Society of Forensic Toxicologists, Inc.

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December 2011

TOXTALK

SOFT 2012 BOSTON
WWW.SOFT2012.ORG
JULY 1ST—JULY 6TH, 2012

The 2012 Meeting of the Society of Forensic Toxicologists (SOFT) promises to be the forensic toxicology conference that offers a once in a life time event.

This will be the first time that the SOFT conference will be held in the northeast in over two decades and the first time that the conference will be held in July(1- 6). The unique scheduling celebrates science with Boston's spirit of independence. Hosted in the beautiful historic Back Bay area of Boston (Marriot Copley Place), members will be welcome to participate by presenting their latest research, case presentations and analytical techniques to our national audience.

Boston is located in the heart of the biomedical and the biopharmaceutical industry. In addition, it is home to the world's leading scientific institutions and medical facilities: MIT, Harvard, Northeastern University, Tufts University and Boston College, Mass General, Brigham and Women's, Beth Israel Deaconess, Dana-Farber, and Tufts. Come early or stay late and enjoy all that Boston has to offer.

Due to the earlier scheduling, all deadlines in preparation for this conference have been advanced by at least four months. This announcement is designed to assist SOFT members in familiarizing themselves with these new deadlines. Throughout the year, email announcements will be released as a reminder. If you are not receiving these emails, please check your junk folders or contact your IT coordinator. Note: Announcements will be posted on the conference website under their associated tabs (soft2012.org). In the spring issue of ToxTalk, the hosting committee will provide additional details about Boston and the surrounding areas for activities that members may be interested. These same events and announcements will also be posted on the website in the "Events" tab.

INSIDE THIS ISSUE:

PRESIDENT'S MESSAGE

*Submitted by **Sarah Kerrigan**, Ph.D.*

First and foremost, thank you to each of you who took time to share your thoughts and stories with me after the incoming and outgoing President's speeches in Richmond VA, and more recently in San Francisco.

The issues that I discussed at both meetings clearly resounded with a great many of you, and I find this very reassuring. It's testament to the fact that each of us feel strongly that it is absolutely essential to do the right thing, rather than take the path of least resistance. In my last message I want to reiterate the comments I made at the San Francisco business meeting, because these challenges and concerns affect the entire membership.

This year, we have talked at some length about the changing landscape of forensic science: new and improved guidelines, standards and oversight, as well as pending federal legislation that will undoubtedly impact forensic science. These developments will elevate the science and strengthen the criminal justice and public health systems that rely on us. We will continue to embrace and support these changes.

In contrast to this however, is the current state of publicly funded laboratories throughout our nation. While we talk of increasing standards, tougher guidelines, and providing better services, I am distinctly troubled by the financial crisis faced by so many laboratories. During the past year a great number of you have reported first hand the closure of your own laboratories, reduced staffing, reduced scope of testing, and in some cases elimination of toxicology work completely. The dwindling financial resources in publicly funded laboratories has made it hard to provide even *basic* quality services, let alone *improved* standards and services. This has to be addressed head-on.

This dilemma is ironic and extremely troubling. The situation for many laboratories is contrary to what most of us feel is in the best interest of the science. Perhaps some of my concern stems from the situation in the United Kingdom, where the large publicly funded laboratory system attempted to transition into a fee for service and privatized entity. This resulted in the complete demise of the Forensic Science Service and the publicly funded laboratory system as a whole. I was fortunate that I worked there when it was still part of the Home Office, more than 20 years ago. At that time it was considered one of the best laboratories in the world.

The services we provide are essential, not discretionary. Ask a family member waiting for a death certificate if the toxicology report is discretionary; or a person who has lost a loved one in a traffic fatality if it's important to know whether alcohol or drugs were a factor? Many of the basic forensic services that our members provide are as essential to public health and safety as clean drinking water. Unfortunately, they may not be as attractive to a public safety official as police cars or bullets, but they are every bit as important. Our voice must be heard.

The broadcast email system was recently used to solicit information on how many of our members are facing shortfalls and resource deficits. The results clearly indicate the economic struggle experienced by the majority of respondents. Almost two thirds have already implemented, or plan to implement cutbacks to manage resources, such as reduced workforce, reduced services, reduced scope of testing and outright closure. The majority of members responding to the survey were from government funded laboratories (65%). Almost three quarters of these survey respondents reported significant cutbacks. This is perhaps not surprising given economic circumstances, but it is impressively disturbing considering the grave importance of government-funded services for both criminal and death investigations. It seems ironic that while so many of us are actively engaged in the process to improve the quality of forensic science in the United States, these resource deficits have the potential to undermine essential services and the criminal justice system as a whole.

I said previously that doing the right thing can get you in trouble. If upsetting people is a measure of success, some would say I've been very successful. In San Francisco I told the story of a laboratory employee who, as a joke, gave me a badge saying "I Am a Shameless Agitator" at a time when I was going out on a limb on an ethical issue. I wore that badge with pride! It's important to speak up about the things you believe in, and we should do it more often. If you are troubled by lab closures, cuts and quality, you are obliged to speak up about it -and do something about it.

My message as President is simply this: We have an ethical responsibility to stand up for the things we believe in, regardless of whether or not we will be on the winning or losing side. If you are not willing to lose, you have to be willing to do whatever it takes to win. To be ethical you have to be willing to lose.

Thank you for allowing me to serve as President. It's been a distinct privilege.

