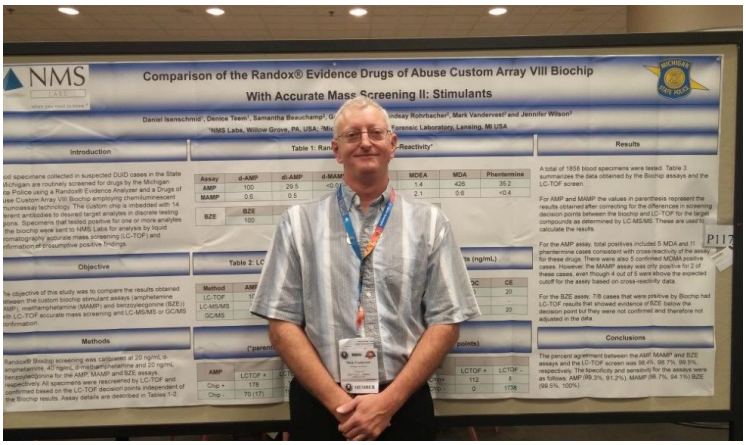

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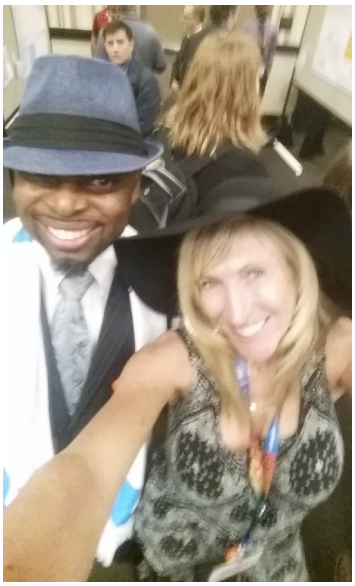

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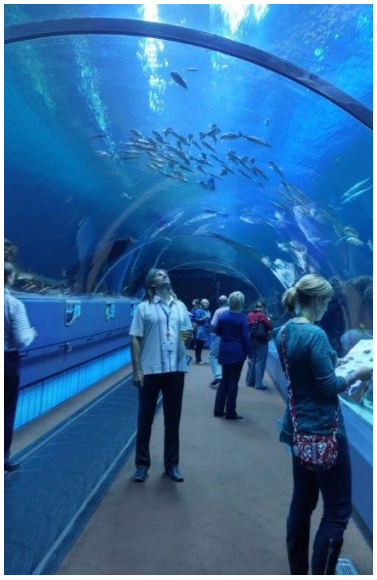

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