Society of Forensic Toxicologists, Inc.

TOXTALK™

Volume 37, Issue 2
June 2013

SOFT Annual Meeting
Orlando , Florida
October 27—November 1, 2013
*Submitted by **Bruce Goldberger**, Ph.D., D-ABFT*

I would like to invite all SOFT members to attend the upcoming meeting in Orlando, Florida October 28 to November 1, 2013. With only four months till the conference, it is important to make note of some important deadlines:

The meeting registration deadline is August 31, 2013. All registrations received after this date are subject to an additional $200 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.

Please reserve your hotel room early – prior to September 26, 2013. Use the link on the SOFT web-site (under the Hotel tab).

This year's workshop schedule includes four full-day workshops and eight half-day workshops on Monday and Tuesday. In addition, we'll likely have over 200 abstracts presented during the Scientific Sessions starting Wednesday morning. 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.

To register for the conference, begin at the online Web Login tab. The registration fee is $499 for SOFT members and $675 for non-members. The student rate is $175. Non-SOFT Members must create an account, save, and then enter to follow the registration prompts. In addition to accompany person registration, additional tickets for the Presidential Banquet and Cirque du Soleil® La Nouba™ can be purchased. The registration fee for children under the age of 2 years will be waived. For registration support, please call Bonnie Fulmer.

Discounted tickets for all Disney attractions including Walt Disney Word® Theme Park can be purchased through a link on the SOFT web-site (Disney tab) prior to October 28, 2013. Convention tickets (admission after 2 PM and 4 PM) and multi-day passes are available for purchase online. (*Continued on page 2.*)

Inside This Issue:

SOFT Board of Directors Statement on Hair Testing

The "Consensus Opinion on the Applicability of Hair Analysis for Drugs of Abuse" was approved by the SOFT membership at the annual business meeting in October 1990. It was subsequently revised, and the "Revised Consensus Opinion on Applicability on Hair Analysis for Drugs of Abuse" was approved by the membership at the annual meeting in October 1992. The opinion was published in ToxTalk Vol. 16, No. 4 in December 1992.

Over the last several years, the SOFT Board of Directors has had inquiries regarding the position statement and whether it has been updated to reflect current knowledge. The evolving field of forensic toxicology is time limited and all publications must be evaluated in the context of research and knowledge available at that particular time. SOFT has neither reviewed nor updated this consensus opinion on hair testing and SOFT does not plan to review or update this opinion.

SOFT members are actively engaged in hair testing in regulatory, clinical, forensic and research settings. As a result, SOFT continues to have presentations on hair testing at its annual meetings. As an organization, SOFT is committed to advancing scientific knowledge and understanding in all areas of forensic toxicology, including hair testing.

Educational Research Awardees

Congratulations to Three 2013 ERA Awardees

The SOFT Award Committee, chaired by Erin Spargo, Ph.D., has announced the following three 2013 ERA (Educational Research Award) winners. These three Awardees will give a presentation during one of the Scientific Sessions at the October 2013 annual meeting in Orlando, FL regarding the findings of their winning research projects.

The SOFT ERA program was established in 1980 to encourage academic training and research in areas of forensic toxicology. The award consists of a $2,000 stipend, plus a waived basic meeting registration. The three Awardees will be presented with an honorary plaque during the SOFT Business Meeting.

SOFT also sponsors a Young Scientist Meeting Award, that compliments the ERA. The YSMA recognizes the bench level scientists with 5 years or less experience in the field of forensic toxicology. The award offers a $2,000 stipend, plus a waived basic meeting registration. Sadly, there were no applicants for this YSMA category in 2013.

ERA Awardee: **Rebecca L. Hartman,** B.A., rebecca.hartman@nih.gov
Doctoral Candidate, Chemistry and Drug Metabolism
Intramural Research Program, NIDA, NIH, Biomedical Research Center
Baltimore, MD 21224

"Cannabinoids Disposition in Blood Following Controlled Cannabis Administration by Volcano® Vaporizer" Mentor: Marilyn Huestis, Ph.D.

ERA Awardee: **Kim Samano**, MSFS
ksamano34@yahoo.com
Virginia Commonwealth University, Richmond, VA

"Cannabimimetic Behavioral Effects of the Synthetic Cannabinoid, CP47,497 are Mediated by CB1 Receptors" Mentor: Alphonse Poklis,Ph.D., DABFT

ERA Awardee: **Sarah Himes**, B.S.
sarah.himes@nih.gov
National Institute on Drug Abuse
Baltimore, MD 21224

"Risk for Neurobehavioral Disinhibition in Prenatal Methamphetamine-Exposed Young Children with Positive Hair Toxicology Results" Mentor: Marilyn Huestis, Ph.D.

SOFT Annual Meeting *(continued)*

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.

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. In addition, there are numerous attractions, dining and entertainment venues in Downtown Disney including Planet Hollywood, House of Blues and Splitsville Luxury Lanes.

SOFT would like to take this opportunity to thank the exhibitors and sponsors that make this meeting a success, year after year. Their support provides SOFT members amazing venues to network and learn about emerging developments in forensic toxicology. In particular we want to thank our SOFT 2013 Tier 1 sponsors, including ABSCIEX, Agilent Technologies, Cerilliant, Immunalysis, Randox, Restek, Thermo Scientific, UTAK Laboratories and United Chemical Technologies. Please let the sponsors and exhibitors know you appreciate their support.

The SOFT 2013 Annual Meeting will be a valuable educational and memorable social experience. Please plan to join your friends and colleagues in Orlando.

President's Message

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

To my friends and colleagues of the SOFT family,

With the month of May brings "May Flowers" and hopefully some warmth about the country. At this time of year, I would imagine many of you are very busy preparing for May/June graduations, anticipating and planning for your kids to finish school along with what to do with them for the summer, or maybe just planning on where to take that summer vacation. With whatever you are planning and preparing for, have a great summer!