SOFT RESOURCE SURVEY 2011 RESULTS

1. Which best describes your laboratory?

	Response Percent	Response Count
Government funded	**65.1%**	**231**
Private sector	22.0%	78
Mixed	5.1%	18
Other (please specify)	7.9%	28
answered question		**355**
skipped question		**0**

2. What type of forensic toxicology do you perform

	Response Percent	Response Count
Human performance	54.6%	194
Medical examiner	**57.7%**	**205**
Workplace drug testing	24.8%	88
Other (please specify)	27.3%	97
answered question		**355**

3. What best describes the funding structure of your laboratory

	Response Percent	Response Count
Government funded	**65.6%**	**233**
Private sector	22.8%	81
Mixed	7.0%	25
Other (please specify)	4.5%	16
answered question		**355**
skipped question		**0**

4. Does your laboratory charge fees for analytical services

	Response Percent	Response Count
No, we do not charge fees for testing	**46.8%**	**166**
Yes, we charge fees for some, but not all analytical services	16.9%	60
Yes, we operate under a fee for service structure for all clients	31.5%	112
Other (please specify)	4.8%	17
answered question		**355**
skipped question		**0**

5. Has your laboratory implemented any changes as a result of limited resources during the past year, or does it plan to during the upcoming year?

	Response Percent	Response Count
Yes	64.5%	229
No	35.5%	126
answered question		355

6. During the past year, or in the near future, my laboratory has experienced the following (choose all that apply):

	Response Percent	Response Count
Reduced workforce (e.g. eliminating positions, holding open positions)	**54.1%**	**192**
Reduced scope of testing in-house (i.e. reduced/limited analytical services)	28.7%	102
Other reductions or changes in analytical services (e.g. increased send-outs or referrals to other laboratories)	22.3%	79
Other reductions or changes in non-analytical services (i.e. reduced testimonial services, support, training)	32.4%	115
Laboratory closure / closure or elimination of toxicology section(s)	5.6%	20
My laboratory has not been affected	28.2%	100
Please add additional information here (optional)		84
answered question		**355**
skipped question		**0**

SOFT2012 (BOSTON) ANNOUNCEMENTS

*Submitted by **Michael Wagner**, Ph.D., Meeting Host (micawgn@iupui.edu)*

SOFT 2012 at the Boston Marriott Copley Place - July 1, 2012 thru July 6, 2012

Workshops:

Proposals for the 2012 annual meeting in Boston, MA are **due no later than Friday, December 2, 2011**. Proposals must be submitted electronically – see website for form. For planning purposes, please email workshop ideas ahead of time. Feel free to contact the 2012 Workshop Chair with any questions or concerns.

Contact:
Jen Limoges
Jennifer.Limoges@troopers.ny.gov
(518-457-9612)

Hotel Registration:

Boston Marriott Copley Place
110 Huntington Avenue
Boston, MA 02116 USA
Phone Reservations (available now):
1-800-266-9432 (toll-free) and
1-506-474-2009 (Int'l)

Rate: $183/night (not including tax)

Online Reservations (available):
https://resweb.passkey.com/Resweb.do?mode=welcome_ei_new&eventID=59833441&utm_source=249&utm_medium=email&utm_campaign=7927916

Scientific Session:

"Call for Abstracts" Deadline is March 5, 2012. Detailed instructions for submittal can be found at the meeting website (www.soft2012.org).
Contact:
Scientific Co-Chairs:
Loralie Langman
(langman.loralie@mayo.edu)
Albert Elian
(albert.elian@pol.state.ma.us)

Volunteers: Please refer to the soft2012.org website.

Registration Costs:

Members	$499.00
Non-Members	$675.00
Students	$175.00
Daily	$275.00
Additional Person *(16 year of age and older)*	$399.00
Additional Person *(younger than 16 years of age)*	Free
Exhibitor	$499.00

Workshop Cost:

Members ½ Day	$150.00
Full Day	$200.00
Non-Members ½ Day	$200.00
Full Day	$250.00

SCHEDULE FOR 2012 SOFT SPECIAL ISSUE	
Title & abstract submissions to Guest Editor	January 6
Completed manuscripts due	January 20
Manuscripts due from reviewers	February 3
Revised manuscripts due back from authors	March 2
Accepted manuscripts due to JAT	March 16
Editorial material due to OUP	March 30

JAT PRODUCTION SCHEDULE FOR 2012

*Submitted by **Dimitri Gerostamoulos**, Ph.D. (dimitrig@vifm.org)*

It is my privilege to have been selected as Special Edition Guest Editor for the Journal of Analytical Toxicology. In preparation for our meeting in Boston (July 1-6, 2012) I would like to inform all our members that the submission dates needed for producing the Special Edition are going to be tight. As you can see below there is a much smaller window this year due to the fact that the SOFT meeting is in July.

I look forward to receiving your submission via the JAT website (ManuscriptCentral) http://mc.manuscriptcentral.com/jat. Remember to select Special Edition 2012 when submitting. A reminder that the Journal accepts original, full-length manuscripts, short communications, and commissioned review articles relating to the isolation, identification, quantitation, and interpretation of potentially toxic substances and their biotransformation products in specimens of human, animal, or environmental origin. The articles should pertain especially to the monitoring of drugs and therapeutic agents and environmental and industrial contaminants, clinical reports of poisonings (with analytical data), the development of analytical techniques, and the interpretation of the results of toxicological investigations. The methods should be applicable to the fields of forensic science, therapeutic drug monitoring, drugs-of-abuse testing, clinical and forensic toxicology, and industrial hygiene.

I look forward to seeing the manuscripts shortly!!

SOFT 2012 ANNUAL MEETING

Boston, Massachusetts

July 1 – 6, 2012

Host: Michael Wagner, Ph.D.

