Society of Forensic Toxicologists, Inc.

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Passing the Toxicology Torch

Over the last several months, the toxicology community lost three of its founders. Dr. Sidney Kaye and Dr. Leo Goldbaum, students of Alexander Gettler in New York and founders of the American Academy of Forensic Sciences, and Dr. Jane Speaker, a founder and first president of SOFT. Please see their historic biographies later in this issue. We also mourn the passing of a great friend of toxicology, Dr. Joseph Davis of Florida. Drs. Kaye and Davis were Gradwohl Laureates of the AAFS.

This ends the generation that followed Gettler, the father of American Toxicology in New York. The time was one that fostered the modernization of forensic toxicology, a time where the Stas-Otto procedure for poison separation was followed by color reactions, crystal formation, melting/boiling point measurements and titrations to assist in determining and confirming the identification of drugs. We have come a long way and we thank them.

Yale H. Caplan, PhD, DABFT
Editor

SOFT Annual Meeting
Orlando , Florida
October 27— November 1, 2013

The meeting will be held at the Buena Vista Palace Hotel & Spa in Orlando, Florida. The resort is an official Walt Disney World Hotel and just five-minutes walking distance to Downtown Disney. Attendees will be able to reserve rooms through a link on the SOFT web-site beginning January 2013.On-line meeting registration will be available in early March, 2013. Additional details regarding SOFT 2013 are included in this issue and will be posted on the SOFT web-site. Finally, don't forget to mark your calendars – October 28 to November 1, 2013.

Inside This Issue:

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President's Message

*Submitted by **Dan Anderson**, M.S., FTS-ABFT, D-ABC*

Hello all and welcome to the beginning of another year in which I hope there will be continued success with your careers and personal lives. As I write the first of my four ToxTalk President messages, it has already become March and several of us are still scrambling to recover from the workload of the holiday season. I'm sure that I don't have to remind all of you that health and family should remain the first priority. Although the business of Forensic Toxicology can be a very busy one, a particular voice always seems to remind me, that the work will be there tomorrow, whereas our friends and family may not. Please put it all in perspective because the demands of 'faster, better, cheaper' will always be there.

Involvement

As I grow older, I believe with age comes maturity and sometimes complacency. Yes, I am growing older and hopefully more mature; but complacent is something I didn't sign up for! When I first began my career in the field, research, presenting, and publishing were always on the forefront of my mind. My intent was to get established and get noticed. However, over the years, I find myself struggling to find the time to get back to the research that I so thoroughly enjoyed and return to the stage or the platform presentation arena. I encourage ALL members to re-engage yourself with the research or the investigative aspect of your job and present your worthwhile information at an annual meeting. For the younger generation, I say keep it going; your enthusiasm and commitment to the field is unparalleled.

The 'Commission'

In February, the Friday before the Academy of Forensic Sciences (AAFS) convened in Washington, D.C., the White House released a notice regarding the formation of a National Commission on Forensic Science in response to the 2009 National Academy of Sciences (NAS) recommendations. The NAS report, Strengthening Forensic Science in the United States: A Path Forward was issued four years ago. Since then, there has been activity by the White House Subcommittee on Forensic Science Interagency Working Groups (IWGs) as well as draft legislation introduced in Congress to advance Forensic Science in the United States. However, this announcement came as a surprise to all. The Commission, co-chaired by the Department of Justice (DOJ) and the National Institute of Standards and Technology (NIST) will be comprised of approximately thirty (30) members with varying experience who will be selected by the Attorney General in consultation with NIST. The Notice of Establishment, which provides information on applying for Commission membership, can be found in the February 22, 2013 Federal Register, Vol. 78, No.36, Pages 12355 and 12356. From the many presentations I heard during my attendance at the AAFS meeting, the philosophy of why this Commission was formed is to strengthen Forensic Science in the United States and to create a strong and effective partnership between NIST and the forensic science community. NIST is the nation's measurement laboratory responsible for 'measurement science' and will be responsible for evaluation of technology and methods as well as coordination of 'Guidance Groups', the next version of the current Scientific Working Groups (SWGs). Many viewed this as a step to have the science of forensic science overseen by an agency that is not tied to law enforcement. NIST indicated that they will begin the process by creating a framework to start from and that we, as practitioners, should view this as a 'beginning' and not an 'end'. NIST indicated that they will meet and work with each SWG chair. Lastly, NIST indicated that they would solicit public comment and consider each submitted comment in a future hosted workshop. The Commission will be required to work under the Federal Advisory Committee Act (FACA-1972), which contains requirements for open meetings and transparent processes. Some AAFS presenters referred to all of this as a "peer approach" effort. The entire process should be viewed as a mutual collaboration between DOJ, NIST and the community.

So, what does all of this mean to you as a SOFT member? Well, just the word 'Commission' can translate to oversight. And with responsible oversight, must come financial commitment. The Federal Register states that the Commission will recommend strategies for enhancing quality assurance in forensic science units. The areas listed in which the Commission is to work will require long-term funding for implementation. The mechanism to provide long-term support for forensic science is congressional legislation. The White House announcement and the proposed organizational structure are remarkably similar to Senator Patrick Leahy's Bill and it is anticipated that his revised bill will be reintroduced into the Senate in the very near future. SOFT remains an active member in the Consortium of Forensic Science Organizations (CFSO) with Laurel Farrell representing our best interests. CFSO works very hard to influence public policy to the benefit of the forensic science community and will be working with members of Congress on all proposed legislation. SWGTOX will continue to move forward and work towards providing standards for the practice of Forensic Toxicology. With the federal government becoming more involved in our science, I would highly encourage the SOFT membership to continue improving and moving forward in both individual certification as well as laboratory accreditation. But to put it simply, we all need

President's Message (Continued)

to hold tight, as there will be plenty more to come as the country determines how best to provide coordination and adequate financial support for forensic science in the United States!

SOFT Activity

At the Academy meeting, the Board of Directors (BOD) held an interim meeting where the annual SOFT budget was determined. I am happy to report the membership dues, including the annual subscription to Journal of Toxicology (JAT), will remain at $60. Reminder to all that access to the JAT website can be made through the members' only section of www.SOFT-tox.org. A BOD decision was made for SOFT to continue down the path of being 'Green' and provide the 2013 membership directory online in the members' only section rather than mass produce and endure the costly bulk mailing. This directory will be updated twice a year and will always be available to download onto each member's desktop.

There were several committee chair changes. I am pleased to announce that Amy Miles will chair the Drugs and Driving committee, Erin Spargo will oversee the Awards committee, Dimitri Gerostamoulos will chair the Publications committee, and Suman Rana is beginning the task of assembling the newly implemented Designer Drugs committee.

Annual Meeting

Bruce Goldberger and the 2013 Orlando planning meeting have been working extremely hard in making the annual meeting at the Buena Vista Hotel in Disneyworld very memorable! Twelve (12) workshops, including eight (8) half-day and four (4) full-day workshops with very diverse subject matter have been scheduled for Monday and Tuesday. The President's reception will consist of a full evening that includes a beautiful reception at the hotel concluding with attendance to a unique Cirque performance for the SOFT organization. The night will definitely be one to remember. The scientific sessions will be filled with informative platform presentations and proudly presented posters. I encourage all members, both new and experienced, to prepare a presentation and take advantage of this opportunity to connect with the SOFT community and our exciting future. I am thoroughly looking forward to this event and hope to see you all there with your Mickey ears on!

Dan Anderson
M.S., FTS-ABFT, D-ABC,
President

Treasurer's Report

*Submitted by **Jennifer Limoges**, M.S., SOFT Treasurer (2013-2014)*

In January of this year, outgoing SOFT Treasurer Peter Stout, Certified Public Accountant Martin Halloran, SOFT Administrative Assistant Bonnie Fulmer, and I met at the SOFT office in Mesa, AZ to transfer the Treasurer duties. All account authorizations and signatories were updated and the responsibilities successfully transferred. A property inventory was also conducted with no discrepancies noted.

I would like to take this opportunity to recognize Peter Stout for his service to SOFT over the past 2 years as our Treasurer and to thank him for his valuable assistance as I take over that role.

At the interim board meeting in February, the SOFT Board of Directors reviewed the 2011 and 2012 financial summaries and approved the 2013 Budget.

I have updated the format in which the financials are being reported to the Board and the Membership. The items are basically the same as previous years, but they have been categorized as *Operations*, *Awards*, and *Professional Investment*. I feel that SOFT does an excellent job of spending its money in line with the organization's purpose – to promote and develop forensic toxicology. So I thought it might be beneficial to align the financial report to more clearly reflect that. I also added an additional year to the budget vs actual to allow for better comparisons.

Some specific expenses to elaborate on…. The Charitable Contributions category represents our donation of the Karla Moore Fun Run money to the American Cancer Society. Several years' contributions were donated as a lump sum in 2012. The discontinuation of a printed directory resulted in a lowering of the Postage and the Printing budgeted expenses, saving the organization ~$6000. The Board previously decided that SOFT would undergo a full certified audit every other year, in conjunction with the transfer of the treasurer duties. That audit will occur this year, thus the increased Professional Fees. We have also been making many IT improvements. The increased amount budgeted for 2013 (Software/Website Programming) includes planned expenditures for updating the online meeting registration database, and has expenses from the website update that were budgeted in 2012 but not invoiced until 2013. Our Incorporation Expenses represent the actual $25 incorporation fee plus a required $75 "agent fee"; 2012 expenditures represented several years' worth of agent fees. The changes for Oxford University Press represent our shift from the Special Issue costs, to the full membership subscription. Finally, the Awards were categorized separately. They are a planned expense that are not expected to be covered by dues and/or meeting revenues. The ERA/YSMA awards were budgeted for 3 awards in 2013, but the Awards Committee may request additional funds to be approved if the submissions warrant that.

I hope you find the new format useful in understanding how the Board plans to spend the organization's funds. If you have any comments, questions, or suggestions on SOFT's finances, I encourage you to contact me at Jennifer.Limoges@gmail.com.

TREASURER'S REPORT (CONTINUED)

OPERATIONS	2011 BUDGET	2011 ACTUAL	2012 BUDGET	2012 ACTUAL	2013 PLANNED
INCOME					
SOFT Application Fees	2,000	4,380	3,000	4,725	4,500
SOFT Membership Dues	59,000	56,401	58,000	58,041	58,000
Late Fees (Dues)	250	260	250	460	400
TOTAL OPERATIONS INCOME	**61,250**	**61,041**	**61,250**	**63,226**	**62,900**
EXPENSES					
AAFS Midyear BOD Meeting Expenses	1,900	965	1,500	1,262	1,200
Bank and Credit Card Service Fees	6,000	2,747	3,800	3,019	3,500
Appreciation Gifts	1,000	1,221	1,200	1,181	1,200
Charitable contributions			700	2,690	800
Insurance	2,100	2,087	2,100	2,162	2,100
Lease: SOFT Office Space	4,625	4,815	4,800	3,101	3,000
SOFT Office Equipment	500	238	500	433	400
SOFT Office Supplies	5,000	1,899	3,000	1,837	2,500
Payroll Expenses	30,000	27,165	35,000	28,473	35,000
Postage/Shipping Expenses	2,000	2,814	3,000	2,221	1,500
Prof Fees: Accounting and legal	8,000	6,603	4,200	2,582	11,000
QuickBooks Online	600	588	600	588	650
SOFT Officer/Committee Expenses	4,000	4,136	4,000	6,628	5,000
Software/Website Programing	1,500	4,350	4,000	1,728	12,000
State of DE: Incorporation Expenses	25	25	25	250	100
Telephone/Internet	900	1,170	1,800	2,442	2,500
Website Hosting Expenses	500	476	500	1,115	1,000
TOTAL OPERATIONS EXPENSES	**68,650**	**61,299**	**70,725**	**61,713**	**83,450**
NET OPERATIONS INCOME	***($7,400)***	***($258)***	***($9,475)***	***$1,514***	***($20,550)***
AWARDS					
INCOME					
ERA Donations	1,000	1,526	1,000	1,445	1,300
Interest Earned - ERA Account	900	625	700	467	500
Leo Dal Cortivo Interest				120	150
TOTAL AWARDS INCOME	**1,900**	**2,151**	**1,700**	**2,032**	**1,950**
EXPENSES					
ERA/YSMA Awards	14,000	12,000	6,000	6,000	6,000
Leo Dal Cortivo Awards	0	0	0	2,000	2,000
TOTAL AWARDS EXPENSES	**14,000**	**12,000**	**6,000**	**8,000**	**8,000**
NET AWARDS INCOME	***($12,100)***	***($9,849)***	***($4,300)***	***($5,968)***	***($6,050)***

TREASURER'S REPORT (CONTINUED)

PROFESSIONAL INVESTMENT						
INCOME						
	Annual Meeting Income	35,000	1,498,058	900,000	826,610	1,035,000
	Mugs/Shirts/Memorabilia Sales	1,700	1,988	1,700	734	700
	Silent Auction Proceeds	3,500	5,673	4,000	5,420	5,000
	Interest Earned - Reserve Account	500	338	400	247	250
	TOTAL PROF INVESTMENT INCOME	**40,700**	**1,506,057**	**906,100**	**833,011**	**1,040,950**
EXPENSES						
	CFSO Membership	15,000	10,000	10,000	10,000	10,000
	Oxford University Press	8,000	6,847	7,000		40,000
	Annual Meeting Expenses	5,100	1,203,447	900,000	785,766	1,000,000
	SOFT Directory Printing	2,600	3,539	3,500	4,258	0
	SOFT Logo'd Item Expenses	500	949	1,100	1,102	1,000
	SOFT CONED committee expenses	5,000	0	5,000	-55	5,000
	YFT Committee/SSEP	5,000	5,639	5,600	6,674	6,000
	Survey Monkey	200	200	200	200	200
	TOTAL PROF INVESTMENT EXPENSES	**41,400**	**1,230,620**	**932,400**	**807,946**	**1,062,200**
NET PROF INVESTMENT INCOME		***($700)***	***$275,437***	***($26,300)***	***$25,065***	***($21,250)***
OVERALL						
NET INCOME		***($20,200)***	***$265,329***	***($40,075)***	***$20,611***	***($47,850)***

SOFT Account Balances 1/1/2013

Operations Checking	$438,090.44
Reserve	$100,585.01
ERA	$190,522.58
Leo Dal Cortivo	$48,126.45
Annual Meeting Checking	$81,585.00
Annual Meeting Merchant	$429.50
Online Dues Merchant	$20,464.30
	$879,803.28

HAVE YOU PAID YOUR ANNUAL MEMBERSHIP DUES?