Annual Meeting

It's hard to believe that the last Annual Meeting took place almost a full year ago! Never mind the fact that we have another five months to go before we are able come together for the all important information exchange, collaboration, and plain ole fun with laughs in Orlando, Florida. Dr. Bruce Goldberger and his team are busy making sure the October Annual Meeting will be a huge success. By the time this issue of ToxTalk is published, the abstract submission deadline will have passed and I hope that all the 'newbies', as well as the established 'oldie but goodie' members, found the time to submit their interesting research or case studies. The annual meeting is taking great shape as demonstrated by a few examples:

- The attendees spending an exciting evening together at Cirque Du Soleil.
- The Awards committee, chaired by Erin Spargo, received several applications and worked extremely hard to select three very deserving recipients; announcement of these Award winners can be found later in this issue. I also want to wish Erin and her husband congratulations on their first addition to their family.
- JAT Special Edition (SE) Editor Madeline Montgomery also has been busy with all the manuscript submissions, coordinating the reviewers with their comments, and then having to deal with the manuscript resubmissions. Chair Dimitri Gerostamoulos and his Publications Committee will judge the full-length manuscripts and determine if the research and the first author are deserving of the prestigious EDIT award. Anticipated is a very successful SE JAT to be distributed during the Annual meeting.
- Chair Jayne Thatcher and her committee members are diligently working to prepare a successful Young Forensic Toxicologists (YFT) event. Each year, they host an evening for the younger forensic toxicologists (=<41 years-old of age) to informally gather, network, communicate, and be educated on a selected topic.

The annual meeting will be a wonderful experience and I encourage your attendance participation, and your continued enthusiasm towards Forensic Toxicology.

Board of Directors (BOD) Activity

Although there's been a significant amount of time between the annual meetings, I assure you that the BOD is working hard in tackling important aspects of our business. On a monthly basis, the eleven member BOD convenes by conference call to discuss and progress the organization. BOD recent accomplishments include the following:

- Wrote and approved procedures for vendors and other interested parties to advertise or provide information to the membership through ToxTalk. Although not expected to be a significant revenue generator for SOFT, there are no costs to SOFT as the publication is in an electronic format. This avenue to 'advertise' satisfies an immediate need for membership communication during the year, rather than only at the annual meeting.
- Revised and approved a SOFT 'brochure' that will be posted on the website for others to download. The informational brochure contains topics on SOFT such as an introduction, history, sponsored programs, membership, and the organizational purposes and goals.
- Wrote and approved an MOU between SOFT and SWGTOX to provide limited financial assistance for incidental "items not supported by the United States Department of Justice (NIJ) or other entity."
- Approved and signed a contract for the 2019 SOFT Annual Meeting to be held in October at the Grand Hyatt in San Antonio, Texas. Whether you can relate to this or not, locating a large venue that is affordable is actually a very difficult task. SOFT is too small for a large venue, but too large for a small hotel. Therefore, the BOD reviews many different hotel proposals and conducts a site visit prior to any decisions or contracts being signed. The main goal is to move the annual meeting around the country trying to achieve geographical variety, as well as getting the 'most bang for the buck' in order to maintain affordability for the membership.
- Conducted a site visit and signed a contract for the 2018 SOFT Annual Meeting to be held in October at the Hyatt Regency in Minneapolis, Minnesota.
- Published the SOFT Membership Directory within the 'Members Only' section of the SOFT web-site rather than printing and mailing to continue our efforts towards being green.
- Revised and working to finalize a few more Committee handbooks which contain necessary information about the committees and their functions.

'Commission' and Legislation

The deadline for submitting applications to participate in the Commission has passed with little activity since my last message. The Consortium of Forensic Science Organizations (CFSO) also has been fairly quiet. Therefore, to be short and sweet; stay tuned for more activity later!

To conclude this message, I encourage all to continue to work hard in your respective Forensic Toxicology Laboratory to produce quality and reliable results for your customers and be available to mentor, network, and assist others when problems should arise. Have a great summer and see you all in Orlando.

Dan Anderson
M.S., FTS-ABFT, D-ABC,
SOFT President 2013

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

On-Line registration will be available on April 15, 2013

Go to www.SOFT-TOX.org TO REGISTER!

For registration assistance, call the SOFT Office, 1-888-866-7638

Name_____ Agency_____

Address_____

City_____ State_____ Zip_____ Country_____

Telephone _____ e-mail address_____

Shirt Size Preferred (S,M,L,XL)-Men: _____ Women: _____ Special Dietary Needs? Yes /No Describe_____

Accompanying Person(s) _____

Shirt Size Preferred (S,M,L,XL)-Men: _____ Women: _____ Special Dietary Needs? Yes /No Describe _____

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.

2013 SOFT STUDENT ENRICHMENT PROGRAM

at the 43rd Annual Meeting of the Society of Forensic Toxicologists (SOFT)

Tuesday, October 29th 2013 from 8am-5pm

Buena Vista Palace Hotel & Spa in Orlando, Florida

1900 North Buena Vista Drive, Lake Buena Vista, FL

Learn about a Career as a Forensic Toxicologist

Forensic toxicology applies the principles of analytical chemistry, pharmacology and toxicology to determine the presence of drugs in biological samples and interpret analytical findings within the context of a legal investigation. Applications of forensic toxicology include (but are not limited to):

Medicolegal Death Investigation
Workplace Drug Testing
Drug Facilitated Crimes
Driving Under the Influence of Alcohol or Drugs
Sports Doping

Student Enrichment Program (SEP)

Undergraduate and graduate students interested in forensic toxicology are invited to participate in a one-day educational outreach program as part of the 2013 Annual Society of Forensic Toxicologists (SOFT) Meeting. The SEP will take place on Tuesday, October 29th 2013 from 8am-5pm at the Buena Vista Palace Hotel & Spa in Orlando, Florida. Students will learn about various disciplines within forensic toxicology and what knowledge and skills are necessary for this exciting career path from practicing forensic toxicologists.

To sign up, please fill out an application. If more individuals sign up that can be accommodated, SEP participants will be selected on the basis of the application.

Application Process

Students interested in forensic toxicology should apply. The SEP, including continental breakfast and lunch, are provided to accepted applicants at no cost; however, students are responsible for their own transportation and lodging, if needed. Interested students should download an Application Form from the 2013 SOFT meeting website http://www.soft-tox.org (under the Young Forensic Toxicologists link on the main menu).

The completed application, including a one-page interest statement, is due by 6 September 2013. Applicants will be notified of acceptance by 16 September 2013.

For questions or additional information, visit the SOFT website http://www.soft-tox.org (under the Young Forensic Toxicologists link on the main menu), check out our Facebook page, www.facebook.com/SOFTYFT, or contact us at softyft@gmail.com.