Site: Boston Marriott Copley Place

PRELIMINARY PROGRAM

Sunday, July 1, 2012

- Registration Opens (9am-6pm)
- NSC-CAOD Meeting (10am-2pm)
- NLCP Inspector Training (2pm-6pm)
- Young For. Tox. Meeting (5pm-9pm)
- Dinner on your own

Monday, July 2, 2012

- Continental Breakfast (7am-8:30am)
- Registration (7am-6pm)
- ABFT Exam Committee (7am-12pm)
- SOFT Workshops (8am-5pm)
- SOFT Student Enrichment Program (8am-5pm)
- Lunch On Your Own / Workshop Box Lunches
- FTCB Board Meeting (5pm-6pm)
- SOFT-AAFS Drugs and Driving (5pm-6:30pm)
- Dinner on your own

Tuesday, July 3, 2012

- Continental Breakfast (7am-8:30am)
- Registration (7am-6pm)
- SOFT Board Meeting (7am-12pm)
- SOFT Workshops (8am-5pm)
- ABFT Exam (8am-12pm)
- ABFT Accreditation Comm. (8am-12pm)
- ABFT Board Meeting (12pm-6pm)
- Exhibits Setup (12pm-5pm)
- Lunch On Your Own / Workshop Box Lunches
- Exhibits Open (6:30pm-8pm)
- Welcome Recep. w/Exhibitors (6:30pm-8pm)
- Sunshine/Rieders Silent Auction Opens 6:30pm
- Elmer Gordon Forum (8pm-9:30pm)
- Night Owl Event (10pm-12am)

Wednesday, July 4, 2012

- Continental Breakfast (7:30am-9am)
- Registration (7:30am-1pm)
- Exhibits open (7:30am-1pm)
- Sunshine/Rieders Silent Auction (7:30am-1pm)
- Opening Ceremony Plenary Sess. (8am-9am)

Wednesday, July 4, 2012 (continued)

- Scientific Session #1 - YFT (9am-10am)
- Poster Session #1 (10:15am-11:30am)
- Lunch with Exhibitors (11:30am-1pm)
- SOFT "on the town" July 4th (1pm-6:30pm)
- Bus Transport to "Museum of Science" (7pm)
- MOS – Interactive Exhibits / Music / BBQ / Dessert Stations (7:30pm-10pm)
- To outdoor Pavilion to experience "Firework Extravaganza" on Charles River (10pm-11pm)
- Bus Transport back to Marriott (11:30pm)

Thursday, July 5, 2012

- SOFT Fun Run/Walk (6:30am-8am)
- Continental Breakfast (7:30am-9am)
- Registration (7:30am-5pm)
- Exhibits open (7:30am-1:30pm)
- Silent Auction Last Day (7:30am-12:30pm)
- Exhibitor Feedback Meeting (8am-9:30am)
- Scientific Session #2 (8am-9:45pm)
- Poster Session #2 (9:45am-10:30am)
- Scientific Session #3 (10:30-12pm)
- Lunch with Exhibitors (12pm-1pm)
- DFSA Committee (12-1pm)
- Exhibits breakdown (1:30pm-4pm)
- Scientific Session #4 (1pm-3:45pm)
- SOFT Business Meeting (4pm-5:30pm)
- ABFT Certificate Recep. Wine & Cheese (5:30pm-6:30pm)
- President's Cocktail Hr & Banquet (6pm-12am)

Friday, July 6, 2012

- Continental Breakfast (7:30am-9am)
- Scientific Session #5 (8am-9:45pm)
- AAFS Steering Committee (9am-11am)
- Refreshment Break (10am-10:30am)
- Scientific Session #6 (10:30am-12pm)
- Lunch (12pm-1pm)
- Scientific Session #7 (1pm-2:30pm)

SOFT-TIAFT 2011 IN SAN FRANCISCO

Submitted by AnnMarie Gordon, B.A. / Nikolas Lemos, Ph.D., 2011 Meeting Hosts

The 2011 combined SOFT-TIAFT meeting in San Francisco was an unmitigated success. This was the largest gathering of International Forensic Toxicologists ever convened and what a week it was. The 1334 registrants included 750 SOFT and/or TIAFT members, 103 accompanying members, 140 non-members and 306 exhibitor registrants. With all of these attendees, we were lucky to have our wonderful volunteers and Bonnie manning the registration desk. They make it look effortless but the truth is they work very hard to achieve this. A special thanks to the SO-SOFT ladies who every year make this run so smoothly. This year we also had help from P Wagner (the wife of 2012's host) and Vickie Maloney (who is helping Bruce Goldberger with the 2013 meeting). Thanks to all of you who graciously offered your help by volunteering early to put together the meeting bags, the workshop volunteers, those who helped with the buses and the boats to Alcatraz and all the other efforts that made the meeting such a success. Special thanks to Debbie Denson who did a wonderful job coordinating the volunteer efforts and also Denise Teem, her fiancé, and Kayla Fulmer who all seemed to be there whenever something needed to be done. We could not have done it without all of these wonderful volunteers.

The week started out with two full days of workshops orchestrated by Laureen Marinetti, PhD and Dimitri Gerostomoulus, PhD. There were 2097 workshop attendees and a wide spectrum of topics including a full day of oral fluid testing, scientific writing and publishing, the latest information on ICPS, Solid Phase, High Resolution Mass Spec, Capillary Electrophoresis and LCMS, Interpretation of Clinical and Post-Mortem Results, Expert Witness Testimony and the latest on detection of Spice. Our sincere thanks to Laureen and Dimitri and all of the individual workshop chairs for putting together such a great program.

There were 104 vendor booths in the outstanding Exhibitor space representing 65 vendors; ThreeTier 1 sponsors: Randox, Thermo Scientific and Agilent Technologies; Five Tier 2 sponsors: Immunalysis, Waters, AB Sciex, Cerilliant and Roche-Orasure; Nine Tier 3 Sponsors: Axion Diagnostic, Campbell Science, Biophor, Apollo LIMS, Common Cents, RTI, Preston Publications, Neogen Corporation, Venture Labs and Shimadzu Scientific Instruments; Five Tier 4 sponsors: Biotage, Lin-Zhi, Sensa Bues AB, UCT and Lipomed and four Tier 5 sponsors: Shamrock Glass, Biochemical Diagnostics Inc., SPEware Corp, and Branan Medical. It is with special gratitude that we, the hosts of the 2011 SOFT-TIAFT meeting, want to thank the generous support of all of our sponsors. Without their contributions, the meeting would not have been such a huge success, from the scientific program to the food to the special events. We also want to acknowledge the efforts of Peter Stout and Jeri Ropero- Miller who served exceptionally as the vendor liaisons.