The deadline date for payment of the SOFT annual membership dues was February 28. The on-line payment option was disabled March 1. Those with unpaid dues but wishing to continue SOFT membership should call the SOFT Office asap to find out how to proceed.

SOFT Annual Meeting
Orlando , Florida
October 27—November 1, 2013

Seven months and counting before the start of SOFT 2013 – October 28 to November 1, 2013. The SOFT 2013 Program Committee has been very busy planning scientific and social events to ensure a valuable educational and memorable social experience. The workshop schedule includes four full-day workshops and eight half-day workshops. The tentative meeting schedule is published in ToxTalk, as well as on the SOFT website. While changes to the schedule are not anticipated at this time, check the on-line schedule before making travel plans.

The meeting will be held at the Buena Vista Palace Hotel & Spa in Orlando, Florida. The resort is an official Walt Disney World® Hotel and just five-minutes walking distance to Downtown Disney. The accommodations at the Buena Vista Palace Hotel & Spa are stylishly appointed and feature luxurious pillow-top mattresses and bedding, along with amenities such as a 32" HDTV, a mini-refrigerator, and high-speed and wireless Internet access. The room rate is $185 per night (single and double), plus a $10 resort fee which provides access to the heated swimming pools, Jacuzzi and the fitness room. The Buena Vista Palace Hotel & Spa also provides complimentary transportation to the Walt Disney World® Theme Parks including Disney's Magic Kingdom Park and Epcot. Attendees can reserve rooms now through a link on the SOFT web-site.

There are a few important deadlines to note –

- ERA and YSMA applications are due April 5, 2013.
- Abstracts must be submitted by May 15, 2013.
- The meeting registration deadline is August 31, 2013. All registrations received after this date are subject to an additional late fee. A meeting registration worksheet is published in ToxTalk, as well as on the SOFT web-site, to assist you during the registration process.
- Reserve your hotel room early – prior to September 26, 2013. Use the link on the SOFT web-site.

On-line meeting registration will be available by April 15, 2013. The registration fee is $499 for SOFT members and $675 for non-members. In addition to accompany person registration, additional tickets for the Presidential Banquet and Cirque du Soleil® La Nouba™ can be purchased. Also, discounted tickets for all Disney attractions including Walt Disney Word® Theme Park can be purchased through a link on the SOFT web-site.

New this year will be a Career/Education fair to provide information regarding employment and education opportunities in forensic toxicology. The fair will coincide with the Tuesday evening Welcome Reception.

There are many special events planned for SOFT 2013 including the traditional President's Reception followed by an evening at Cirque du Soleil® La Nouba™, as well as Halloween festivities on Thursday evening. Other social events include the Tuesday evening Welcome Reception and SOFT Nite Owl.

ERA and YSMA APPLICATIONS ARE DUE FRIDAY APRIL 5, 2013

The SOFT Awards Committee is requesting applications for the Educational Research Award (ERA) and the Young Scientist Meeting Award (YSMA). These awards recognize students and young scientists performing outstanding forensic toxicology research. Awardees will present their findings at the annual meeting. Each award consists of a basic meeting registration and a $2000 stipend to be used to cover the cost of travel expenses.

Eligibility:

ERA: Applicants for the award must be enrolled in a Master's, Pre-Doctoral, Post-Doctoral or Medical Residency academic program and performing research related to forensic toxicology.

YSMA: Applicants must be bench level scientists (B.S., M.S., or Ph.D.) with 5 years or less experience in the field of forensic toxicology and complete a research project related to forensic toxicology.

To apply:

Go to the Education and Research Award section on the SOFT website (located under the 'Features' tab) for instructions on the application process. Application materials must be received by the Committee Chair no later than Friday April 5th. Awardees will be notified by June 1st. **Applications and questions regarding the application process should be directed to the SOFT Awards Committee Chair, Erin Spargo, at ekspargo@dallascounty.org.**

2013 Orlando Meeting *(Continued)*

SOFT 2013 Agenda

Sunday, October 27, 2013

- Registration Opens (8am-6pm)
- NSC-ADID Meeting (8am-12pm)
- NLCP Inspector Training (2pm-6pm)
- YFT Meeting (5pm-9pm)
- Dinner On Your Own

Monday, October 28, 2013

- Continental Breakfast (7am-8:30am)
- Registration (7am-6pm)
- ABFT Exam Committee (7am-12pm)
- SOFT Workshops (8am-5:30pm)
- FTCB Examinations (9am-12pm)
- Lunch On Your Own
- FTCB Board Meeting (2pm-5pm)
- SOFT-AAFS Drugs and Driving (5:30pm-7pm)
- Dinner On Your Own

Tuesday, October 29, 2013

- Continental Breakfast (7am-8:30am)
- Registration (7am-6pm)
- SOFT Board Meeting (7am-12pm)
- SOFT Student Enrichment Program (8am-5pm)
- SOFT Workshops (8am-5:30pm)
- ABFT Exam (8am-12pm)
- ABFT Accreditation Committee (8am-12pm)
- ABFT Board Meeting (12pm-6pm)
- Lunch On Your Own
- Welcome Reception w/Exhibitors (6:30pm-8pm)
- Sunshine / Rieders Silent Auction (6:30pm-8pm)
- Education / Career Fair (6:30pm-8pm)
- Elmer Gordon Forum (8pm-9:30pm)
- SOFT Nite Owl Event (10pm-12am)

Wednesday, October 30, 2013

- Registration (7am-5pm)
- Exhibit Hall / Silent Auction Open (7am-5pm)
- Continental Breakfast (7am-9am)
- JAT/OUP breakfast by invitation only (7am-8am)
- Opening Ceremony (Plenary) Session (8am-9am)
- Scientific Session #1 (9am-10am)
- Refreshment Break (10am-10:30am)
- Scientific Session #2 (10:30am-12pm)
- Lunch with Exhibitors (12pm-1:30pm)
- Poster Session #1 (12pm-1:30pm)
- Scientific Session #3 (1:30pm-3:00pm)
- Refreshment Break (3:00pm-3:30pm)
- Scientific Session #4 (3:30pm-5:00pm)
- Happy Hour (5:00pm-6:00pm)
- President's Reception (6:00pm-8:00pm)
- Cirque du Soleil La Nouba (9:00pm-11:00pm)

Thursday, October 31, 2013

- Registration (7am-5pm)
- Karla Moore Memorial Fun Run/Walk (6:30am-8am)
- Continental Breakfast (7am-9am)
- Exhibit Hall / Silent Auction Open (7:30am-12:30pm)
- Exhibitor Feedback Meeting (8am-9:30am)
- SWGTOX update (8-8:30am)
- Scientific Session #5 (8:30am-10:00am)
- Refreshment Break (10:00am-10:30am)
- Scientific Session #6 (10:30am-12pm)
- Lunch with Exhibitors (12pm-1:30pm)
- Poster Session #2 (12pm-1:30pm)
- DFSA Committee (12pm-1pm)
- Scientific Session #7 (1:30pm-3:00pm)
- Refreshment Break (3:00pm-3:30pm)
- SOFT Business Meeting (3:30pm-5:00pm)
- ABFT Certificate Reception (5:00pm-6pm)
- Dinner On Your Own
- Thermo Sponsored Reception (7pm-10pm)

Friday, November 1, 2013

- Continental Breakfast (7:30am-9am)
- AAFS Steering Committee (9am-11am)
- Scientific Session #8 (8:00am-10:00am)
- Refreshment Break (10:00am-10:30am)
- Scientific Session #9 (10:30am-12pm)
- Scientific Session #10 (1:30pm-3pm)

EXHIBITS OPEN

Tuesday – 6:30pm-8:00pm
Wednesday – 7am-5pm
Thursday – 7am-1:30pm

REVISED – March 20, 2013

Society of Forensic Toxicologists

Orlando, Florida, USA — October 27-November 1, 2013

Workshops — October 28 and 29, 2013

#	Title	Abstract	Co-Chairs	Date
1	Overview and Review of Forensic Toxicology - Part 1 (SOFT Continuing Education Committee Workshop)	This is part 1 of a 2 part workshop. Participants may take one or both parts of the workshop. The practice of forensic toxicology covers wide and multidiscipline fields of practice. Forensic toxicology includes drug and substance testing that are involved in fields such as performance enhancing in athletics, performance impairment in DUI/DUID, compliance monitoring in pain management testing, the ever evolving world in drug abuse testing, and post-mortem testing. While these fields are at times very different, they have the same foundation in common. This workshop will provide an overview and review of these basic toxicology principles and practices. This workshop is designed for individuals with a few years of work experience or individuals who are looking for a review of forensic toxicology. The workshop will cover drug ADME, math and terminology, instrumentation, current trends in drug testing, and interpretation of results.	Carl Wolf, PhD, MS Justin Poklis, BS	Monday Full-day
2	SWGTOX Standard Practices for Method Validation in Forensic Toxicology	Validation is the process of performing a set of experiments that reliably estimates the efficacy, reliability, and reproducibility of an analytical method. The goal of conducting validation experiments is to establish evidence which demonstrates that a method is capable of successfully performing at the level of its intended use and to identify the method's limitations under normal operating conditions. A survey of the literature finds there are numerous approaches used to demonstrate that a method is "valid", yet they differ in their level of thoroughness. This suggests that some approaches are insufficient while others may be overly rigorous. The Scientific Working Group for Forensic Toxicology (SWGTOX) has developed minimum standards of practice for the validation of analytical methods used in forensic toxicology. This workshop will present a review of basic statistical principles, including an in-depth look at regression analysis for quantitative analyses. Examples and exercises will be provided to help demonstrate how to apply these practices in everyday laboratory methodologies.	Marc LeBeau, PhD Jennifer Limoges, MS	Monday Full-day
3	Solid Phase Extraction: Applications in Forensic Toxicology	From attending this workshop, attendees will learn about the chemistry behind solid phase extraction and its application in validation, practice and application in forensic toxicology. The various speakers discuss their use of this technique for gaining the maximum information from biological matrices in medicolegal laboratories.	Jeffery Hackett, PhD Albert Elian, MS	Monday Morning
4	Ethanol Facilitated Sexual Assault (SOFT DFSA Committee Workshop; Co-sponsored by the University of Florida)	Drug-facilitated sexual assaults (DFSA) and other drug-facilitated crimes have been occurring for centuries. Forensic toxicologists have become increasingly aware of their role in helping to solve these crimes over the last decade. Ethanol continues to be the drug identified with the most prevalence in DFSA casework. Even though this drug is well understood by the forensic toxicology community, it presents particular challenges to DFSA cases. Attendees at this workshop will hear from various professionals involved in different aspects of ethanol as related to sexual assault, from blackouts to the stigmas associated with a "drunk" victim.	Madeline Montgomery, BS Laureen Marinetti, PhD	Monday Morning
5	Identifying and Publishing Quality Research for the Bench Level Scientist (SOFT Young Forensic Toxicologists Committee Workshop)	Forensic Toxicology is continuously developing and evolving, making quality new research a vital key to the advancement of our field. It is important to stay current with research in the field both for the purposes of developing sound analytical methods and for proper interpretation of results. However, those actively working in the field are often times limited in the amount of time they can devote to traditional research. This workshop will explain the importance of continuing research in the field, offer advice on identifying and locating quality existing research, and provide suggestions on performing and publishing your own research.	Tim Grambow, BS Jayne Thatcher, PhD	Monday Afternoon
6	High Profile Cases in Toxicology - Lessons Learned	Presenters will provide their expertise and experience in High Profile cases they have testified in or worked on. Kathy Augustine, Roger Clemons, and Michael Jackson are a few of the cases that will be discussed. A focus will be placed on case do's and don'ts, how toxicology was relevant in the case, the aftermath, dealing with the media and other problems a toxicologist is faced with in High Profile Cases.	J. Robert Zettl, BS, MPA Diane M. Boland, PhD	Monday Afternoon