Quick Facts

Student Enrichment Program
Tuesday, October 29th 2013 8am-5pm
Buena Vista Palace Hotel & Spa, Orlando, Florida
Continental breakfast and lunch provided
Applications due by 6 September 2013
http://www.soft-tox.org (Young Forensic Tox)
www.facebook.com/SOFTYFT
softyft@gmail.com

SOFT Orlando 2013

2013 SOFT STUDENT ENRICHMENT PROGRAM

at the 43rd Annual Meeting of the Society of Forensic Toxicologists (SOFT)

Tuesday, October 29th 2013 from 8am-5pm
Buena Vista Palace Hotel & Spa in Orlando, Florida
1900 North Buena Vista Drive, Lake Buena Vista, FL

APPLICATION

CONTACT INFORMATION

Name: _____
Last First MI

Mailing Address: _____

Email: _____ Phone: _____

EDUCATIONAL INFORMATION

Academic institution attended in the fall semester of 2013: _____

Academic status for fall 2013: □ Graduate Student □ Undergraduate Student

If undergraduate, provide class (freshman, sophomore, etc.): _____

PREVIOUS EXPERIENCE

In the space provided, describe your previous experience with forensic science or forensic toxicology.

(Note: Previous experience is **NOT** required.)

_____

_____

_____

_____

INTEREST STATEMENT

On a separate page, please describe your interests and goals relating to forensic toxicology and explain how attending this program will help you meet those goals. *Limit interest statements to one page or less*.

SOFT Orlando 2013

E-MAIL COMPLETED APPLICATIONS TO softyft@gmail.com

APPLICATIONS DUE 6 SEPTEMBER 2013

Accepted applicants will be notified by 16 SEPTEMBER 2013.

Young Forensic Toxicologists Committee

*Submitted by **Jayne Thatcher**, Ph.D., Virginia Department of Forensic Sciences*

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:

10/ 27 (5pm-9pm): YFT Symposium

10/ 29 (8am-5pm): Student Enrichment Program (SEP)

10/29 (6:30pm-8pm): Professional Development Fair

10/30-11/1: YFT/ Dal Cortivo Award Competition

YFT Symposium

The theme for the 2013 Symposium will be the Effect of Marijuana Legislation on Toxicology Casework. The symposium will begin with a social hour and is followed up by formal presentations 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. Advanced registration is required and should be done through the online meeting registration form.

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. The deadline for applications is September 6. For additional information and an application form please see the YFT page on the SOFT website.

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. The deadline for the 2013 Awards has passed, but we encourage all meeting attendees to view the presentations and support the contestants.

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 or by visiting our Facebook page.**

Forensic Toxicologist Certification Board (FTCB)

*Submitted by **Lisa E. Fondren**, B.S., DFTCB*

The Forensic Toxicologist Certification Board (FTCB) has offered certification for over twenty years. The FTCB has chosen certification as a means of professional recognition for practicing toxicologists who meet the minimum educational and experiential requirements and who pass the subspecialty knowledge examination. The FTCB currently provides three forensic toxicology subspecialty examinations, *Forensic Toxicology*, *Forensic Alcohol Toxicology* and *Forensic Drug Toxicology.*

Forensic Alcohol Toxicology

This certification is targeted toward professionals who perform forensic alcohol examinations, and provide testimony in this area. Specific areas of proficiency include ante-and postmortem blood, breath, and urine alcohol testing in conjunction with interpretation of results, pharmacokinetic and pharmacodynamics of alcohol, analytical instrumentation and drug-alcohol interactions.

Forensic Drug Toxicology

This examination is designed to test a candidate's knowledge of fundamental and practical aspects of urine drug testing and interpretation.

Forensic Toxicology

This examination tests knowledge of the theoretical and practical aspects of forensic postmortem toxicology, to include ethanol and related volatiles, drugs and poisons across a variety of biological matrices. Additional topics include pharmacology, toxic mechanisms, anatomy, physiology, and instrumental analysis.

To date, the FTCB has awarded sixty-six *Forensic Toxicology*, forty-four *Forensic Alcohol Toxicology*, and thirty-one *Forensic Drug Toxicology* certificates. To learn more about the FTCB application and certification process, activities and members, please visit our website at www.ftcb.org.

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

Carbon Monoxide Poisoning: On the decline, but still a danger.

Submitted by **Dwain Fuller**, B.S., D-FTCB, TC-NRCC
Section Editor

When I wrote about cyanide poisoning in the last edition of ToxTalk, I couldn't have known there would be a reasonably high-profile carbon monoxide death within the next couple of months. I obviously didn't plan this, and I regret the circumstances by which this comes, but for a forensic toxicologist a discussion of cyanide poisoning is always a good segue to a discussion of carbon monoxide poisoning.

First the news part of Drugs in the News: Unfortunately, or perhaps fortunately, I am often uninformed when it comes to pop culture, a fact which perpetually annoys my college-age son. Perhaps it is my age, although I prefer to believe it is because I am occupied with more intellectual pursuits. Regardless, I knew nothing of the MTV television show, "Buckwild", before reading the news of the death of its star, Shain Gandee, along with his uncle and a friend.

Buckwild was an MTV program that followed Shain Gandee and his friends on their adventures in rural West Virginia. It has been described, rather derisively, as being "the Jersey Shore of Appalachia", and the program had in fact been denied a tax credit from the state for its production, citing a concern that it might portray the state "in a significantly derogatory manner." Be that as it may, on March 31, 2013, 21-year-old, Shain Gandee, his 48-year-old uncle, David Gandee, and friend, Donald Myers, left a bar at around 3:00 a.m., indicating that they were going "mudding", which for the uninitiated is off-road driving in the mud. When the trio failed to show up the next morning, a missing persons report was filed. Thirty one hours later their truck, a 1984 Ford Bronco II, was found stuck in the mud beside a road, by a passing ATV. All three occupants were found dead in the cab of the truck. A subsequent investigation revealed that all three had succumbed to carbon monoxide poisoning. Apparently, at least to this author, after the truck became stuck, the occupants decided to wait it out until daylight and ran the truck for warmth. Investigation later revealed that, unfortunately, the tailpipe of the vehicle was submerged in the mud which caused the exhaust to enter the cab of the truck, eventually causing the death of the occupants.