The opening plenary speaker, UCSF Professor Thomas Kearney, PhD, brought us back to San Francisco's "Summer of Love" and toxicology. The scientific program was teeming with the latest technical and research information. There were more than 450 abstracts submitted for acceptance and Scientific Chair Marilyn Huestis, PhD offered simultaneous sessions for the first time at SOFT, including sessions on DUID, Clinical Toxicology and Clinical Research, Post-Mortem Toxicology, Alternative Matrices, the latest in Analytical Techniques, Alcohol Biomarkers, Sports Doping, DFSA and Synthetic Cannabinoids. This format allowed for a record 106 platform sessions and 300 Poster Sessions as well as the 6 ERA and YSM awardee presentations. The Elmer Gordon Forum began with a Historical Lecture by Professor Robert Wennig and a SWGTOX update. A huge thank-you to Marilyn and her NIDA staff for such a superb scientific program. We also want to acknowledge the efforts of Don Frederick, PhD, who took on the enormous task of ensuring our participants,were able to receive Continuing Education Credits. Of course, Frank Wallace and his team's efforts with the audio visual made all of the sessions run perfectly.

SOFT-TIAFT 2011 IN SAN FRANCISCO (CONTINUED)

With all that science one might think that everyone would have been too tired for anything else, but true to form, this group came prepared to also have fun and enjoy the camaraderie of our fellow attendees. On Monday night two of our Tier 1 Sponsors, Agilent and Thermo Scientific, hosted outstanding receptions in the hotel. On Tuesday evening we had the opportunity to celebrate the diverse ethnic cuisines of San Francisco with our incredible vendors in the Exhibit Hall with cocktails and dinner. Members had options of seafood from Fisherman's Wharf, Italian Dishes inspired by North Beach, Dim Sum and other Chinese adventures reminiscent of San Francisco's renowned Chinatown and the California-Mexican Cuisine inspired by The Mission District. Following the reception there were desserts and the Elmer Gordon Forum which once again provided a forum to discuss our challenges and successes with our colleagues. Following Elmer Gordon, Cerilliant hosted a Night Owl reception on the 39th floor of the hotel in The View Lounge.

On Wednesday evening 1043 of us took off for a tour of historical Alcatraz Island followed by a dinner cruise on the bay aboard the San Francisco Belle. The weather was exceptional all week, but Wednesday night was one of the warmest of the entire year and we were able to walk on the open decks in shirt sleeves until 11 pm. (There are only one or two days a year when this is the case in San Francisco.) The buffet dinner was outstanding and we were entertained by the Sisters of Perpetual Indulgence offering Bingo and humor on Deck 1, a jazz band on Deck 2 and a DJ and dancing on Deck 3. Others were content to walk the outside decks and view the incredible San Francisco skyline.

Despite the late Wednesday night, 79 hardy souls braved the early morning hour on Thursday and participated in the Karla Moore 5K Fun Walk/Run which started at 6:00 am. The first place male runner was Mark Roberts and the first place female was Simone Loew. The first place walker was Eric Lavins. Congratulations to the winners and all of the participants. Special thanks to the volunteers who got up early to help out and to Preston Tinsley who was there with his camera to document the event.

Thursday evening we had a fabulous evening of cocktails, dinner, awards and dancing to the sounds of San Francisco. SOFT President Sara Kerrigan and newly elected TIAFT President Alain Verstraete presented awards to their respective societies and everyone enjoyed the food, wine and dancing.

The scientific sessions lasted until 4 pm on Friday where we completed the week with a closing ceremony. We were treated to a wonderful slide show put together by TIAFT president Alain Verstraete which can be viewed on the meeting website.

Finally, we want to thank the SOFT and TIAFT boards for allowing us to host this meeting in this beautiful city of San Francisco. All of you made this meeting the success it was and it was so great if we needed something done to look around and know there were so many of you upon whom we could call. It is impossible to recognize all of you by name but know that we are grateful to you. There are two others whose efforts need formal recognition. Dan Isenschmid served as the meeting treasurer and kept us on budget. His efforts did not end with the closing ceremonies and we are lucky to have such a dedicated treasurer. And of course, what can we say about Bonnie Fulmer. Bonnie is the backbone of all of our meetings. She keeps everyone on task, remembers every detail from year to year and gets everything done. She works from early in the morning until late at night months before the meeting and it is doubtful that she sleeps at all during the meetings. She is an amazing asset and all of us owe her a world of thanks.

It was an honor to be a part of this meeting and we look forward to seeing you all in Boston for the 4th of July.

SOFT TIAFT 2011
SAN FRANCISCO
CALIFORNIA, USA

PICTURES FROM SOFT-TIAFT 2011

PICTURES FROM SOFT-TIAFT 2011









DRUGS IN THE NEWS

Section Editor, ***Dwain C. Fuller****, D-FTCB, TC-NRCC*

Send interesting *"Drugs In The News"* articles to Section Editor, Dwain Fuller, (Dwain.Fuller@va.gov)

MORE ON BATH SALTS

Submitted by ***Laureen Marinetti,*** *Ph.D, DABFT,* ***Heather Antonides,*** *B.S., and* ***Jennifer Watson,*** *B.S.*
Montgomery County Coroner and Miami Valley Regional Crime Laboratory, Dayton, OH

Continuing the trend of the previous three issues of Tox Talk, we would like to discuss bath salts in terms of the toxicology results of some DUI and Postmortem cases that have been analyzed at our laboratory in Dayton, Ohio. In the December 2010 issue of Tox Talk an article was written about mephedrone, in the March 2011 issue there was an article that analyzed some bath salt products containing MDPV, methylone and mephedrone and finally in the June/July 2011 issue there was a request from the DEA regarding submission of case work involving bath salts.