#	Title	Abstract	Co-Chairs	Date
7	Overview and Review of Forensic Toxicology - Part 2 (SOFT Continuing Education Committee Workshop)	This is part 2 of a 2 part workshop. Participants may take one or both parts of the workshop. The practice of forensic toxicology covers wide and multidiscipline fields of practice. This workshop is intended for the toxicologist with a few years of experience and will provide an overview of stimulants, cannabinoids, opioids, party drugs, atypical antidepressants and antipsychotics, and NSAIDS. An emphasis will be placed on basic pharmacology, impairment and toxicity.	Ann Marie Gordon, MS Deborah Denson, MPM	Tuesday Full-day
8	The Sober and Impaired Subject (SOFT Continuing Education Committee Workshop)	The workshop will begin with the audience observing the Standardized Field Sobriety Exercises (SFSE) on sober subjects. The subjects will then be taken off to another room to participate in a controlled "Drinking Lab". The lecture will continue with the Concepts and Principles of the SFSE's, the Three Phases of DUI Detection, Observations of the Eyes and the relationship of impairment to the Seven Major Drug Categories. The subjects will then be brought back in front of the audience and the subjects will perform the SFSE's while impaired on alcoholic beverages. The audience will be able to utilize the drunk goggles to experience the effects of the different levels of impairment. Numerous visual aids will be brought in to assist with the demonstrations.	Dustin Tate Yeatman, MS Nicholas Tiscione, MS	Tuesday Full-day
9	Pharmacology and Toxicology of Synthetic Cannabinoids (SOFT Designer Drugs Committee)	Synthetic cannabinoids continue to be one of the most common emerging drugs of abuse. Though laboratories have been testing for these compounds for several years, there is still a deficit of information on their pharmacology and metabolism. Through a brief history of their use as drugs of abuse this workshop will update the toxicology community on the current status of knowledge. The synthetic cannabinoids will be described both from a forensic and clinical perspective as well as through the latest research.	Robert Kronstrand, PhD Sherri Kacinko, PhD	Tuesday Morning
10	Unusual Causes of Death: From Analysis to Interpretation	The analytical techniques in use (TLC,GC, HPLC) 10-20 years ago were quite adequate for their current use but were much to insensitive if an unusual drug was to be analyzed. The advent of immunoassays changed the analytical scene markedly. The increased sensitivity they provided made analysis feasible for a large group of substances, but some are still undetectable. As the staff developed expertise and funding became more available they moved forward with hyphenated mass spectrometric procedures (headspace GC-MS, ICP-MS, GC-MS/MS, and LC-MS/MS). Applying these techniques to routine analysis insured the desired sensitive and specific results. The pursuit of zero began. As the technology of analysis has grown, so have its applications. Attendees to this workshop will find author's suggestions that will resolve many questions, including exposure to unusual drugs (elements, plants, pesticides, gas), detection of unstable and complicated poison (cyanide), recent analytical development, new research in postmortem redistribution and finally, interpretation of postmortem results.	Pascal Kintz, PharmD, PhD Jean-Pierre Goullé, PharmD, PhD	Tuesday Morning
11	High Resolution Accurate Mass Spectrometric Methods for Toxicology	High resolution accurate mass spectrometric methods can detect drugs and metabolites with high sensitivity and specificity. Instruments with mass accuracy greater than 1 milli-Dalton (mDa) search for the presence of ions expected for a target compound's molecular formula and measure the mass accuracy and abundance of expected isotope ions. Coupled with retention time matching, these methodologies provide highly accurate drug identification. Non-targeted screening for suspected drug intoxications also is possible when the toxicant is unknown. High resolution accurate mass spectrometry can identify unknown human metabolites of synthetic cannabinoids produced by incubation of the parent drug with human hepatocytes. This is an advantage not available by LC-MS/MS. With sensitivities similar to LC-MS/MS, accurate mass methods can be a better alternative for drug screening. In addition, high resolution mass spectrometry can simultaneously identify and quantify low concentration analytes of different chemical characteristics.	Stephanie Marin, PhD Marilyn Huestis, PhD	Tuesday Afternoon
12	Marijuana: Old Drug, New Data (SOFT/AAFS Drugs and Driving Committee Workshop)	Marijuana continues to be the most frequently encountered chemical in drug impaired driving investigations, and therefore it is the drug about which forensic toxicologists are most often called to testify. This SOFT/AAFS Drugs & Driving Committee sponsored workshop will review the pharmacology of marijuana, focusing on some of the more recent data available (i.e., chronic users); and include results from the latest driving simulator studies being conducted in Iowa. A current legal update will be provided discussing the impact of marijuana legislative changes such as decriminalization, medical use, and per se. Lastly, toxicologists will share their expert testimony as it relates to various marijuana DUID cases.	Jennifer Limoges, MS Christine Moore, PhD	Tuesday Afternoon

For more information, contact Workshop Co-Chairs:

Chris Chronister (chronist@pathology.ufl.edu) and Jeri Ropero-Miller (jerimiller@rti.org)

SOFT 2013 ANNUAL MEETING

Buena Vista Palace ($185 room rate & $10 resort fee)

Orlando, Florida, USA — October 27-November 1, 2013

REGISTRATION WORKSHEET

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I plan to attend the (free) Sunday Young Forensic Toxicologists Forum (5pm-9pm). Yes /No Attendees must be 40-years-old or younger.

REGISTRATION DATES TO NOTE:	FULL MEETING REGISTRATION INCLUDES:	SOFT Mem	Accomp. Person	Non-Mem	Univ. Student	Daily W, Th or F
Apr. 15-Aug. 31	Full Meeting - Includes: ►Welcome Reception Tues. Eve ►Entrance to Scientific Sessions (W, Th, F) ►W, Th, F Breakfasts, Lunches, Refresh Breaks ►Wed. Eve "President's Banquet" ►Wed. Eve "Cirque du Soleil" (after Banquet) ►SOFT 2013 Meeting Program/Abstract Book ►SOFT 2013 Meeting Bag / Shirt	$499	$399 Family Member 17+ *16 & younger pay $125* **Includes Banquet & Cirque Tickets**	$675	$175 Picture ID from Univ. Reqd.	$275 Does NOT Incl. Wed. Special Events
Sep. 1-30	LATE REGISTRATION ---------- Added to Reg. Fee	$200	n/a	$200	$200	n/a
After Oct. 1	ON-SITE REGISTRATION----------Added to Reg. Fee	$300	n/a	$300	$300	n/a
Ind. Event Ticket	►Wed. Cirque du Soleil Tkt. **$100** - Call for assistance **Extra Tickets will NOT be available on site.**	Incl.	Included	Incl.	Incl.	$100
Ind. Event Ticket	►Wed. Pres. Banquet (17+) **$90** - Call for assistance	Incl.	Included	Incl.	Incl.	$90

WS#	Schedule	Workshop Titles (all workshops provide C.E. credits from the AACC)	Mem Cost	Non-Mem Cost	Late Fee After 8/31
WS#1	Mon **Full-Day** 8am-5:30pm	Overview & Review of Forensic Toxicology – Part 1 (SOFT C.E. Committee)	$200	$250	$25
WS#2	Mon **Full-Day** 8am-5:30pm	SWGTOX Standard Practices for Method Validation in Forensic Toxicology	$200	$250	$25
WS#3	Mon **Half-Day** 8am-noon	Solid Phase Extraction: Applications in Forensic Toxicology	$150	$200	$25
WS#4	Mon **Half-Day** 8am-noon	Ethanol Facilitated Sexual Assault (SOFT DFSA Committee w/Univ. of FL sponsorship)	$150	$200	$25
WS#5	Mon **Half-Day** 1:30pm-5:30pm	Identifying & Publishing Quality Research for the Bench Level Scientist (SOFT YFT Committee)	$150	$200	$25
WS#6	Mon **Half-Day** 1:30pm-5:30pm	High Profile Cases in Toxicology – Lessons Learned	$150	$200	$25
WS#7	Tue **Full-Day** 8am-5:30pm	Overview & Review of Forensic Toxicology – Part 2 (SOFT C.E. Committee)	$200	$250	$25
WS#8	Tue **Full-Day** 8am-5:30pm	The Sober & Impaired Subject (SOFT C.E. Committee)	$200	$250	$25
WS#9	Tue **Half-Day** 8am-noon	Pharmacology & Toxicology of Synthetic Cannabinoids (SOFT Designer Drugs Committee)	$150	$200	$25
WS#10	Tue **Half-Day** 8am-noon	Unusual Causes of Death: From Analysis to Interpretation	$150	$200	$25
WS#11	Tue **Half-Day** 1:30pm-5:30pm	High Resolution Accurate Mass Spectrometric Methods for Toxicology	$150	$200	$25
WS#12	Tue **Half-Day** 1:30pm-5:30pm	Marijuana: Old Drug, New Data (SOFT/AAFS Drugs & Driving Committee)	$150	$200	$25

YOU MUST WEAR YOUR NAME BADGE DURING ALL MEETING FUNCTIONS

IMPORTANT REFUND POLICY: Refunds for a complete registration will be honored if written request is received prior to 8-31-13 minus a $100 USD administrative fee. No refunds offered after 9-1-13.

REGISTRATION DESK will be open Sunday - Friday. Delegates are advised to pick-up badge and materials upon arrival.

DRUGS IN THE NEWS

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

Dwain Fuller, B.S., D-FTCB, TC-NRCC

Dwain.Fuller@va.gov

Cyanide: Another Classic Re-emerges

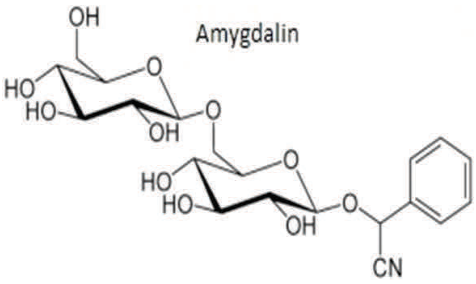
Submitted by Section Editor, ***Dwain C. Fuller***

Life was good for 46 year-old Urooj Khan, or so it appeared. He had just hit it big with a "scratch-off" ticket valued at $1 million. Mr. Khan chose to take the lump-sum disbursement which would net approximately $425,000 after taxes. By all accounts, he intended to pay off his debts, invest in his dry-cleaning business, and give some money to St. Jude's Children's Hospital. Mr. Khan received the check on July 19th, but by July 20th he was dead. The Cook County Medical Examiner's Office which investigated the death, did not perform an autopsy; their policy was to not perform an autopsy on a person 45 or older, unless the death was suspicious. After a basic toxicology screen for cocaine, opiates, and carbon monoxide, all of which were negative, the cause of death was ruled to be due to arterial sclerotic cardiovascular disease (ASCD). It wasn't until an unidentified relative of Mr. Kahn pushed for more investigation that it was discovered that Mr. Kahn had died from cyanide poisoning.

Arsenic, cyanide, and strychnine are undoubtedly the three most commonly recognized poisons among the general public, and likely in that order. If you don't believe me, ask someone to name the first poison that comes to mind. See, I told you. The "big three" have been featured in numerous books, movies, plays, and even songs. Regardless of public perception, however, these poisons are quite rare today. Or are they? In the case of strychnine, this is probably true; strychnine is easily detected in a commonly performed alkaline drug screen. But what about arsenic and cyanide? Perhaps, I am out of touch, having not worked in a laboratory that performs postmortem work in a number of years, but in the years I did, it was not common to routinely screen for "heavy metals" or cyanide, unless there were indications of their involvement.

It would be interesting to take a poll of how many toxicologists have had an opportunity to investigate an actual cyanide death and how many cases they have examined. I would wager the number is relatively low. I can only think of two or three cases I have investigated that were actually cyanide deaths, even though I spent several years of my career in Nevada, a state where cyanide salts are commonly accessible in the gold mining industry. Although, I have performed cyanide screens on many more occasions than I have found cyanide, it was by no means a routine assay. It is hard to tell if one should find this encouraging or frightening, given we don't know what we don't know.

Perhaps we are getting ahead of ourselves though. Let's talk a bit about what cyanide is, where it comes from, and why it's toxic. This may be old news to most of you, but a little refresher is always useful. The word "cyanide" is most often used as a short hand expression for hydrogen cyanide, hydrocyanic acid, or the old classic name, prussic acid. Hydrogen cyanide (HCN) is a simple molecule, consisting of a hydrogen atom bonded to a carbon atom which is triple bonded to a nitrogen atom. Hydrogen cyanide has a boiling point of 25-26° C, thus is quite volatile at room temperature. Hydrogen cyanide is weakly acidic, having a pKa of 9.2. The smell of hydrogen cyanide is often described as that of bitter almonds. I have two problems with this last description, however. First, how many people can say they have had the opportunity to smell bitter almonds? In fact, bitter almonds are not sold in the United States, for reasons that bring me to point number two. The reason cyanide smells like bitter almonds is because bitter almonds contain cyanide in quantities of up to 9 mg per almond. Therefore, bitter almonds smell like cyanide, not vice versa.