Toxic Mechanism

The major source of toxicity from carbon monoxide (CO) lies in its affinity for binding to hemoglobin. Although oxygen combines with hemoglobin ten times more readily than CO, oxygen also dissociates from hemoglobin 2400 times more rapidly than CO. Thus, the affinity of CO for hemoglobin is around 240 times greater than it is for oxygen. Therefore, as the saturation of hemoglobin by CO increases, it competes with oxygen for binding sites, greatly reducing the oxygen-carrying capacity of hemoglobin, resulting in hypoxia and eventually death if the exposure is maintained. Carbon monoxide was once thought to have little truly-toxic effect in and of itself; rather its toxicity was due

Carbon Monoxide Poisoning *(Continued)*

solely to the resulting hypoxia. However, more recent assessments have shown that CO binds to intracellular myoglobin in the myocardium and impairs the oxygen supply to the mitochondria. This negatively affects oxidative phosphorylation and consequently, the energy source of heart muscle. Patients with underlying cardiac conditions are at risk for death from arrhythmias and fatal heart attacks. As with cyanide poisoning, an interesting result of CO poisoning is that due to the bright red appearance of carboxyhemoglobin, victims of CO poisoning often have a bright red appearance to their skin, and after death may appear to have a healthy glow rather than the usual pallor of death.

An additional, but important, consideration is that carbon monoxide is colorless, odorless, and tasteless. Thus there is often no warning to the victim, as he becomes increasingly confused and drowsy, further diminishing the probability that he will realize his predicament in time to take corrective action.

The treatment for CO poisoning is to remove the victim to fresh air and if possible to administer oxygen. When ambient air is breathed, the carboxyhemoglobin falls by about one half in approximately 250 minutes. When high-flow oxygen is administered the half-life of carboxyhemoglobin is reduced to approximately 40 minutes.

Analyses

The determination of carboxyhemoglobin saturation may be performed by various means. However, the methodologies typically fall into two categories: spectrophotometric and gas chromatographic.

Perhaps the most common methodology, due to its simplicity and speed, employs the determination of both total hemoglobin and carboxyhemoglobin by measuring the spectrophotometric absorbance of prepared blood hemosylate at selected wavelengths. From these values, carboxyhemoglobin saturation can be calculated.

Gas chromatographic methods require considerably more sample preparation and therefore time, but are generally more accurate and robust. Typically, hemoglobin is measured by a spectrophotometric method, and CO is measured, after liberation by acidification, by either FID (after reduction), thermal conductivity, or other detection methods. It is, however, somewhat of a consensus, that no matter what the methodology, old or postmortem specimens should be treated with sodium hydrosulfite to convert methemoglobin to hemoglobin prior to CO measurement. Alternately, some methods measure total iron, by atomic absorption or ICPMS, as a surrogate for hemoglobin.

An excellent overview of postmortem carboxyhemoglobin methodologies can be found in the referenced article by Boumba and Vougiouklakis, 2005.

The Effect of the 1970 Clean Air Act

The 1970 Clean Air Act mandated minimum automobile emission standards, spurring the use of catalytic converters on automobiles beginning in 1975. An automobile catalytic converter is a device placed in the exhaust flow path between the engine and the tailpipe. The catalytic converter contains various catalysts such as platinum and palladium. The purpose of the catalyst is to chemically convert substances such as hydrocarbons, carbon monoxide, and nitrogen oxides to less toxic substances. In the present case, carbon monoxide is catalytically oxidized to less toxic carbon dioxide. While the purpose of the regulation was to reduce air pollution, it appears that an unexpected benefit of the 1970 Clean Air Act was a decline in automobile-related carbon monoxide deaths, as well.

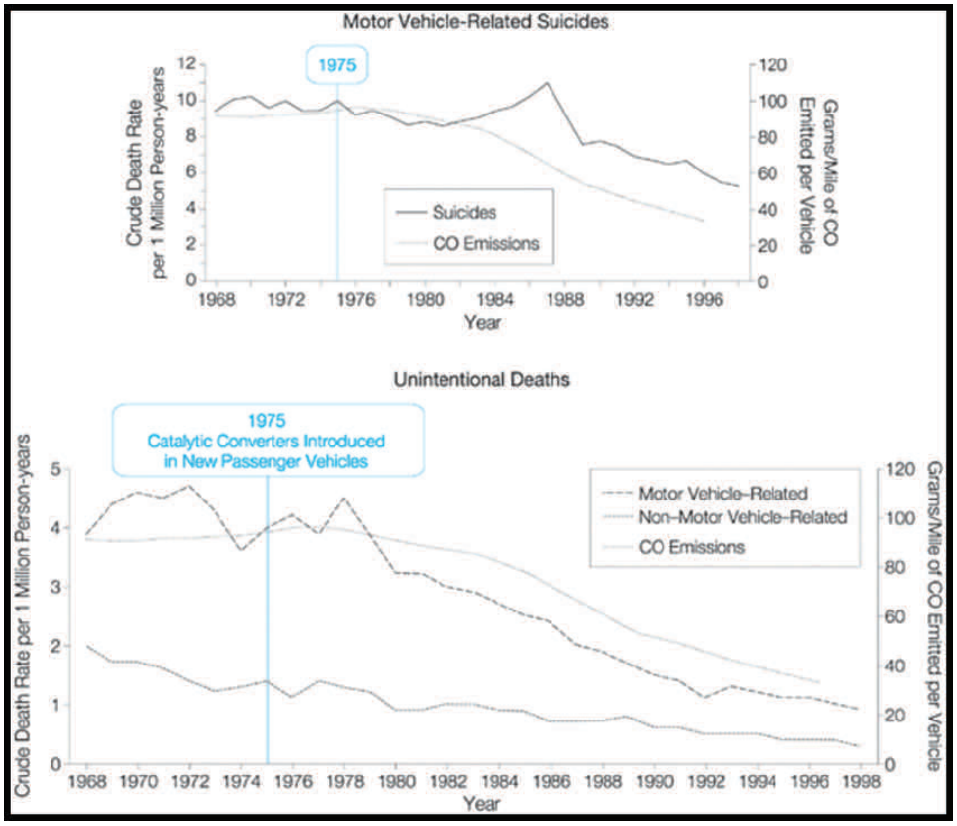
As in all such observations, it is difficult to assign causation to correlation, but within a few years following the requirement of catalytic converters on new cars, the medical community was beginning to notice a change in the presentation of carbon monoxide poisonings. In 1981, there was a reported case of a 35-year-old man who was brought to the emergency department after being found by paramedics lying unconscious in a closed garage behind a running 1980 four cylinder Chevrolet Chevette. The patient was lying within 12 inches of the tailpipe and had been there for at least three hours before being removed from the garage to fresh air. Upon arrival, paramedics found him to be awake, with a blood pressure of 132/72 mm mercury, a pulse of 100 bpm, and a respiratory rate of 24 breaths per minute. The skin of his face and his oral mucous membranes were red. The patient was retching, but no vomitus was noted. When examined at the hospital the patient had a carboxyhemoglobin saturation of 36% and a BAC of 0.09 g/dL. The patient was released without neurological sequelae ten days later.