Since those publications, MDPV, methylone and mephedrone have been Federally Scheduled (10-21-11). Starting in March of this year we started seeing bath salt related cases, first in DUI case work and then in postmortem cases. Our first case involved the fatality of a driver at fault in a traffic crash. The toxicology testing showed a THC concentration in blood of 15 ng/mL with a carboxy THC of 118 ng/mL. This satisfied the impairment issue until the office received a call from the next of kin asking if we had tested for bath salts and synthetic cannabinoids. The synthetic cannabinoids were not detected but the blood contained MDPV and methylone. The MDPV peak was apparent on the basic GC/MS screen in urine but the library match came back as ropivacaine. Once we obtained a standard and created a library spectra for MDPV the "ropivacaine" was a perfect match for MDPV. Ropivacaine and MDPV mass spectra are similar but their retention times are different. Methylone can also be detected by GC/MS if the concentration is high enough which it was in this case. In addition to the cannabinoids this decedent had a heart blood MDPV concentration of 56 ng/mL and a methylone concentration of 735 ng/mL.

The Miami Valley Regional Crime Laboratory (MVRCL) Chemistry Section has seen the usual powders and have also seen liquid in syringes, and a candy looking concoction that looks like it was created with a Play Doh fun factory. The long multicolor rope like shape is then cut into pieces to look like pills but has the consistency of rubber or foam.

Information from the DEA has stated that this is a non toxic matrix but it is not clear if this matrix is being ingested or simply held in the mouth until the drug is released and then discarded. Analysis by the Chemistry Section showed 70% methylone and 30% sassafras powder.

The following table lists several of the bath salts cases we have analyzed since March of this year. The cases in which a blood specimen was available are listed. The case demographics are white males and females ranging in age from 19 to 53 years. There are death cases, DUI's, domestic violence, suicide, overdose, traffic fatalities and one drug facilitated assault. The concentration does not appear to predict outcome as far as fatalities or impairment. The highest MDPV concentration occurred in a living driver and the highest methylone was also in a driver. However, it is not clear if the accident was due to impairment or collapse as this driver was killed in the accident. We are compiling data now to get a picture of how these drugs distribute after death.

The case numbers in red are those in which the death or behavior impairment is thought to be directly related to bath salt use.

The opinions expressed herein are solely the opinions of the author and do not necessarily reflect the opinions of the Society of Forensic Toxicologists, Inc. or any other entity.

DRUGS IN THE NEWS (CONTINUED)

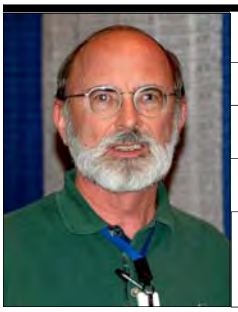
Case #	Age/ Gend/Race	Synopsis	Toxicology – ng/mL
11-1104	37/M/W	MVA driver at fault – fatal.	Heart Blood MDPV – 56 Methylone - 735 THC – 15 THC-COOH - 118
d11-2984	32/F/W	MVA driver – hit 3 parked cars, did not know where she was or that she hit any cars.	Blood MDPV – 200 Fluoxetine – 180 Norfluoxetine – 290 Historic cocaine use
d11-5222	23/M/W	MVA driver at fault – severity of the intoxication required admission to hospital – some delay in specimen collection – he admitted to smoking/inhaling bath salts, cocaine and THC all night.	Blood MDPV – < 10 THC – ND THC-COOH – 18 No cocaine or metabolite
d11-5919	32/M/W	DUI – found pills and white powder.	Blood MDPV – 29 Lidocaine - < 50 Oxycodone - < 20
d11-8760	30/M/W	The charge was having weapons while under disability – the subject was passed out in a vehicle – two syringes were located – the syringes were tested and contained methylphenidate.	Blood MDPV – 24 Methylone – 7 Clonazepam – 11 7-AMC – 14 Alprazolam – 95 Citalopram – 110 Methylphenidate - ND
d11-6438	?/M/?	Once the victim became unresponsive the suspects stole the victim's car. Police asked for Ativan and Zanaflex as possible drugs used.	Victim's Blood MDPV - 52 Lorazepam and Temazepam both less than 10 Zanaflex – not detected
d11-11157	25/M/W	Vehicular homicide/assault – subject is a known bath salt user – subject stated they would never prove he used bath salts.	Blood MDPV - 6
11-6075	20/M/W	MVA at fault driver – fatal Vehicle drove off roadway – small plastic bottle with white residue found in pocket.	Cavity Blood MDPV – 14 Only tox finding
11-6088	39/M/W	Known user of bath salts – product of choice called "POSH" - he was known to become manic and uncontrollable when he used. Found dead at home, with over turned furniture and broken lamps. Autopsy findings: bitten tongue, cerebral edema, mild cardiomegaly.	Femoral Blood MDPV – 74 Lidocaine – 100 (lidocaine was also in the POSH product)
11-6105	29/M/W	Recently reconciled with wife and discovered she was snorting bath salts. He tried to dissuade her by snorting bath salts himself to show her how she acted while under the influence. He was later found hanging.	Heart Blood MDPV – 110 Historic THC use
11-6107	34/M/W	Known drug user – using heroin with a friend – when friend came to he found the decedent unresponsive. Autopsy showed cerebral and pulmonary edema and frothy material in the airway.	Femoral Blood MDPV – 170 Morphine - 24 Fluoxetine – 760 Norfluoxetine – 1600 Trazodone – 70 Mirtazepine - < 50