Of course, bitter almonds are not the only food product that contains cyanide. Apple seeds, peach pits, apricot pits, lima beans, sorghum, flaxseed, bamboo shoots, and cassava root all contain cyanide, or more accurately, cyanogenic (cyanide-forming) compounds.

While I don't wish to stray too far

Drugs in the News: Cyanide *(Continued)*

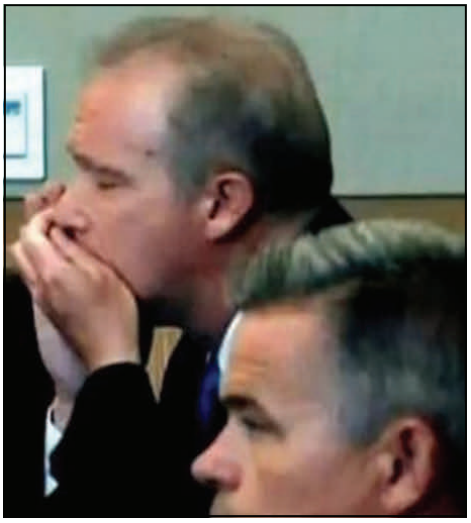
afield, the chemistry of these cyanogenic compounds and their role in plant protection is quite fascinating. The compounds are typically cyanogenic glycosides; essentially sugar molecules bonded to cyanide groups. These cyanogenic glycosides are relatively benign in the plant itself until they are combined with an enzyme, also in the plant, that cleaves the sugar and releases hydrogen cyanide. In the intact plant the cyanogenic glycoside is sequestered from the activating enzyme. However, when preyed upon by an insect, the resulting damage to the plant causes a mixing of the cyanogenic glycoside and the activating enzyme, creating a "chemical booby-trap" for the predator. The most common example is amygdalin, found in bitter almonds. When amygdalin comes in contact with its activating enzyme, it produces two glucose molecules, hydrogen cyanide, and benzaldehyde. Benzaldehyde is incidentally the chemical responsible for the flavor of almonds.

Returning to the subject at hand: Why is hydrogen cyanide toxic to humans, as well as many other species? When hydrogen cyanide is inhaled or otherwise ingested it produces a form of histotoxic hypoxia, primarily through the inhibition of cytochrome c oxidase, thus preventing the cells from utilizing the oxygen in the blood. After the inhalation hydrogen cyanide or the ingestion of cyanide salts, seizures, apnea, coma, and cardiac arrest follow quite rapidly.

A tragic example of the rapid lethality of cyanide was played out recently in an Arizona courtroom.

Michael Marin, often described as a millionaire playboy and adventurer, was convicted of burning down his $3.5 million Phoenix-area home. Upon the reading of the jury's verdict of guilty, Mr. Marin placed his hands over his face and apparently swallowed something that was cupped in his left hand. About seven minutes later, Mr. Marin, his face flushed pink, begins to gasp and struggle for breath before collapsing to the floor. By the time the paramedics arrived, he was dead. Days later, discovered in the trunk of Mr. Marin's car, was a container of sodium cyanide he had purchased from an online supplier.

As are many things these days, the



courtroom events were captured on video and are available for viewing on the internet. While it is not pleasant to witness the demise of any person, the video does provide the forensic toxicologist with invaluable firsthand knowledge of the effects of cyanide on the human body.

As I mentioned earlier, a cyanide assay is not often performed on the blood of a decedent unless there are indications one should do so. So what are the indications? Since death from cyanide is often quite rapid, a suicidal ingestion is often accompanied by the presence of cyanide salts at the scene. Additionally, victims of suicide, due to cyanide's toxic mechanism, often appear bright pink, much like carbon monoxide victims. Therefore, an observation of a bright pink body in the absence of circumstances that would indicate carbon monoxide poisoning, should at least cause one to consider cyanide as a possibility. There is one further indication that I find compelling. The smell of cyanide is quite unique; once someone has smelled it, they will often recognize it instantly. For the initiated, it can often be smelled in the gastric contents of the victim and at times even the blood. During my tenure at a state medical examiner's office, I was on several occasions asked to come to the morgue to determine if I detected the odor of cyanide in a decedent. Some of you may ask why I was summoned to provide this service. Why didn't the morgue personnel just do it themselves? Ay, there's the rub… due to genetics approximately 20-40% of the population cannot smell cyanide.

So why not perform the assay routinely? There are probably several answers to this question. In particular, it is the perceived rarity of a positive finding weighed against the time and expense required to perform the assay.

There are three common assays for cyanide, one qualitative, the other two qualitative and quantitative; all of these consist of acidifying the blood specimen to release hydrogen cyanide into the headspace where it can be analyzed, or captured then analyzed. One assay relies on liberating hydrogen cyanide gas by acidifying a blood specimen in a closed tube where a cyanide-sensitive Cyantesmo™ test strip is suspended in the headspace. Color changes in the test strip are compared with positive and negative controls as a qualitative screen for cyanide. In another method that has been in use since at least 1957, hydrogen cyanide is liberated from blood by acidification in the outer ring of a Conway microdiffusion dish where it is trapped in a sodium hydroxide solution in the inner well. This sodium hydroxide solution can then be analyzed by the introduction of reagents that form a colored solution in the presence of cyanide. This method can be used qualitatively by visual comparison, or quantitatively by reading the absorbance at the appropriate wavelength on a spectrophotometer compared to standards. And finally, after the addition of a suitable internal standard, such as acetonitrile or isotopically labeled cyanide, the headspace above the acidified blood can be sampled for gas chromatographic analysis by either nitrogen phosphorus or mass spectrometric detection.

Indeed cyanide is a classic poison that appears to be a rare finding these

Drugs in the News: Cyanide *(Continued)*

days. However, appearances may be deceiving, in that we don't find what we don't look for. I am not assigning blame or calling anyone out on this issue. I am well aware of the pressures of laboratory management and protocol development, and that reasonable compromises must be made to do the most that can be done with what you have in regards to money, equipment, personnel, and time. Perhaps this is call for us all to examine our pre-analytical and analytical protocols to make sure we aren't letting things slip through the cracks.

References and further reading:

http://www.cnn.com/2013/01/07/justice/illinois-lottery-death/index.html, Accessed 1/28/13

http://abcnews.go.com/Business/poisoned-lottery-winner-urooj-khans-family-knew-nephew/story?id=18196028, Accessed 1/28/13

http://en.wikipedia.org/wiki/Hydrogen_cyanide, Accessed 1/29/13

http://news.wustl.edu/news/Pages/20916.aspx, Accessed 1/29/13

http://en.wikipedia.org/wiki/Cyanide_poisoning, Accessed 1/28/13

http://www.nydailynews.com/news/crime/autopsy-shows-michael-marin-arizona-man-wall-street-trader-killed-cyanide-hearing-guilty-verdict-article-1.1123692, Accessed 1/28/13

http://usatoday30.usatoday.com/news/nation/story/2012-08-19/defendant-kills-self/57134642/1, Accessed 1/28/13

http://www.youtube.com/watch?v=w_3869woRAI, Accessed 1/28/13

Ma J, Dasgupta PK. Recent Developments in Cyanide Detection: a review. Anal Chim Acta, 2010 Jul 19;67(2):117-25

Rella J, Marcus S, Wagner BJ. Rapid Cyanide Detection Using the Cyantesmo Kit. J Toxicol Clin Toxicol. 2004;42(6):897-900

Feldstein L, Klendhoj NC. The Determination of Volatile Substances by Microdiffusion Analysis. J Forensic Sciences, 1957, 2:39-58

CALL FOR PAPERS—ABSTRACT SUBMISSION FOR SOFT 2013 ANNUAL MEETING

DEADLINE IS MAY 15, 2013

The SOFT 2013 Scientific Program Committee is requesting abstracts on all topics related to forensic toxicology. Refer to the Scientific Session section on the SOFT website for instructions on how to submit an abstract. It is located under the 'Annual Meeting / Scientific Session' tab.

Abstracts can only be submitted electronically and the deadline is May 15, 2013. The submitting author will be notified with a confirmation email that the abstract was submitted. If notification is not received, contact info@soft-tox.org.

Abstracts will be peer-reviewed, and if accepted, will be chosen as either a 15 minute platform presentation or poster presentation to be given during one of the meeting's scientific program sessions. **Notification of acceptance will be made by email to the first author by August 1, 2013.**

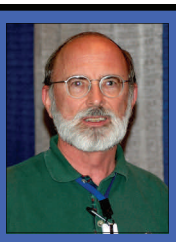
In addition, the Leo Dal Cortivo Memorial Fund is allowing the Young Forensic Toxicologists Committee to present two awards to young forensic toxicologists at the SOFT 2013 Annual Meeting. The best platform presentation and the best poster presentation will be chosen from among the eligible entries, and the presenting author will be awarded with a cash prize of $1000 in addition to a free registration for a future SOFT meeting. For eligibility requirements and instructions on how to apply, go to the Young Forensic Toxicologists tab on the SOFT website.

The SOFT 2013 Scientific Program Committee Chairs: **Michele Merves** and **Matthew Juhascik**

51st Annual Meeting of the International Association of Forensic Toxicologists (TIAFT)

September 2-6th, 2013 Maderia, Portugal

Submitted by **Helena Teixeira**, Ph.D., President of TIAFT 2013 Meeting



CASE NOTES

Send interesting *"Case Notes"* to Section Editor

Matthew Barnhill, Ph.D., DABFT

mbarnhilljr@worldnet.att.net

CASE NOTE : Case Report of a Fatality Involving a New Designer Drug: 5-(2-aminopropyl)-2,3-diydrobenzofuran (5-APDB)

Submitted by ***Tiffanie L. Hargraves and Julia M. Pearson, Ph.D., DABFT***

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Introduction

Benzofuran derivatives were originally synthesized to assess the structure-activity relationships and the pharmacological properties produced from changes in ring substitutions of 3,4-methylenedioxyamphetamine (MDA) and3,4-methylenedioxymethamphetamine (MDMA) (1).

5- and 6-(2-**A**mino**p**ropyl) **b**enzofuran (5- and 6-**APB**) and 5- and 6-(2-**a**mino**p**ropyl)-2,3-**d**ihydro**b**enzofuran (5- and 6-**APDB**) were synthesized by replacing one of the dioxole oxygen atoms within the methylenedioxy portion of MDA with a methylene (CH_2) unit, differentiating the two by the placement of the oxygen atom. 5- and 6-APB differ from 5- and 6-APDB by having a double bond between the carbon atoms not associated with the oxygen atom (see Figures 2 and 3).

Recently, these benzofuran derivatives have become available as designer drugs. These drugs are designed to avoid legal prosecution as substitutes for ecstasy and are commonly sold on the Internet and in head shops. However, these designer drugs have caused confusion within both Internet drug chat rooms and the forensic community because some were abbreviating 5- and 6-APDB as 5- and 6-APB (2, 3). There is little known about these synthetic designer drugs and their potential toxicity. In this case report, we present a fatality involving 5-APDB and provide analytical data for all four benzofuran derivatives in order to assist other toxicologists with the identification of these designer drugs in casework.

Experimental

Reagents and materials

High-performance liquid chromatography (HPLC) grade toluene, hexane, isoamyl alcohol, sulfuric acid, and ethyl acetate were obtained from Thermo Fisher Scientific. Sodium bicarbonate, potassium carbonate, and sodium tetraborate decahydrate were obtained from Sigma-Aldrich Chemical Company. 5-APDB and 6-APDB were obtained from the DEA. 5-APB and 6-APB were obtained from Cayman Chemical. Enzyme-linked immunoassay (ELISA) kits were obtained from Immunalysis.

Sample extraction for identification and confirmation by GC-MS

Biological specimens were extracted using a standard alkaline liquid-liquid extraction followed by analysis by gas chromatography mass spectrometry (GC-MS). Briefly, two milliliters of specimens were extracted with saturated borate buffer and THIA (78:20:2 mixture of toluene, hexane, and isoamyl alcohol), back extracted with sulfuric acid, neutralized and concentrated in ethyl acetate for analysis.

Instrumentation and chromatographic conditions

A Thermo Scientific ISQ GC-MS equipped with an AS300 autosampler was used for analysis. Chromatographic separation was performed on an RTx -5MS (Crossbond 5% diphenyl-95% dimethylpolysiloxane) 0.25 µm x 0.25 mm i.d. x 30 m column from Restek. The injection port was set at 260˚C (injection volume 2 µL in splitless mode). The initial oven temperature was 100˚C, with 1 minute hold time, ramped at 15˚C/min to 230˚C, then ramped at 12˚C/min. to reach a final temperature of 300˚C, which was held for 10 minutes. Helium was used as a carrier gas at a flow rate of 1.5 mL/min for 18 minutes, followed by 2.5 mL/min for 10 minutes. The transfer line temperature was 285˚C. Electron Ionization (EI) was used with an ion source temperature at 300˚C and operated in full scan mode.