In 2002, Mott, et al. published an article in JAMA entitled, National Vehicle Emissions Policies and Practices and Declining US Carbon Monoxide-Related Mortality, in which the authors examined 31 years (1968-1998) of CO-related deaths in the United States. While the article is daunting to read due to its heavy statistical content, some of the more telling statistics are as follows:

- Following the introduction of the catalytic converter to automobiles in 1975, CO emissions from automobiles decreased by an estimated 76% of 1975 levels.
- Unintentional motor vehicle-related CO death rates declined an estimated 81%.
- Rates of motor vehicle-related CO suicides declined an estimated 43%.

The accompanying figure from Mott, et al. demonstrates the correlation of falling automobile CO emissions with falling rates of both intentional and unintentional vehicle-related CO deaths.

Carbon Monoxide Poisoning *(Continued)*



Observations

In light of the forgoing discussion, this author is quite curious as to whether the 1984 Bronco II, in which Shain Gandee and his companions perished, was equipped with a catalytic converter. Had it been removed, or did the truck perhaps have an exhaust leak prior to the catalytic converter which, under the back pressure created by the mud, allowed raw exhaust into the cab? At this writing, nothing has surfaced on the news or internet in this regard. Perhaps it will. The publication of this information may be helpful in preventing future fatalities, in addition to being educational to death investigators.

Conclusion

Outside of house fires, and suicides, CO deaths tend to be "perfect storm" type situations. The victims of unintentional CO deaths often fail to think an action through, as in during a power failure placing a gasoline-powered generator in a closed garage, or heating a home with a barbecue grill. Fortunately, accidental deaths due to automobile exhaust seem to be less common. However, the deaths of Shain Gandee and his companions should serve as a reminder that even though carbon monoxide in automobile exhaust may not present the danger it once did, if we fail to think or if we let down our guard, whether it be with a car, a generator, or a barbecue grill, at some point the "perfect storm" will arise.

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New drugs and technology TidBits

Send interesting *"New Drugs and Tech-IN Tidbit"* articles to Section Editor ***Dan Anderson**, M.S., FTS-ABFT, D-ABC*

DAnderson@coroner.lacounty.gov

New or Re-emerging Drug: Acetyl Fentanyl

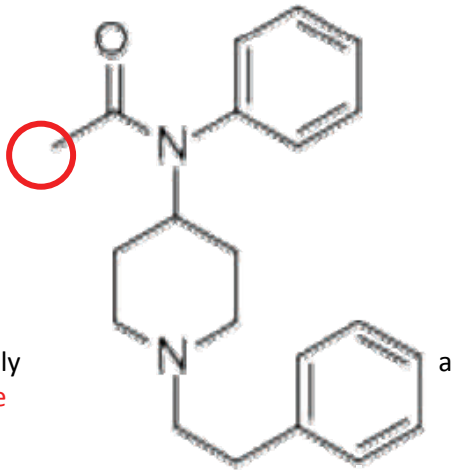
Submitted by **Laurie Ogilvie**
Rhode Island State Health Laboratories
Laurie.Ogilvie@health.ri.gov

Rhode Island has experienced opioid-related overdose fatalities related to a previously unseen fentanyl analog. Between March 2013 and April 2013, an unusual cluster (n=11) of opioid-related overdose fatalities occurred in Rhode Island among male and female suspected intravenous (IV) drug users between the ages of 19 and 57 years. These deaths occurred in northern Rhode Island and most decedents appear to be habitual drug users. All blood samples tested strongly positive for fentanyl by ELISA immunoassay screening, but were negative for fentanyl and norfentanyl by MS confirmation. There is no other common drug present among these cases (ex. cocaine, opiates). All samples associated with these cases did, however, show a distinct chromatographic peak with a mass spectrum consistent with acetyl fentanyl—an analog of fentanyl previously undocumented in recreational drug use. The same substance has also been detected in physical evidence associated with these overdoses. A reference standard was obtained from the DEA and has confirmed the presence of acetyl fentanyl.

The Forensic Toxicology Laboratory at the RI State Health Laboratories is urging other toxicology laboratories to consider the possibility that acetyl fentanyl might be the substance of interest in cases where the immunoassay is strongly positive for fentanyl, but cannot be confirmed by GC/MS.

General Information

Chemical Name:	N-Phenyl-N-[1-(2-phenylethyl)-4-piperidinyl] acetamide N-(1-Phenethyl)-4-piperidylacetanilide
Synonyms:	Acetanilide
Chemical Formula:	$C_{21}H_{26}N_2O$
Molecular Weight:	322.205 g/mol
CAS Number :	003258-84-2