DRUGS IN THE NEWS (CONTINUED)

Case #	Age/ Gend/Race	Synopsis	Toxicology – ng/mL
11-2406	46/M/W	Mental status became altered, at hospital he was hypotensive and then coded. Cause of death was sepsis and acute lobar pneumonia with chronic intravenous drug abuse and hypertensive and arteriosclerotic cardiovascular disease contributory.	Heart Blood MDPV – 10 Hospital Blood MDPV - < 5 DPH – 230 Alprazolam – 15 Tramadol < 50 Historic Heroin use
11-6123	33/F/W	Found dead in hotel room with bath salts containers at the scene.	Femoral Blood MDPV – 46 Morphine – 390 Hydrocodone – 179 Citalopram – 320 Cocaine - < 50 Benzoylecg. - > 700 Alprazolam – 50 No 6MAM in blood, vitreous or urine
11-3291	47/M/W	History of illicit and prescription drug abuse, HTN and chronic pain. Found unresponsive by mother. Autopsy – drug overdose. Pulmonary edema and arteriosclerotic and hypertensive cardiovascular disease.	Peripheral Blood MDPV – 162 Oxymorphone – 43 Diazepam – 313 Nordiazepam – 494 Temazepam – 33 DPH – 80
11-6175	33/M/W	Drug abuser, found dead after 2 days with straws and "white horse" brand bath salts. Likely dead 2 days in hot apartment, then refrigerated 3 days prior to autopsy. No known prescribed drugs Autopsy showed prominent decomposition and no injuries.	Liver (only specimen submitted): MDPV > 4800 ng/g Ethanol – 0.044% Trazodone – presumptive I.D. Beta-phenethylamine positive
11-3405	43/F/W	History of asthma, seizures and depression – previous suicide attempt by setting herself on fire – on numerous medications. Found unresponsive in bed. Autopsy - Pulmonary edema and cardiomegaly (480 grams). COD – multiple drug intoxication.	Peripheral Blood MDPV – 18 Fentanyl – 8 Norfentanyl - < 1 Trazodone – 540 Gabapentin – 6800 Norvenlafaxine – 220 Tramadol - < 50 Diazepam/Nor - 301/281
11-6170	51/M/W	Severe depression since wife's death 6 months ago - Found inside motorcycle trailer with a mason jar having minimal red liquid residue. All med bottles inside house. Meds - Depakote, Wellbutrin, divalproex, buproprion, Pristiq, diazepam, glimepiride, hydrocodone, Nuvigil (r-modafinil). Autopsy showed emphysema and one coronary severely obstructed.	Femoral Blood; MDPV – 129 Bupropion/Metab – 24/216 Morphine – 40 Oxycodone - < 20 Diazepam/Nor – 303/229 Ethyl Glyc - ND Modafinil/Valproic Acid – not tested

Our confirmation method involves a liquid/liquid extraction with detection by LC/MS/MS. The extraction was developed from our current sympathomimetic procedure. At this writing we have several more cases that have screened positive and are awaiting confirmation, including data from an embalmed body.

According to local hospital ER staff and first responders, these users are often violent and out of control. Paranoid behavior and delusions are common. Similar to symptoms exhibited by PCP and/or LSD use. Because of this, there is great concern for the safety of these workers. Doctors report the psychological symptoms of bath salt use can last for days. Common methods of chemical submission are often useless making treatment a challenge. Our local hospital is up to a case a day. The hope is that now that some of the compounds are controlled either by Federal and/or State, use will drop off. With new compounds evolving regularly, the trend seems to indicate that manufacturers will simply move on to another compound or isomer that is not yet controlled. The Chemistry Section at MVRCL has already encountered pentylone, pyrovalerone and fluoromethcathinone.



CASE NOTES

*Section Editor, **Matthew Barnhill**, Ph.D., DABFT*

Send interesting "Case Notes" to Section Editor, Matthew Barnhill (mbarnhilljr@worldnet.att.net)

CASE NOTES #1: DROWNING?

*Submitted by the **Theresa Hippolyte**, M.S., **Samantha Tolliver**, Ph.D., **Wilmo Andollo,** M.S., and **Bruce Hyma**, M.D., Miami Dade Medical Examiner Dept.*

Introduction

Dichloromethane (methylene chloride) is a colorless, volatile, organic liquid that has a sweet smell. (1) It is used primarily as a solvent for commercial/ industrial purposes such as paint remover, degreaser, and aerosol propellant. (2) It has also been used to decaffeinate coffee and tea and sample preparation of hops and other flavorings. Due to methylene chloride's high volatility, acute inhalation toxicity is a risk. Methylene chloride is converted in the body to carbon monoxide which makes it even more dangerous. Some other potential hazards that can be encountered from acute exposure are optic neuropathy and hepatitis. (1, 2)

Dichloromethane is used to strip paint off the scuba tanks, to degrease the valve fittings on the scuba tanks, and to remove corrosion that can build up on the scuba tanks. However when using methylene chloride it is important to make sure that the air intake fittings are sealed to prevent contamination of the air in the scuba tank. The introduction of methylene chloride into the tank air is easily accomplished because of its high volatility. Also when filling the tanks it is imperative to make sure that the air quality surrounding the tank is free of contaminates especially when methylene chloride is present. Proper ventilation is necessary when using paint strippers/ degreasers that contain methylene chloride. (3)

Case History

Along with a small diving group, a 60 year old white female was scuba diving in the sea off River Bay, St. Lucy. Approximately 10-15 minutes into the dive, the victim decided to return to the surface at which time she indicated to fellow scuba divers that all was well via a signal. She was allowed to return to the surface alone. However she failed to return to the surface and was found in the water with her mask on, but her oxygen supply disconnected. The dive depth for this expedition was 60 feet.