Case History

A thirty-four year old male was at home with his girlfriend taking Diablo ecstasy pills and smoking synthetic marijuana. The girlfriend witnessed him take the last ecstasy pill at approximately 11:00 pm. He complained of difficulty breathing and became unconscious. When paramedics arrived he was found in asystole and despite resuscitative efforts was pronounced dead at 11:55 pm.

A Diablo ecstasy packet was obtained from the scene and is shown in Figure 1. It contained two gray/black speckled tablets. A tablet is also shown in Figure 1 with a small portion removed for analysis.

Results

Routine drug screening was performed including volatiles by GC-MS, immunoassay for drugs of abuse (acetaminophen, barbiturates, benzodiazepines, cannabinoids, carisoprodol/meprobamate, cocaine metabolite, fentanyl, methadone, methamphetamine/MDMA, opiates, oxycodone and salicylates) and alkaline

CASE NOTE: 5-APDB *(Continued)*

extractable drugs by GC-MS. The immunoassay screen was presumptive positive for methamphetamine/MDMA however subsequent targeted analyses for amphetamines (methamphetamine, amphetamine, MDMA and MDA) and bath salts (methylone, mephedrone, methedrone and methylenedioxypyrovalerone) were negative. Dextromethorphan, cotinine, caffeine, lidocaine and an early eluting unidentified peak were detected by GC-MS.

The unidentified peak eluted approximately one minute before the retention time of cotinine and two minutes before that of caffeine. This unidentified peak had a mass spectrum with a prominent base ion of 44 and low abundance ions at 77, 133, 134 and 177, similar to the mass spectrum published in a 2011 DEA Microgram Journal (2). In this reference article, the compounds 5- and 6-(2-aminopropyl) - 2,3-dihydrobenzofuran were abbreviated as 5- and 6-APB. Subsequently, standards of 5- and 6-APB were obtained from Cayman Chemical and analyzed by GC-MS. However, the 5- and 6-APB standards did not match the spectra described in the article (2) or the unknown peak identified in the victim's specimens. Upon further discussion with Cayman Chemical and the authors of the Microgram Journal article it was discovered that there was confusion in abbreviating 5- and 6-(2-aminopropyl) - 2,3-dihydrobenzofuran as 5- and 6-APB when actually it should be referred to as 5- and 6-APDB (3). Subsequently, 5 - and 6-APDB were obtained by the DEA.

All four benzofuran standards (5- and 6-ABP, 5- and 6-APDB) were spiked separately into blank blood, extracted and analyzed by GC-MS. 5-APDB was the only compound with the exact retention time and identical mass spectrum as the unidentified peak in the victim's specimens. A portion of the Diablo ecstasy pill was dissolved in methanol and analyzed by GC-MS; 5-APDB was the only compound identified.

Due to the lack of a pure analytical standard, analysis was limited to qualitative identification and confirmation. Ions 44, 77, 133, 134 and 177 were used for identification of 5- and 6- APDB with 5-APDB producing a more intense ion at *m/z* 134, relative to 6-APDB. Ions 44, 77, 131, 132, and 175 were used for identification of 5- and 6-APB with 6-APB producing a slightly more intense ion at *m/z* 132, relative to 5-APB. Figures 2 and 3 show the EI mass spectra of all four benzofuran derivatives.

Discussion

5-APDB was readily detected in this case by a routine analysis of alkaline extractable drugs by GC-MS. At the time this case was analyzed, there were no reported cases of 5-APDB intoxications in the published literature. The medical examiner ruled the cause and manner of death as accidental 5-APDB intoxication. As with all post-mortem toxicology interpretations, the conclusion that this case resulted from 5-APDB toxicity was based on the lack of any significant anatomical or other drug findings and individual case history. The analytical data presented for benzofuran derivatives should assist in the identification of these designer drugs in other benzofuran-related cases.

Acknowledgement

The authors would like to thank John Casale from the Dulles DEA Special Testing and Research Laboratory for his assistance with the clarification of the nomenclature for the four different benzofuran derivatives and helping obtain the 5- and 6-APDB standards from the DEA.

References

1. Monte, A.P., Marons-Lewicka, D., Cozzi, N.V., and Nicholas, D.E. (1993) Synthesis and Pharmacological Examination of Benzofuran, Indian, and Tetralin Analogues of 3, 4-(Methylenedioxy) amphetamine. *Journal of Medical Chemistry*, **36**, 3700-3706.
2. Casale, J.F. and Hays, P.A. (2011) The Characterization of 5- and 6-(2-Aminopropyl)-2,3-dihydrobenzofuran. *Microgram Journal*, **8** (2), 62-74.
3. Casale, J.F. (2012) Letter to the Editor regarding: Abbreviations for 5- and 6--(2-Aminoprop-yl)-2,3-dihydrobenzfuran v.s. 5- and 6-(2-Aminoprop-yl)benzofuran: A Clarification of "APB" and APDB." *Micro-gram Journal*, **9** (1), 46.

Figure 1: The Diablo package, front and back; a tablet with a small portion removed for analysis

CASE NOTE: 5-APDB *(Continued)*

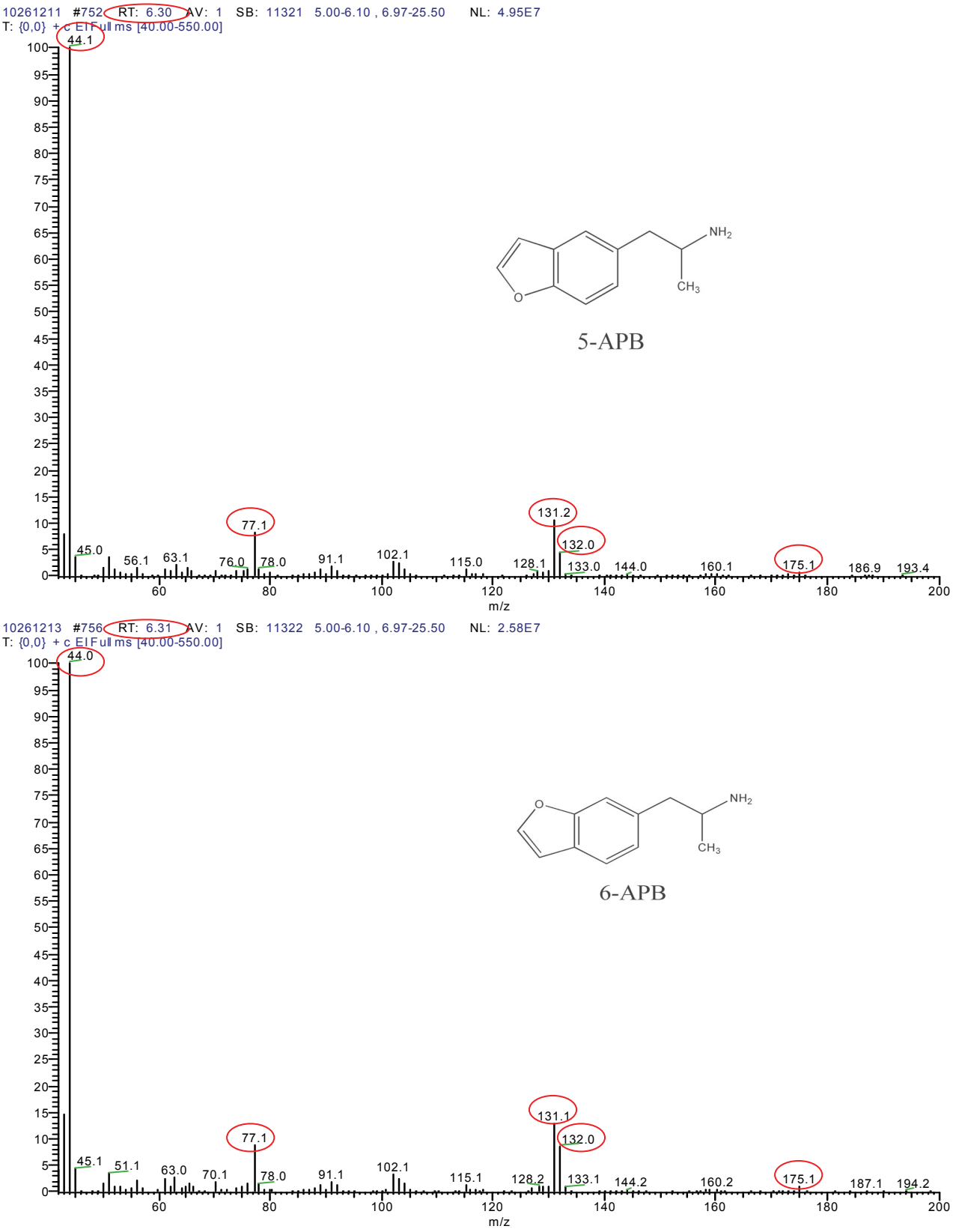


Figure 2: GC-MS full scan mass spectrum of 5- and 6-APB with a prominent base ion at 44 *m/z* and less abundant ions at 77, 131, 132, and 175 m/z. Note that 6-APB has a slightly more intense ion at *m/z* 132, relative to 5-APB.

CASE NOTE: 5-APDB *(Continued)*

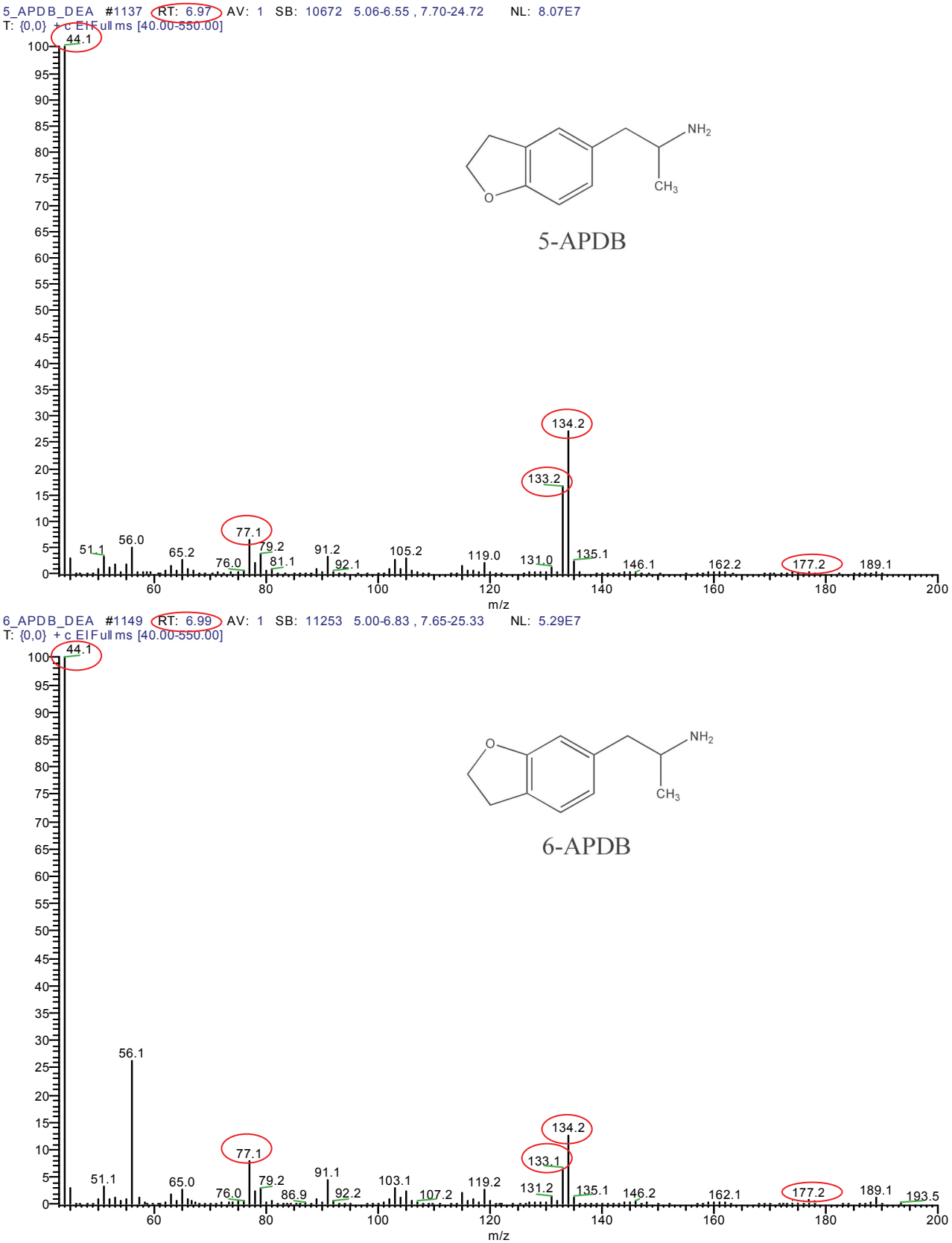


Figure 3: GC-MS full scan mass spectrum of 5- and 6-APDB with a prominent base ion at 44 *m/z* and less abundant ions at 77, 133, 134, and 177 m/z. Note that 5-APDB has a more intense ion at *m/z* 134, relative to 6-APDB

FROM THE TOXICOLOGY LITERATURE

*Submitted by **Barry Levine, Ph.D., DABFT***

Forensic Science International
Vol. 220 July 2012

Saar et al studied the instability of the antipsychotic drug olanzapine in blood and water. In blood stored at 4°C, all olanzapine was degraded by 4 days. The addition of 0.25% ascorbic acid slowed, but did not prevent this degradation. Olanzapine was more stable in water at 4°C, with total loss of drug occurring by approximately 2 weeks. One breakdown product was identified, 2-hydroxy-olanzapine, but this product was found only in water; breakdown products in blood were not identified. The addition of 0.25% ascorbic acid prevented the formation of this breakdown product in water.