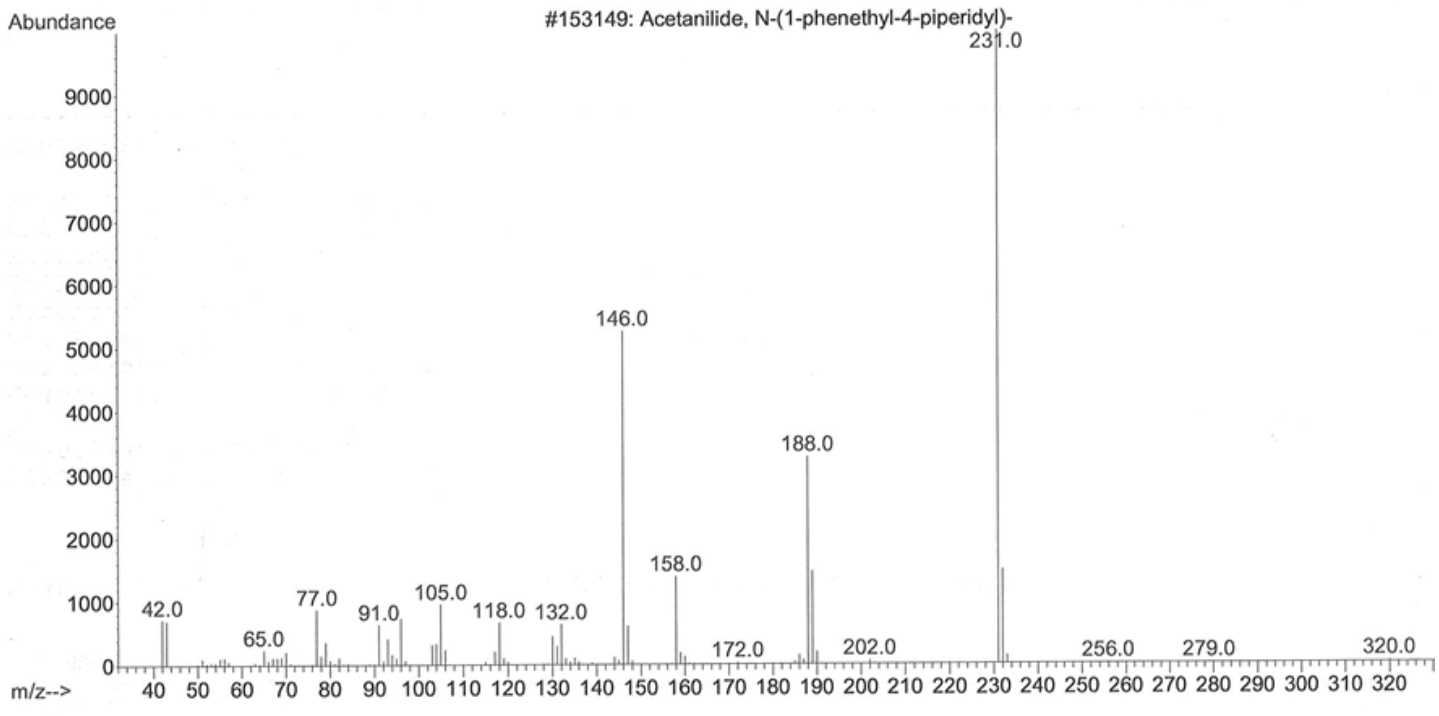


NOTE: Acetyl Fentanyl and Fentanyl ($C_{22}H_{28}N_2O$ MW 336.5 g/mol) differ by only a methyl group. Fentanyl has an additional methyl group at the red circle on the chemical structure.

Toxicology

Extraction:	Recovered by routine n-butyl chloride liquid: liquid basic drug extraction, including an acid back extraction. Sensitivity of method not yet established.
Detection:	GC/MS EI Scan Ions **231**, 146, 188 m/z and earlier eluter metabolite/breakdown ANPP 146, 189 m/z
Elution order:	Citalopram, **ANPP**, Paroxetine, **ACETYL FENTANYL**, Fentanyl, Zolpidem

Drugs in the News: Acetyl Fentanyl *(Continued)*



UKIAFT Conference
August 15-16, 2013 Dublin, Ireland

Submitted by **Richard Maguire,** Richard.Maguire@ucd.ie

A meeting which includes the UKIAFT 2013 AGM and Annual Conference will take place at University College, Dublin, Ireland on the 15th and 16th of August, 2013. There will be a reception in the Old Jameson Distillery on the evening of the 15th of August.

The UKIAFT is the professional body for forensic toxicologists in the United Kingdom and Ireland and was formed to provide a forum for practicing forensic toxicologists. This, 4th Annual Conference, will include guest speakers, as well as oral and poster presentations on topics including New Psychoactive Substances, Post Mortem Toxicology and Driving Under the Influence.

Schedule of Controlled Substances: Temporary Placement of Three Synthetic Cannabinoids Into Scheule I

The Deputy Administrator of the Drug Enforcement Administration (DEA) is issuing this **final order** to temporarily schedule three synthetic cannabinoids under the Controlled Substances Act (CSA) pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). The substances are (1-pentyl-1H-indol-3-yl)(2,2,3,3- tetramethylcyclopropyl)methanone (UR-144), [1-(5-fluoro-pentyl)-1H- indol-3-yl](2,2,3,3-tetramethylcyclopropyl) methanone (5-fluoro-UR-144, XLR11) and N-(1-adamantyl)-1-pentyl-1H-indazole-3-carboxamide (APINACA, AKB48).

Complete text of the action can be found in **Federal Register Volume 78 number 95, Thursday May 16, 2013. here.**

Submitted by **Jeff Teitelbaum, MLIS | Forensic Science Library Services**
Forensic Laboratory Services Bureau
Washington State Patrol

Technical Note: Qualitative or Quantitative Testing? Relative Value in Pain Management Testing

Submitted by ***Anne Z. DePriest, Pharm.D., David L. Black, Ph.D., Timothy Robert, Ph.D., Yale H. Caplan, Ph.D. and Edward J. Cone, Ph.D.***

Recently, debate has emerged regarding the need and value of various testing modalities in pain management situations. Most of the controversy centers on the role of immunoassay vs mass spectrometry-based testing, as many providers employ immunoassay testing at the point-of-care (POC) in physician office laboratories. However, more recently, the potential for qualitative mass spectrometry testing has been advanced.

Immunoassay vs. Mass Spectrometry

Among pain management practitioners, immunoassay and mass spectrometry-based testing are often used interchangeably with the immunoassay - qualitative and mass spectrometry - quantitative, respectively. Immunoassay testing offers an advantage for POC testing with its rapid provision of results. Some pain management guidelines, including those by the American Society of Interventional Pain Physicians (ASIPP), recommend mass spectrometry-based confirmatory testing only when the POC immunoassay result is inappropriate or unexplained.[1] This recommendation fails to address testing for common prescription drugs or metabolites excluded from testing by most POC programs (e.g., fentanyl or opioid normetabolites), or the potential for false negatives.[2-3] In contrast, some authors have recommended mass spectrometry testing at least periodically to improve detection of drugs and metabolites that cannot be effectively tested by POC programs.[4-5]

Although immunoassay has been increasingly used, it only provides a presumptive qualitative result for a drug class. An inherent weakness in this approach is the high prevalence of chronic pain patients who have aberrant urine test results, particularly for multiple non-prescribed drugs. A recent report by Quest Diagnostics indicated that 60% of chronic pain patients undergoing urine testing had potentially noncompliant results, with more than half of these testing positive for drugs other than those prescribed. Marijuana was the most commonly detected non-prescribed drug (26%), followed by opiates (22%), benzodiazepines (16%), and oxycodone (14%).[6] Given the increased risk of poor outcomes associated with noncompliance, illicit drug abuse and prescription drug misuse, failure to identify the presence of additional opiates or benzodiazepines besides those prescribed may prove detrimental in clinical situations. Due to these concerns, testing with mass spectrometry methods may provide more useful data than immunoassay.