The chart obtained from her dive computer that monitored her descent/ascent is displayed as Figure 1. From the chart, it is determined that the victim went to a depth of 40 feet before deciding to ascend. She had only ascended to approximately 25 feet when something occurred causing her to descend. Subsequently, the chart shows that the victim's final depth was around 90 feet at which time a flat line is noted on her monitor. It can be assumed that at this point in the graph that the victim was no longer alive. The coroner who performed the autopsy concluded that the victim died by drowning.

Postmortem Toxicology

Postmortem blood, liver, brain, and vitreous humor were submitted for toxicological analysis. The analysis included a blood EIA screen, Volatile screen by GC-FID, basic drug screen by GC-NPD, Opiate Quantitation by GC/MS/MS, and SMPE for Volatile Unknown by GC/MS. The toxicology results reported below are from the final toxicology report.

Ethanol GC-FID

Blood*	0.02%
Vitreous Humor*	Undetected

*unknown peaks detected

Basic Drug Screen by GC-NPD/ GC/MS Confirmation

Liver Homogenate

Chlorpheniramine
Dextrorphan
Diphenhydramine
Fluconazole

Opiate Quantitation by GC/MS/MS

Blood	Codeine, 0.006 mg/L

Carbon Monoxide by Co-Oximeter

Blood	Undetected

SPME for Volatile Unknown by GC/MS

Blood	Dichloromethane, Ethanol
Liver	Dichloromethane, Ethanol
Brain	Dichloromethane, Ethanol
Vitreous Humor	Dichloromethane

CASE NOTES #1: DROWNING (CONTINUED)

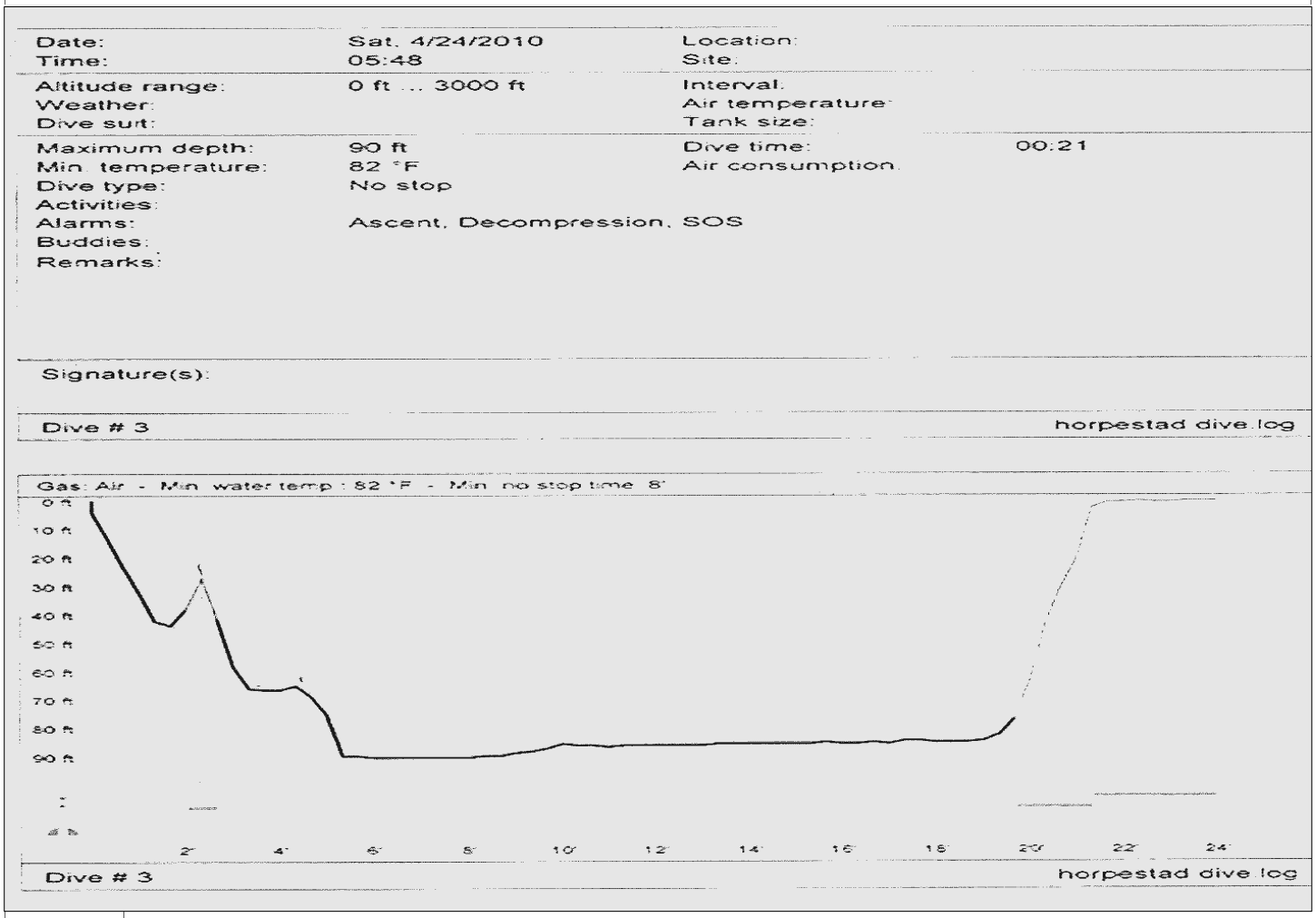


Figure 1

Discussion

Drugs found in the blood and liver homogenate by the Basic Drug Screen and the Opiate Quantitation methods were consistent with medication that was being taken by the decedent for a cold. Further analyses were conducted due to the unknown peaks detected by the Volatile Screen. The Volatile unknown method using SPME detected dichloromethane in the victim's blood, liver, brain, and vitreous humor. Since dichloromethane metabolizes into carbon monoxide in the body, the blood was tested for carbon monoxide. The presence of carbon monoxide in the blood was undetected.