Selden et al studied a series of buprenorphine related deaths to assess the role of opioid abstinence and co-administration of other psychotropic drugs as risk factors in buprenorphine deaths. Over a 4-year period, 97 cases were identified and subdivided into 4 categories: buprenorphine intoxication; possible buprenorphine intoxication; incidental buprenorphine finding and unclear cause. Co-administration of other CNS depressants occurred in 75% of the intoxication cases. The median buprenorphine concentration in intoxication cases was not significantly different than buprenorphine concentrations in other cases; therefore, a "toxic" or "lethal" buprenorphine concentration cannot be definitely established. The median norbuprenorphine to buprenorphine concentration ratio in intoxication cases was significantly lower than in the other classifications, suggesting opioid abstinence may play a role in intoxication deaths.

Forensic Science International
Vol. 221 Sep 2012

Tetrahydrozoline is a drug used in over the counter eye and nasal preparations because of its vasoconstrictive and decongestant effects. Stillwell and Saady reported 2 cases of drug facilitated sexual assault involving teenage females where this drug was allegedly added to alcoholic beverages. In the first case, the urine tetrahydrozoline concentration was 1.481 ng/mL 7 hours post ingestion. Other than ethanol, no drugs were detected. In the second case, the urine tetrahydrozoline concentration was 108 ng/mL 23 hours post ingestion. No ethanol or drugs were detected in this case.

Journal of Analytical Toxicology
Vol 36 Jul-Aug 2012

Larson et al presented tapentadol and N-desmethyltapentadol distribution data from 2 postmortem cases. In the 2 cases, the heart blood tapentadol concentrations were 1.95 and 0.22 mg/L while the respective femoral blood concentrations were 0.77 and 0.26 mg/L. N-desmethyltapentadol was detected in the heart and femoral blood of the first case, at concentrations of 0.09 and 0.07 mg/L, respectively. In both cases, the liver and brain concentrations were approximately twice the femoral blood concentration.

There were 2 papers that described methods for the analysis of synthetic cannabinoids. One paper (Shanks et al) used ultra-performance liquid chromatography time-of-flight mass spectrometry to test non-biological products. In the other paper, Ammann et al presented a liquid chromatography-tandem mass spectrometry method to detect and quantify 25 synthetic cannabinoids in blood specimens.

Schwope et al evaluated the effects of smoking one 6.8% THC cigarette in 10 chronic cannabis users. Smoking the single cigarette significantly increased the positive subjective effects and no effect on negative effects such as anxiety or restlessness. No changes in divided attention or critical tracking tasks were observed.

Three papers on designer cathinones also appeared in this issue. Ammann et al presented a liquid chromatography tandem mass spectrometry method for 32 of these compounds in blood specimen. Cawrse et al and Pearson et al reported a total of 7 postmortem cases where methylone was detected. In 4 of these cases, methylone was directly involved in the death. In each case the peripheral blood methylone concentration was greater than 0.5 mg/L.

Journal of Analytical Toxicology
Vol 36, Sep 2012

Valtier and Bebarta studied the urinary excretion profile of hydrocodone and 2 of its major metabolites, hydromorphone and norhydrocodone following a single 10 mg dose of hydrocodone in 7 individuals. Peak urine concentrations of hydrocodone, hydromorphone and norhydrocodone were found 3-7 hours, 6-25 hours and 4-13 hours post dose, respectively. Norhydrocodone was the metabolite found in highest concentration and remained detectable (LOD =2.5 ng/mL) for a longer period of time than parent drug or hydromorphone. Hydromorphone (LOD = 5 ng/mL) was detectable for the same length of time as the hydrocodone (LOD = 2.5 ng/mL), but at concentrations lower than the parent drug.

Forensic Science International
Vol 222 Oct 2012

Fjeld et al reanalyzed 59 fluoridated blood specimens positive for GHB, including 32 postmortem and 27 antemortem specimens that were stored in a freezer between 0.4 and 7.2 years. The initial concentrations ranged from 13 to 288 mg/L. No changes greater than 35% were detected in any of the samples, indicating that no changes of forensic relevance were detected during this period.

Jones and Holmgren compared zopiclone and zolpidem concentrations in venous blood of impaired drivers to femoral blood concentrations in autopsy cases. The mean/median zopiclone concentrations in drug deaths, other caused deaths and traffic cases were 0.49/0.20, 0.15/0.06 and 0.12/0.07 mg/L respectively. The mean/median zolpidem concentrations in drug deaths, other caused

FROM THE TOXICOLOGY LITERATURE *(CONTINUED)*

deaths and traffic cases were 0.75/0.30, 0.31/0.13 and 0.31/0.19 mg/L respectively.

Journal of Analytical Toxicology
Vol 36 October 2012

Heltsley et al reported on the prevalence of two major synthetic cannabinoids in approximately 6000 athletes. Urine specimens were tested for JWH-018 and JWH 073 and their metabolites by LC/MS/MS. 4.5% of these specimens tested positive for the metabolites of these two compounds. 99% of these positive specimens were positive for the metabolites of JWH-018; 50% were positive for the metabolites of JWH-073.

International Journal of Legal Medicine Vol 126 November 2012

Palmiere and Mangin published a two part review on postmortem chemistries. The first part discussed the more common postmortem chemistries, including a discussion of glucose, glycated hemoglobin, ketone bodies, UN, creatinine and electrolytes. The second paper discussed the less commonly employed tests on postmortem specimens, including liver function, markers of alcohol use, cardiac function, anaphylaxis markers and hormone measurements.

Journal of Forensic Sciences
Vol 57 September 2012

Logan et al examined 82 commercial herbal incense products to identify which synthetic cannabinoids were present. Analytical techniques used included TLC, GC/MS, HPLC and LC/TOFMS. In these products, JWH-018 and JWH-073 were the primary synthetic cannabinoids identified. The concentration of the drugs in these products was 5-20 mg/g.

Heninger reported the beta-hydroxybutyrate (BHB) concentrations in 1795 vitreous humor specimens. Comparison with blood BHB concentrations failed to find a correlation between the two specimens. Vitreous humor BHB concentrations less than 0.4 mM were considered normal while BHB concentrations greater than 6.0 mM were generally associated with ketoacidosis.

Journal of Analytical Toxicology
Vol 36 November-December 2012

Jones and Holmgrem looked at 9310 DWID cases where methamphetamine was confirmed positive to ascertain whether the measured amphetamine resulted from methamphetamine use or from separate use of amphetamine. When the methamphetamine to amphetamine concentration ratio was between 3 and 10, this strongly indicated that only methamphetamine was used. In these cases the mean and median methamphetamine concentrations were 0.72 and 0.56 mg/L respectively.

FAA COLLOQUIUM

POSTMORTEM FORENSIC TOXICOLOGY IN AVIATION

APRIL 1-3RD, 2014

The Federal Aviation Administration's (FAA's) Civil Aerospace Medical Institute (CAMI) is organizing a colloquium on postmortem forensic toxicology in aviation to be held during **April 01–03, 2014** at the FAA's Mike Monroney Aeronautical Center in Oklahoma City, Oklahoma, USA.

This meeting will cover topics such as sample processing; importance of chain of custody of samples; analyses of samples for combustion gases, ethanol, and drugs; analytical result interpretation; significance of quality control/quality assurance; and litigation and expert testimony issues.

The meeting will be a scientific platform for medical examiners, coroners, forensic toxicologists and other professionals, regional flight surgeons, National Transportation Safety Board personnel, and other accident investigation authorities, including FAA's Flight Standards District Offices and FAA's Office of Accident Investigation and Prevention employees.

There is no registration fee for attending this colloquium. Responses from potential attendees are required by **the end of July 2013**. Additional information may be obtained through the web-link http://www.faa.gov/go/toxmeeting.

MEMBER NEWS

In Memoriam: Sidney Kaye, Ph.D. D-ABFT (1912—2012)

Submitted by ***Bruce Goldberger***

Dr. Sidney Kaye (1912-2012), a pioneer in clinical and forensic toxicology, passed away in Gainesville, Florida on December 30, 2012, two months shy of his 101st birthday.

Dr. Kaye earned his B.S. and M.S. degrees from New York University, and his doctoral degree from the Medical College of Virginia. Dr. Kaye enlisted in the Army just prior to the start of WW II, and later, stayed on in the Army Reserves and retired after 30 years of service with the rank of Full Colonel. Throughout his career, Dr. Kaye was a consultant to the U.S. Army, Air Force and Navy.

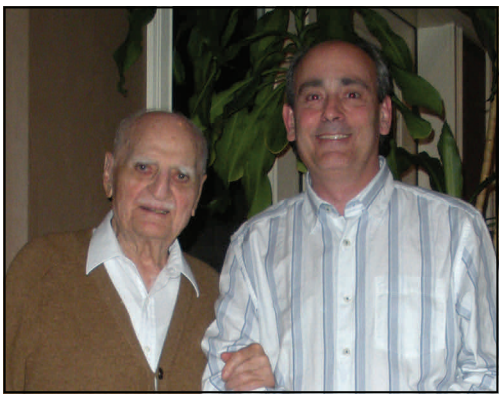
Dr. Kaye was mentored by the founder of modern-day forensic toxicology, Dr. Alexander Gettler, and he worked with Dr. Rutherford Gradwohl at the Police Laboratory in St. Louis. Early in his career, Dr. Kaye was the State Toxicologist for Virginia, and later in life, Dr. Kaye was the Associate Director and Professor of Toxicology, Legal Medicine, Pharmacology and Pathology at the Institute of Forensic Medicine at the University of Puerto Rico. Over the course of his career, Dr. Kaye founded and directed four forensic laboratories. He continued to work into his 90's.

Dr. Kaye's scientific contributions include the determination of heavy metals, alcohol and other volatiles, carboxyhemoglobin, and organic bases in biological fluids and tissues. In addition, many of his papers were devoted to the medicolegal interpretation of toxicological findings with an emphasis on alcohol intoxication.

Dr. Kaye's is best known to many as the author of the renowned "Handbook of Emergency Toxicology: A Guide for the Identification, Diagnosis, and Treatment of Poisoning", as well as countless other publications in the field of clinical and forensic toxicology, many of which are considered classic works in the field. All five editions of the Handbook were highly regarded as the primary source of information for the rapid diagnosis and management of poisonings.

Dr. Kaye's scientific achievements have been recognized by the U.S. Congress, the U.S. Armed Forces, the Armed Forces Institute of Pathology, the National Association of Medical Examiners, and the University of Puerto Rico. Dr. Kaye was a founding member of the American Academy of Forensics Sciences and was a recipient of its Toxicology Section Alexander O. Gettler Award. In 1998, the Academy honored Dr. Kaye with the Gradwohl Laureate Award.

Sidney was an accomplished forensic scientist, teacher and mentor and skilled storyteller. He was buried in the National Cemetery in Puerto Rico with full military honors.



A quote form Siney Kaye on the Rebirth and Blooming of Forensic Medicine recalling a seminal moment in forensic toxicology

The bloom (long overdue) had started. Especially exciting was the DU Spectrophotometer of Arnold Beckman. This was an extremely sensitive instrument and now the old Stas-Otto long, tedious procedure, which required a large amount of specimen, was replaced. A 5-ml sample of blood was now adequate. The DU's original source of energy was an auto storage battery. This DU was later replaced by an automatic DK2-A, which could scan not only in the UV range but also in the near infrared. Leo Goldbaum started with the DU to identify the barbiturate group and Russell Fisher later developed a similar procedure while still in training at Harvard.

Identification of strychnine could be elusive because it is so rapidly removed from the blood prior to death, even fatal cases may only show traces in the blood, and the liver also has to be analyzed. The UV spectrophotometer proved to be a very useful test for strychnine and an early paper that I published added to the UV spectrophotometer's effectiveness.

When another excellent screening technique became available with paper chromatography, many drugs could be identified within 18 hours. This was greatly improved with thin layer chromatography (TLC) whereby most common drugs could be identified at low concentrations within 1 hour.

Editors Note: How we remember ?

MEMBER NEWS

In Memoriam: Leo Goldbaum, Ph.D. (1913—2012)

Submitted by ***Marina Stajic***

"The life given us, by nature is short; but the memory of a well-spent life is eternal."
Marcus Tullius Cicero

The *Toxicology* chapter in the 1954 edition of R. B. H. Gradhwol's *Legal Medicine* was co-authored by Dr. Sidney Kaye and Dr. Leo R. Goldbaum. These two legends in the field of forensic toxicology, both native Brooklynites and lifelong friends, passed away within one day of each other in December 2012, leaving a large void in our field and in the lives of those of us who had the privilege of calling them friends.