Qualitative vs Quantitative Mass Spectrometry

Most mass spectrometry methods employed by laboratories testing in pain management provide a quantitative result, but methods may also be used to provide qualitative reporting (i.e., is the drug present or not). It is well established that interpretation of drug and metabolite concentrations cannot be used to assess compliance to a medication dosing regimen, and thus may be of limited value in many circumstances.[7-9] However, reporting of drug concentrations will assist with toxicology result interpretation and most practitioners prefer quantitative results for that reason. Drug concentrations are useful for interpretation in the following scenarios:

- Detection of parent drug in absence of metabolites may occur as a natural consequence of drug excretion depending on timing of drug administration.[10] Such patterns could also potentially occur in the presence of genetic, drug-drug or drug-food interactions. In some cases however, chronic pain patients may attempt to appear compliant with prescribed therapy by adding crushed drug to their urine specimens post-collection. If parent drug concentrations are unusually high, then suspicion of tampering may be increased and a subsequent specimen collection under observed conditions may be warranted.
- If drug concentrations exceed normal observations for excretion in the pain management population and are statistical outliers, then practitioners should assess for potential misuse or abuse.[9]
- Minor metabolic pathways such as morphine metabolism to hydromorphone and codeine metabolism to hydrocodone should result in low concentrations of metabolite relative to the parent drug. If concentrations of the minor metabolite exceed those reported in literature (typically 5-6%), second exogenous sources of these compounds are more likely to have been ingested by the patient.[11-16]
- Potential pharmaceutical impurities may increase the risk of finding non-prescribed drugs if urine concentrations of the active pharmaceutical ingredient are significant. Reported pharmaceutical impurities such as hydrocodone in oxycodone formulations (allowable up to 1%), codeine in morphine formulations (allowable up to 0.5%), and oxycodone in oxymorphone formulations (allowable up to 0.5%) may be detectable in the urine of chronic pain patients.[17-20]

In March 2013, more than 35,000 urine specimens of chronic pain patients were tested at Aegis Sciences Corporation for licit and illicit drugs, including opioids and benzodiazepines, and carisoprodol. Of these, 3.7% tested positive for parent drug in absence of tested metabolites; 5.9% exhibited unusually high drug concentrations that were statistical outliers for the population; 4.9% were positive for non-prescribed hydromorphone in presence of morphine; 0.7% were positive for non-prescribed hydrocodone in presence of codeine; 3.3% were positive for non-prescribed hydrocodone in presence of oxycodone; 0.2% were posi-

Technical Note: Qualitative or Quantitative Testing? *(Continued)*

tive for non-prescribed codeine in presence of prescribed morphine; and 0.2% were positive for non-prescribed oxycodone in presence of prescribed oxymorphone. In total, 16.3% of all results required drug concentration determination for interpretation.

These findings suggest that if mass spectrometry testing is performed, quantitative results are critical to effectively interpreting the data. This may also pose a problem if laboratories use mass spectrometry methods with narrow linear ranges. If relative drug concentrations are required, as in the case of potential pharmaceutical impurities or minor metabolism pathways, additional testing using dilutions must be performed to report accurate drug concentrations over the upper limit of linearity (ULOL).

Immunoassay and mass spectrometry methods each have limitations. However, in pain management, quantitative testing using mass spectrometry may provide the greatest benefit by allowing clinicians to correctly interpret results.

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Society of Forensic Toxicologists Inc. ®

FROM THE TOXICOLOGY LITERATURE

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

Toxicology Laboratory, Armed Forces Medical Examiner System

Int J Legal Med, (online) July 7, 2012

Sastre et al compared the ethanol concentrations between femoral blood and subclavian blood in 50 postmortem cases. The femoral blood ethanol concentrations ranged from 0 to 0.49 g/dL. The subclavian blood ethanol concentration was not significantly different than the femoral blood ethanol concentration in these cases with a correlation coefficient of 0.961. This indicates that in the absence of femoral blood, subclavian blood is a suitable alternate specimen for ethanol analysis.

Forensic Science International
Vol 223, Nov 2012

McIntyre and Mallett looked at the sertraline and norsertraline concentrations in heart blood, ileac blood and liver in 9 postmortem cases. Sertraline and norsertraline concentrations in ileac blood ranged from 0.13 to 2.1 mg/L and 0.11 to 6.0 mg/L respectively. Sertraline and norsertraline concentrations in heart blood ranged from 0.18 to 2.0 mg/L and 0.12 to 6.7 mg/L respectively. The average heart blood to ileac blood ratio was 1.22 ± 0.85 for sertraline. The average liver to ileac blood ratio was 97 ± 40; this high ratio suggests that sertraline may demonstrate postmortem redistribution.

Fabritius et al measured the concentrations of THC, 11-OH THC, THC-COOH and the glucuronides of THC and THC-COOH in 10 bile specimens. Free and conjugated THC-COOH concentrations were much higher than the concentrations of the other THC species; concentration of the conjugated THC-COOH was an order of magnitude higher than free THC-COOH. In addition, THC glucuronide concentrations were also an order of magnitude higher than free THC concentrations in the bile.

Journal of Forensic Sciences
Vol 58 Jan 2013

Neerman et al presented a drug death involving mitragynine, the psychoactive ingredient of Kraton. The femoral blood mitragynine concentration was 0.60 mg/L. The following drugs were also detected in the blood: dextromethorphan 0.28 mg/L; diphenhydramine 0.33 mg/L; temazepam 0.21 mg/L and 7-aminoclonazepam 0.21 mg/L. The medical examiner ruled that the cause of death was possible Kraton toxicity.

Journal of Analytical Toxicology
Vol 37 Jan Feb 2013

Gorelick et al examined whether tolerance to the subjective and cardiovascular effects of oral THC occurs over 6 days of round-the-clock, high dose administration of dronabinol. Tolerance to the subjective, intoxicating effects of dronabinol was observed after using 260 mg over a period of 4 days. Since plasma concentrations of THC and 11-OH THC increased rather than decreased over this period, the observed tolerance could not be attributed to changes in plasma concentrations of the psychoactive substances. Conversely, no tolerance to the hypotensive and tachycardic effects were observed over the 6 day period.

Adamowicz et al reported the case of a 30 year old male found unresponsive in a stairway. Comprehensive drug testing failed to identify 4-bromo-2,5-dimethoxyphenethylamine, the drug suspected to be at the scene or other routinely encountered therapeutic or abused drugs. Subsequent analysis of the powder identified mephedrone. The blood and vitreous humor mephedrone concentrations were 5.5 and 7.1 mg/L, respectively. The death in the case was attributed to mephedrone intoxication.

American Journal of Forensic Medicine and Pathology
Vol 34, March 2013

Garber et al presented a case of an airplane crash fatality where the decedent's blood, vitreous humor and urine alcohol concentrations were 27, 28 and 1 mg/dL, respectively. Investigation indicated that the decedent was a non-drinker and there was no evidence that the individual had consumed alcohol prior to the accident. The body was recovered face down directly in contact with fuel-soaked ground. The fuel used in the plane contained 10% ethanol and the authors proposed that exposure of the body to the fuel through direct surface content and through wounds in the body accounted for the measured alcohol in the postmortem fluids.

Forensic Science Review
Vol 25, March 2013

There were 4 articles of interest to forensic toxicologists. Three of the articles were about synthetic cannabinoids and/or designer cathinones. The fourth article discussed ion suppression and matrix effects in LC/MS/MS.

Journal of Forensic Sciences
Vol 58, Jan 2013

Butzbach et al studied the stability of 6 selective serotonin reuptake inhibitor drugs, citalopram, paroxetine, sertraline, venlafaxine, fluoxetine and fluvoxamine in pig liver tissue aver a 57 day period at 20°C. Paroxetine, citalopram, venlafaxine and fluoxetine were found to be stable in both sterile liver maserates and liver maserates inoculated with cecal contents. Sertraline was generally stable, except in one sterile liver homogenate where a decrease was observed. Fluvoxamine concentrations decreased over the experimental period, indicating a potential complication in the interpretation of fluvoxamine concentrations in decomposed specimens.

National Safety Council
Goodbye NSC-CAOD, Hello NSC-ADID

Submitted by **Laura Liddicoat, B.S., Vice Chair, ADID**

Please allow me to introduce you to the National Safety Council's Alcohol, Drugs and Impairment Division (NSC-ADID). If you have been following the activities of the National Safety Council's Committee on Alcohol and Other Drugs (NSC-CAOD) you may already know that the Committee was "promoted" to a Division within NSC, and now has a new name. Rather than focusing solely on alcohol and drugs as they impact traffic safety, the role is now expanded to alcohol, drugs and impairment affecting all facets of our lives; on highways, in homes, the workplace, children, the elderly, and our health for example.

The NSC-ADID meets in conjunction with the SOFT and AAFS Annual Meetings. The last meeting was held in Washington D.C. on Feb 18, 2013.

ADID Officers for 2013 include:

- Randall Beaty – Chair
- Laura Liddicoat – Vice Chair
- Alka Lohmann – Secretary
- Dennis Canfield – Immediate Past Chair

The Drugs, Pharmacology and Toxicology Subcommittee has been working on the "Toxicological Investigation of Drug Impaired Driving" project which surveyed laboratories that provide drug testing for driving under the influence of drugs (DUID) and/or drug recognition evaluator (DRE) cases. This research aims to assist in critically reviewing, updating and publishing the current guidelines and recommendations for the toxicology community.

In the evening of Feb 18, 2013, the Robert F. Borkenstein Award was conferred upon Dr. Robert Forney, Jr. Dr. Forney is nationally and internationally recognized for his career-long achievements and contributions in the fields of alcohol/drug/traffic safety and forensic toxicology – many of them made through the CAOD. Those contributions have been in each of the following three areas: (1) Alcohol education; (2) Human factors, and (3) the technology and toxicology of alcohol and other drugs.

The next NSC-ADID meeting will be held in Orlando, Florida on Sunday October 27, 2013 from 8 am to Noon. This meeting is open to the general public for all but a short closed session portion.

To access ADID policies, previous Borkenstein Award recipients or learn more about the division link to the ADID home page directly at http://www.nsc.org/get_involved/divisions/Pages/CAODwebpage.aspx.

Update from SAMSHA/NLCP

Submitted by **Ron Flegel,** BS, MT (ASCP), MS

National Laboratory Certification Program, U.S. Department of Health and Human Services, Drug Testing Program

On January 26, 2012, the Administrator of the Substance Abuse and Mental Health Services Administration (SAMHSA) approved the two recommendations from the Center for Substance Abuse Prevention Drug Testing Advisory Board (DTAB):

Recommendation 1.

Based on review of the science, DTAB recommends that SAMHSA include oral fluid as an alternative specimen in the Mandatory Guidelines for Federal Workplace Drug Testing Programs (Guidelines).

Recommendation 2.

DTAB recommends the inclusion of additional Schedule II prescription medications (e.g., oxycodone, oxymorphone, hydrocodone, and hydromorphone) in the Mandatory Guidelines for Federal Workplace Drug Testing Programs.

These recommendations were incorporated into two proposed revisions to the Guidelines, one for urine and one for oral fluid. Currently, both proposed revisions are under federal agency review. Upon completion of this review at the federal level, the proposed revisions to the Guidelines will be published in the Federal Register for public comment.

To ensure the scientific supportability of these two recommendations, SAMHSA's Division of Workplace Programs (DWP) staff authorized several special studies under the National Laboratory Certification Program (NLCP) contract. These studies included the NLCP Oral Fluid Pilot Performance Testing Program, a hydrocodone and oxycodone dosing study, and several oral fluid studies. The results of the oral fluid studies were presented at the July 1, 2012 NLCP Workshop. Data from hydrocodone and oxycodone dosing studies will be presented at the 2013 SOFT meeting and will be published in their entirety in The Journal of Analytical Toxicology. This synthetic opioid dosing study includes data for the analysis of oral fluid, urine, and blood taken at selected intervals during the 52-hour post-dosing period.

Planned future studies include a similar dosing study with hydromorphone and oxymorphone and a study on passive inhalation of marijuana smoke in collaboration with the Johns Hopkins University.

SAMHSA also supported the White House Office of National Drug Control Policy initiative to develop the technical standards for oral fluid as a drug testing matrix. DWP staff designed and authorized several studies to evaluate the scientific validity of oral fluid, including dosing studies with poppy seeds and over-the-counter nasal inhalers containing L-methamphetamine. These studies have been completed, and results will be published in peer-reviewed journal articles.

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TOXTALK™ **Deadlines** for Contributions:

February 1 for March Issue
May 1 for June Issue
August 1 for September Issue
November 1 for December Issue

Future 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
2018:	Minneapolis, MN	Oct. 15-12th, 2 018	TBD
2019:	San Antonio, TX	Oct..11-18th, 2019	TBD

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