Leo R. Goldbaum was born in Brooklyn, NY on November 13, 1913. He lived in Washington, DC most of his life, but never lost his characteristic Brooklyn accent.

On March 26, 1968, Dr. Leo R. Goldbaum was elected to membership of the prestigious Cosmos Club in Washington, DC, deemed to have done "meritorious original work in toxicology". This meritorious work started at the clinical chemistry laboratory at Bellevue Hospital in New York City shortly after Leo's graduation from Brooklyn College in 1934. Around 1932, Dr. Alexander O. Gettler, Chief Toxicologist at the Office of Chief Medical Examiner and Professor of Chemistry at New York University, started accepting graduate students in an effort to help train future toxicologists and to help him develop newer, better analytical tests. Leo enrolled in the program and earned a Master's Degree in 1938. The method for cyanide analysis developed during Leo's tenure in Dr. Gettler's laboratory (A. O. Gettler and L. R. Goldbaum, "Detection and estimation of microquanitities of cyanide", Analytical Chemistry, Vol. 19, 1947) has been referenced as late as 2001 in a publication of the Journal of Analytical Toxicology. Leo had a great appreciation for Dr.Gettler, but considered Dr. Charles J. Umberger his true mentor who over the years also became a close friend. He credited Dr. Umberger with the introduction to the state of the art analytical instrumentation available at the time. Leo remained in Dr. Gettler's laboratory until 1942 when Dr. Gettler recommended him as a toxicologist for the military.

First Lieutenant Goldbaum spent the rest of World War II at the Walter Reed Army Medical Center and after an honorable discharge in 1946, continued working for next ten years as a toxicologist at the Walter Reed Army Institute of Research.

In 1950, Leo successfully defended his doctoral thesis "Studies on the binding of barbiturates to proteins and its possible relation to their deposition and action in animals" thus earning his doctorate degree in pharmacology from George Washington University.

Dr. Goldbaum transferred in 1956 to the newly formed Armed Forces Institute of Pathology (AFIP) where he spent the rest of his productive career supervising all technical aspects of the well respected Toxicology Branch and conducting programs of original research, particularly in the fields of forensic toxicology and aerospace. It was research related to aerospace toxicology that made his name inextricably linked to carbon monoxide.

Leo Goldbaum was a founding member of the American Academy of Forensic Sciences (AAFS). He was one of the 29 presenters at the first Academy meeting in 1948 with a paper entitled "Method for Quantitative Identification of Barbiturates". This method became the standard of barbiturate analysis for many years. His active participation in the Toxicology Section continued even after he retired in 1979.

Quiet and unassuming, Dr. Goldbaum easily earned respect, confidence and loyalty of his colleagues and friends. He was proudly considered as a mentor by many respected members of the AAFS Toxicology Section: Dr. Abel Dominguez, Dr. Thadddeus Domanski, Mr. Leo Kazyak, Mr. Robert Cravey and Dr. Leo Dal Cortivo, to name just a few.

Dr. Leo Goldbaum became the first recipient of the Alexander O. Gettler Award for Analytical Achievements in Forensic Toxicology in 1993, a most appropriate award for a man who started his long toxicology career as a student of Dr. Gettler.

Dr. Goldbaum is survived by his wife Ione Lockhart, by children from his first marriage Thomas Goldbaum, MD (Frances Wetzel) and Keyes Anne Elliott (William), as well as three grandchildren. He will live forever in the hearts of his friends and colleagues.

MEMBER NEWS

In Memoriam: Jane Haggart Speaker, Ph.D. D-ABFT

Submitted by ***Tully Speaker***

With a bachelor's degree in chemistry, a master's in biochemistry, and finally in 1955, a Ph.D. in pharmacology from the University of Michigan Jane began teaching dental and medical students in Omaha. There, she spent a few years in CNS research and, in 1964, went with her husband, Tully Speaker, to Connecticut, where she worked with Abe Stolman. Jane had been introduced to forensic toxicology by their close friend Irv Bernstein in Omaha, but in Abe's lab became immersed in the field: analysis, interpretation, testimony. With that education Jane joined Fred Rieders at the Philadelphia Medical Examiner's Office in 1967. When Fred started NMS, she stayed on at the OME, setting up the now defunct "Philadelphia Toxicology Forum" for local discussions. Subsequently, Jane took some folks from her lab to the 1971 & 1972 "Interim Toxicology" meetings. In 1973 they hosted in Philadelphia an interim meeting from which the National Society of Forensic Toxicology, NSOFT, arose before it became SOFT. That year Jane was elected president of NSOFT and became well acquainted with many more forensic toxicologists and their concerns. In 1975, the American Board of Forensic Toxicology became a reality. She served on the first board of directors as treasurer until 1961. In 1975 at the Toronto meeting Jane was elected president of SOFT.

The following year, 1976, her laboratory became quite busy when well over a hundred people attending the Legionnaires' Convention in Philadelphia contracted pneumonia, and at least 25 died, either in or shortly after leaving Philadelphia. Many at the time thought the illness resulted from exposure to some toxic substance: nickel carbonyl, paraquat, freon, what have you. her lab was inundated.....phone calls, in-house analyses, interactions with other laboratories, the press, and politicians. Of course the Center for Disease Control's eventual identification of the legionella organism confirmed her recognition early on that the range and time of onset of the illness followed the pattern of a bacterial infection.

Also in 1976, she and her family celebrated the evening of the 4th of July franticly running CO oximeter tests. An accident had blocked the exit of the parking lot under Independence Mall. The concentration of carbon monoxide built up as visitors waited with engines running until trapped motorists began to faint. Fortunately rescue services prevented any deaths.

In 1977 Smith-Kline invited her to direct a rapid turnaround clinical toxicology laboratory just a block from home. In late 1978 it was necessary for her to use a lot of city sick time for surgery and chemo-therapy. Dick Early was able to step into the Smith-Kline position in late 1979. In 1985, while she was still director of the OME toxicology laboratory, an explosive charge intended to prepare police access to the headquarters of a radical group called "Move" was associated with a fire that spread down a block of row houses. The target house was destroyed and the remains of 13 people were found in the rubble. Attempting to identify and quantitate carboxyhemoglobin in the samples submitted was a great challenge. Jane left the OME in the late eighties, but continued with toxicology consulting and court work.

In 1988 Jane had the great honor of receiving the Gettler Award. From 1988 to the early years of this century she enjoyed working with other toxicologists as part of the National Laboratory Inspection Program. She considered it both a pleasure and a privilege to work with the many smart and able toxicologists throughout the years on various committees of SOFT and AAFS, as well as in the Philadelphia Medical Examiner's Office and NLCP, but she believed her richest experience was in our earliest years of SOFT.

THE CONSORTIUM OF FORENSIC SCIENCE ORGANIZATIONS (CFSO)

The Consortium of Forensic Science Organizations Monthly Reports for January and March can be found on the CFSO website www.thecfso.org.

SOFT and ABFT are members of CFSO.

AAFS Toxiciology Section News

Submitted by **Loralie Langman**, PhD, ABFT, Toxicology Section Chair

The theme for the AAFS 65th Annual Scientific Meeting was "The Forensic Sciences: Founded on Observation and Experience, Improved by Education and Research". Program Chair, Dr. Ashraf Mozayani, and her Co-Chair for workshops, Dwain Fuller, organized an excellent program that demonstrated both national and international collaboration that has moved forensic toxicology forward into 2013. Our thanks go out to all the presenters that made the program a great success, and while all of the registration numbers have not been compiled, as of the Wednesday morning business meeting, there were 130 people registered for the meeting from the Toxicology Section. A huge thank you goes out to all the abstract reviewers, moderators and volunteers. Your dedication helped make this meeting the scientific success it was. And I would also like to extend a big thank-you and acknowledgement to the Sponsors NMS Labs, Agilent Technologies, Randox, Cerilliant, United Chemical Technologies, the Center for Forensic Sciences Research and Education at the Fredric Rieders Family Renaissance Foundation, and Full Spectrum Analytics.

The week got off to a great start with two workshops on Monday: "Beyond the Numbers: An Objective Approach to Forensic Toxicological Interpretation", (Chair: Dwain Fuller; Co-Chair: Laura Liddicoat); and "Principles and Applications of Liquid Chromatography Mass Spectrometry (LC/MS) for the Forensic Toxicologist", (Chair: Jeffrey Walterscheid; Co-Chair: Peter Stout). Tuesday had yet another informative workshop from the Toxicology Section, entitled "Developments in Emerging and Designer Drug Markets 2013", (Chair: Barry Logan, Co-Chair: Jeri Ropero-Miller). We also had our first-ever Toxicology Section Luncheon immediately prior to the section business meeting on Wednesday. The theme of the luncheon was "Whose Shoulders Do You Stand On?" The program featured speakers sharing their remembrances of mentors and colleagues who helped shape their career. Dr. Brad Hepler spoke about Dr. Irving Sunshine, Chip Walls spoke about Dr. June Jones, Dr. William Anderson spoke about Richard (Dick) Prouty, and Dr. Michael Rieders shared his remembrances of his father, Dr. Frederic Rieders.

There were 38 posters and 44 oral presentations given. Special Sessions included Post Mortem Pediatric Toxicology. The Drugs and Driving Session featured a lecture entitled "Drugged Driving: How We Got Here and Where We Are Going", by Dr. Robert DuPont, MD. We also had a special presentation entitled, "Scientific Method for Controlled Substance Analog Determination", by the Advisory Committee for the Evaluation of Controlled Substance Analogs (ACECSA), whose mission is to evaluate "the analog status of non-controlled substances and serve as a resource to law enforcement, legal counsel, laboratories, and government agencies in the scientific categorization of non-controlled substances."

At the Toxicology Section Business Meeting, the 2013 Section Chair reported on the Toxicology Section with respect to finances and membership. In addition, it was clear from the committee reports that members of the section are actively engaged in their groups, working to improve both the section and the field of forensic toxicology as a whole. Awards were presented, new officers were elected, and new committee members were appointed. The new officers for 2013 are: Chair Dr. Loralie Langman, and Secretary Dr. Dwain Fuller. Congratulations to these new officers and appointees! Please provide assistance to them throughout 2013.

Preparations for next year's meeting are already underway. Please contact Dr Sarah Kerrigan and Dr Rebecca Jufer-Phipps, the 2013 Program Chair and Co-chair, with your scientific program suggestions and workshop ideas, or if you would be willing to help in any way. They will be happy to hear from you.

DUID Special Session Summaries

Submitted by **Loralie Langman** , PhD, DABFT

Carisoprodol and Meprobamate Incidence in DUID Cases in the City and County of San Francisco

Nikolas P. Lemos, PhD, FRSC, DABFT; Eric A. Ingle, BA; Cecilia O. Medina, BS; Glenda M. Easterling, BS; Pavlos Karamanidis, BS; and Chinyere M. Williams*, BS. Office of the Chief Medical Examiner, San Francisco CA

A review of DUID cases during a three-year period involving carisoprodol and meprobamate was undertaken. Twenty-one cases with carisoprodol and/or meprobamate in blood were identified. The 21 drivers comprised of 6 females and 15 males, mean age of 32 (range: 19-50). Field sobriety tests showed glossy, watery eyes, slurred speech, an overall lack of coordination and balance, and an increase in the internal clock. Carisoprodol was present in all 21 cases with a concentration range of 3.2-38 mg/L, while meprobamate was present in 20 cases with a concentration range of 0.8-26 mg/L. Carisoprodol /meprobamate were the only drugs detected in 7 of 21 cases with mean concentrations of 12.3 mg/L (7.3–16 mg/L) and 30.4 mg/L (19–36 mg/L), respectively. In the remaining 14 cases, carisoprodol/meprobamate were found with an average of two additional psychoactive compounds.

Cannabinoids in 113 Driving Under the Influence of Drugs (DUID) Forensic Toxicology Cases

Nikolas P. Lemos, PhD, FRSC, DABFT Office of the Chief Medical Examiner, San Francisco CA

Between July 1, 2010 and June 30, 2011, the Forensic Laboratory Division of the San Francisco OCME performed 919 DUID toxicological eval-

DUID Special Session Summaries *(Continued)*

uations. Cannabinoids were found in 113 cases (12.3%). The mean cannabinoids concentrations suggest that drivers who consume ethanol concurrently with cannabis have, on average, lower THC blood concentrations than drivers who use cannabis by itself or with drugs other than ethanol. From this study one may infer these drivers may be changing their cannabis use patterns i.e. consuming lower cannabis doses and/or extending the waiting times before drinking when they combine cannabis with alcohol.

Toxicology Results of Drivers of Fatal Motor Vehicle Accidents in Harris County, Texas in 2011

Fessessework G. Guale, DVM, HCIFS, Houston, TX, Ashraf Mozayani, PhD, PharmD, Texas Southern Univ., Houston, TX

In 2011, the medical examiner of the Harris County Institute of Forensic Sciences performed autopsies of 214 cases from fatal car crashes. All fatal crash cases were subject to alcohol and comprehensive drug testing. Out of 214 cases, 134 (63%) had ethanol and other drugs in their system. Of those, 86 cases were positive for ethanol with 89% having a BAC greater than 0.08 gm/dl. Of the 134 cases, 34% were positive for illicit, prescription and over-the-counter drugs with no ethanol. The prevalence of alcohol and drugs among the fatal crash cases indicate alcohol and cannabinoids being the most common findings followed by benzodiazepines, opiates, cocaine, PCP, muscle relaxants and other prescription drugs. Standardized laboratory testing that includes the comprehensive screening and confirmation/quantitation of illicit, prescription and over-the-counter drugs, training more police officers as a DRE, and adopting a per se law with no tolerance for illicit drugs are some of the proposed interventions to reduce drugged driving.

Using Pharmacology to Screen your DWI-Drug Cases

David M. Benjamin, Ph.D.

Many drugs remain in the body long after their pharmacologic activity has ceased. Subsequent tests for drugs in the urine (Benjamin, ToxTalk, 2010) or blood (Reisfeld, Golberger, et al JAT, 2012) cannot be used to infer impairment at the time of the arrest. Conclusions: Pharmacologic information about the dose and time of last drug ingestion may never be known to the prosecution. Impairment testing and eye witness testimony will be more important to a successful prosecution than a urine or blood test.

Cannabinoids in Exhaled Breath Following Controlled Administration of Cannabis

Sarah K. Himes and Karl B. Scheidweiler, PhD, NIDA, Baltimore, MD, Olof Beck, PhD, Karolinska Universitetssjukhuset Huddinge, Sweden, Marilyn A. Huestis, PhD, NIDA, Baltimore, MD

THC, THCCOOH, and cannabinol were simultaneously quantified in breath following controlled cannabis smoking to characterize the time course and window of detection of breath cannabinoids. Breath was collected from chronic and occasional cannabis smokers. THC was the major cannabinoid detected in breath; no specimen contained THCCOOH and only 1 contained CBN with THC. The cannabinoid detection window in breath is short (0.5-4h) after cannabis smoking. Breath may be an alternative matrix to oral fluid as this short detection window, coinciding with possible impairment or intoxication, is ideal for driving under the influence of drugs and "for cause" workplace drug testing.

Determination of Synthetic Cannabinoids in Whole Blood from Recreational Users

Robert Kronstrand, PhD, and Markus Roman, BSc, Nat'l Board of Forensic Med, Linkoping, Sweden

It has been reported that synthetic cannabinoids, in comparison to cannabis, seem to be more dangerous and potent, causing several unwanted symptoms in the users. In the study, case histories were received in only a few cases where the subjects had suffered from severe side effects and been brought to a hospital. These subjects presented with unconsciousness, vomiting, incontinence, hallucinations and relatively high concentrations of JWH-018, JWH-203 or JWH-210, sometimes in combinations with other synthetic cannabinoids. This study concludes synthetic cannabinoids appear in very low concentrations and the changing panorama of substances requires a flexible approach to the analytical toxicology.

Driving Under the Influence of Alprazolam

H. Chip Walls, BS, Forensic Toxicology Lab, Miami, FL, and Nicholas B. Tiscione, MS, and Ilene K. Alford, MS, and Xiaoqin Shan, PhD, and Dustin Yeatman, MS, Palm Beach County SO, West Palm Beach, FL, and Brianna Peterson, PhD, Seattle, WA

Alprazolam DUI cases submitted to the Palm Beach County Sheriff's Office Crime Laboratory in West Palm Beach, FL between 2007 and 2012 were combined with Washington State's alprazolam DUI cases from the first 6 months of 2012. Sixteen alprazolam-only cases were examined during the presentation which included detailed information regarding the testing protocol, analytical results, and case synopsis including observed impairment and clinical indicators of drug use.

Prevalence of Tetrahydrocannabinol in Oral Fluid Collected from Drivers in California

Christine Moore PhD, DABCC, VP, Toxicology Research and Development, Immunalysis Corporation

The 2010 CA roadside survey was intended to determine the prevalence of cannabis-involved driving in CA. Oral fluid was collected from >900 subjects with 14.4% positive for illegal drugs; 8.5% positive for THC. 38.9% of drivers having a prescription for medical marijuana were THC positive, while only 7.5% of drivers without medical marijuana prescriptions were THC positive. Four California jurisdictions were the same as those sampled in the 2007 National Roadside Survey. The positivity rate for THC rose in all 4 areas; the percentage of other drugs remained the same. The California study was repeated in 2012 and, overall, the numbers had barely changed: 14.4% positive for illegal drugs; 7.4% positive for THC. Cannabis detection in oral fluid increased in all areas between 2007 and 2010, but remained

DUID Special Session Summaries *(Continued)*

constant between 2010 and 2012.

Can Oral Fluid Cannabinoid Testing Differentiate Cannabis Smoking From Intake of Oral THC and Oromucosal Sativex® Administration?

Dayong Lee, M.S., and Erin Karschner, BA, and Allan J. Barnes, BS, and Garry Milman, PhD, and Robert S. Goodwin, DO, PhD, and Marilyn Huestis, PhD, NIDA

Can oral fluid cannabinoid testing differentiate cannabis smoking from oral THC and oromucosal Sativex® administrations? The data demonstrated that the two therapeutic drug delivery systems, oral THC and Sativex, produced oral fluid cannabinoid disposition different from those after smoked cannabis; parent cannabinoids (THC, CBD, and CBN) were rarely detected after oral THC whereas Sativex produced high CBD/THC ratios. Low THCCOOH/THC ratios suggest recent Sativex or smoked cannabis intake. These study results indicated that oral fluid cannabinoid monitoring can document compliance with Sativex pharmacotherapy, and identify relapse to smoked cannabis during oral THC treatment. More detailed findings are reported in a peer-reviewed journal article:

Lee D, Karschner EL, Milman G, Barnes AJ, Goodwin RS, Huestis MA. Can oral fluid cannabinoid testing monitor medication compliance and/or cannabis smoking during oral THC and oromucosal Sativex administration? Drug Alcohol Depend. 2012 Nov 9. pii: S0376-8716(12)00411-5. doi: 10.1016.

Generous ERA/YMSA Contributors

SOFT's long sponsored mentoring programs, ERA & YSMA, are funded by generous donations by SOFT members. Both awards encourage students and young scientists to excel in the Forensic Toxicology field.

More information about the Educational Research Award (ERA) and the Young Scientist Meeting Award (YSMA), (eligibility and application instructions), can be found at the SOFT website (www.soft-tox.org).

Consider "coaching" a talented co-worker or a worthy student to apply for one of these prestigious recognition awards, now worth $2,000. Thank you 2013 Contributors:

Edward A'Zary
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Young Forensic Toxicologists Committee

*Submitted by **Jayne Thatcher, PhD***

The Young Forensic Toxicologists (YFT) Committee is planning several activities for the 2013 SOFT meeting in Orlando. We invite all young forensic toxicologists to participate in the events and extend a special welcome to those who may be attending their first SOFT meeting. New this year, the YFT will host a Professional Development Fair which will be open to all meeting attendees. We kindly ask all SOFT members to share information about the YFT activities with their colleagues and other interested individuals.

YFT activities currently planned for Orlando 2013:

October 27 (5pm-9pm): YFT Symposium

October 29 (8am-5pm): Student Enrichment Program (SEP)

October 29 (6:30pm-8pm): Professional Development Fair

October 30-November 1 (TBD): YFT/ Dal Cortivo Award Competition

YFT Symposium

The Symposium begins with a social hour and is followed up with a keynote speaker and then a discussion of current topics relevant to young forensic toxicologists. This is a wonderful opportunity for first time meeting attendees to meet their colleagues and for newer scientists to discuss their professional experiences in a small group of their peers. To register, you must be under 41 years of age and a registered meeting attendee. Registration should be done through the online meeting registration program.

SOFT Student Enrichment Program

The YFT Committee will host the Student Enrichment Program (SEP), an educational outreach program targeting undergraduates and graduate students interested in forensic toxicology. Students will learn about various disciplines within forensic toxicology and what knowledge and skills are necessary for this career path from practicing forensic toxicologists. The day-long program will be free of charge, but space is limited. For additional information, please email the YFT Committee at softyft@gmail.com.

YFT / Dal Cortivo Award Competition

The Leo Dal Cortivo Memorial Fund is allowing 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 will be presented to the best poster presentation and the other for the best oral presentation. To be considered for these awards, the presenting author should mark the box on the abstract submission form that they are eligible for the YFT Award. The eligible abstracts with the highest scores, as determined by the YFT committee, will be chosen as candidates for the awards. For additional information, please see the YFT pages on the SOFT website.

SOFT Professional Development Fair

New this year, the YFT will be hosting a Professional Development Fair. The goal of this event is to provide an opportunity for attendees to meet with representatives of organizations that can provide them with information on obtaining board certification, an advanced degree, or new career opportunities. This event will be open to all meeting attendees. At this stage in the planning process, YFT asks that anyone interested in promoting their program or future job openings contact us at softyft@gmail.com.

The YFT Committee was founded in 2009 to promote education, networking and interaction among young forensic toxicology practitioners. **Anyone with questions or comments about the SOFT YFT activities can reach us at softyft@gmail.com**

News from the American Board of Forensic Toxicology

*Submitted by **Bruce Goldberger, PhD, DABFT***

I would like to congratulate the following individuals who were recently certified by the Board:

William Anderson, PhD	Diplomate
Brian Cawrse, MS	Specialist
Susan Cooley, BA	Specialist
Paul Crowley, BS	Specialist
Nadina Giorgi, BA	Specialist
Eric Ingle, BA	Specialist
Sara Short, MS	Specialist

In addition, I would like to congratulate the following laboratories that were recently accredited or reaccredited by the Board:

- Albany Medical Center Hospital and College
- Alberta Office of the Chief Medical Examiner
- Armed Forces Medical Examiner System
- Cuyahoga County Office of the Chief Medical Examiner
- Civil Aerospace Medical Institute
- Harris County Institute of Forensic Sciences
- Hennepin County Medical Center
- Maricopa County Medical Examiner
- Nassau County Medical Examiner's Office
- UMass Memorial Medical Center
- Wisconsin State Laboratory of Hygiene

All active Certificants of the ABFT should complete and return the ABFT Continuing Education Program – Annual Submission Form for 2012 by April 15, 2013. An electronic version of the form is available on the ABFT web-site (www.abft.org).

For additional information regarding the Board, please visit www.abft.org.

American Board of Forensic Toxicology (www.abft.org)

ABFT Certification - To establish, enhance, and revise as necessary the standards of qualification for those who practice forensic toxicology, and to certify as qualified scientists those voluntary applicants who comply with the requirements of the Board.

ABFT Laboratory Accreditation - To establish, enhance, and maintain standards of qualification for those laboratories that practice Postmortem Forensic Toxicology or Human Performance Toxicology, and to accredit as qualified laboratories those applicants who comply with the requirements of the Board.

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2013 S.O.F.T. Committee Chairs

Committee	Committee Chair
Advocacy	Bruce Goldberger, Ph.D., DABFT
ByLaws	Yale Caplan, Ph.D., DABFT
Budget, Finance, and Audit	Rod McCucheon, Ph.D., DABFT
Membership	Ruth Winecker, Ph.D., DABFT
TOXTALK™ Editor	Yale Caplan, Ph.D., DABFT
Publications	Dimitri Gerostamoulos, Ph.D., DABFT
JAT Special Issue	Madeline Montgomery B.S., FTS-ABFT
Awards	Erin Spargo, Ph.D., DABFT
Meeting Resource	Peter Stout, Ph.D., DABFT
Drugs & Driving	Amy Miles, B.S.
Designer Drugs	Sumandeep Rana, M.S.
Policy and Procedure	Ruth Winecker, Ph.D., DABFT
IT Committee	Bruce Goldberger, Ph.D., DABFT
Continuing Education	Ann Marie Gordon, M.S.
Young Forensic Toxicologists	Jayne Thatcher, Ph.D.
Drug Facilitated Sexual Assault	Laureen Marinetti, Ph.D., DABFT
Ethics	Robert Osiewicz, Ph.D., DABFT
Nominating	Marc LeBeau, Ph.D., DABFT
Strategic Planning	Jennifer Limoges, M.S.
Consortium of For. Science Organizations	Laurel Farrell, B.A.
Vendor Liaison	Jarrad Wagner, Ph.D.

Webmasters

Bruce Goldberger, Ph.D., DABFT
Matthew Juhascik, Ph.D., DABFT

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 S.O.F.T. Meeting Destinations:

2013:	Orlando, FL	Oct. 26-Nov. 1, 2013	Bruce Goldberger
2014:	Grand Rapids, MI	Oct. 18-25th, 2014	Ben Kuslikis/Michael Smith
2015:	Atlanta, GA	Oct. 17-25th, 2015	Robert Sears
2016:	Dallas, TX	Oct. 15-23rd, 2016	Chris Heartsill/Erin Spargo
2017:	Boca Raton, FL	Sept.. 10-15th, 2017	Ruth Winecker/Dan Anderson

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