Based upon the toxicology findings, acute inhalation by methylene chloride was a contributing factor in the decedent's death. The quantity of methylene chloride present in the victim's fluids and tissues was not able to be quantified. However considering Henry's law, it can be concluded that as the victim descended she absorbed more gas as the pressure increased. (4) In turn this made her more susceptible to acute inhalation via methylene chloride. Currently the toxicology laboratory is awaiting the scuba tank involved in the decedent's death, so only assumptions can be drawn as to origins of the methylene chloride involved in this fatal accident. Since materials used to maintain the scuba tanks contain dichloromethane, one conclusion that can be drawn is that the scuba tank's air supply was contaminated. Unfortunately, until the scuba tank can be obtained for testing no conclusive findings can be offered.

References

1. http://en.wikipedia.org/wiki/Dichloromethane
2. R.C. Baselt. *Disposition of Toxic Drugs and Chemicals in Man*, 8th Ed. Biomedical Publications, Foster City, CA, 2008.
3. http://www.scubaboard.com/forums/archive/index.php/t-111965.html
3. http://www.thescubaguide.com/certification/henrys-law.aspx

CASE NOTES #2: FATALITY DUE TO MDPV

*Submitted by **Nicholas Fillinger**, BS and **Michele Glinn**, PhD, DABFT, Michigan State Police Toxicology Unit*

Introduction

Methylenedioxypyrovalerone (MDPV) is a recently popular psychoactive stimulant with effects reportedly similar to those of the amphetamine derivatives. It is currently being marketed as "bath salts" and can be readily purchased from head shops, convenience stores, gas stations and over the internet. There are currently no controlled studies of its pharmacology or metabolism in humans. However, descriptions of emergency room visits are beginning to appear and subjective reports of user experiences can be found on the Internet.

Between November 13, 2010 and March 31, 2011, 35 patients who had ingested, inhaled or injected "bath salts" were taken to the Marquette County, MI emergency rooms for treatment related to drug toxicity (1). The most common symptoms of toxicity were agitation (66%), tachycardia (63%), delusions/hallucinations (40%) and seizures/tremors (29%). Several patients were violent, 17 were hospitalized and one was dead on arrival. Of these 17 patients, 16 were positive for other drugs (marihuana and opiates being the most common). Three of the 35 later visited the hospital on a second occasion for toxicity relating to another instance of "bath salt" ingestion. Overall, 91% had neurologic findings, 77% had cardiovascular and 49% psychological symptoms.

Here we report a fatality where the only drug findings of significance were MDPV and diphenhydramine, and where the symptoms described are consistent with acute MDPV toxicity, suggesting that the cause of death was accidental MDPV overdose.

Case History

A 28 year old, 135-lb female from Gladstone, Michigan, with a history of drug abuse, exhibited bizarre behavior that prompted her mother to call for emergency medical services. The mother reported that her daughter had awakened between 6:00 and 6:30 am saying she had a nightmare. She then began responding to auditory hallucinations, following which she appeared to undergo seizures. By the time emergency services arrived the subject was having difficulty breathing, her pulse was weak, she couldn't talk and she was having difficulty moving her arms and legs. The mother indicated to the emergency responders that her daughter had taken an unknown amount of a prescription medication and that she was also taking diphenhydramine as a sleep aid. She was transported to the hospital, but died later that afternoon.

Without performing an autopsy, the medical examiner attributed the death to chronic liver failure. However, the investigating law enforcement agency suspected an overdose due to methamphetamine or other stimulants and requested that a blood sample be collected and sent for drug analysis. A 2 ml sample taken from the antecubital vein was submitted to the Michigan State Police Toxicology Unit in Lansing.

Postmortem Toxicology

Results of an initial alcohol analysis were negative. The Unit's drug analytical protocol calls for an immunoassay screen by Randox Evidence biochip assay followed by confirmation by gas chromatography/mass spectrometry (GC/MS); however, the low sample volume received precluded performance of the immunoassay screen. The sample was therefore tested for the presence of acid, neutral and basic drugs using solid phase extraction followed by GC/MS according to standard procedures.

The only drugs detected were diphenhydramine and methylenedioxypyrovalerone (MDPV). Neither drug was quantified. Identification of MDPV was made by comparison to a standard database spectrum (Figure 1). No other MDPV cases were seen in the analytical run.

Discussion

The medical examiner initially characterized this case as death due to chronic liver failure. No autopsy was done to support this diagnosis and it appeared to be based on the subject's past history. However, her acute symptoms of auditory hallucinations and seizures appeared to be more characteristic of stimulant toxicity than liver failure. They are also very similar to the symptoms reported by individuals admitted to Marquette County emergency rooms with complications from MDPV ingestion, 40% of whom reported hallucinations and 29% seizures/ tremors. Although no drug level was obtained in this case, the history and epidemiology suggests it is extremely likely that the death was acute ingestion of MDPV, possibly with contributing toxicity from diphenhydramine.

Diphenhydramine is sold as an over-the-counter sleep aid in formulations such as Sominex. It is considered to be a relatively nontoxic drug; however intoxication due to overdosage is possible, most commonly in infants. Symptoms include muscle tremor, anxiety, disorientation, hallucinations, loss of consciousness, seizures, fever, respiratory arrest and cardiac arrhythmia (2). The subject in this case was reportedly taking diphenhydramine as a sleep aid. It is unknown whether she did so chronically, but if she was a long-term stimulant user, as the police report indicates, it is possible she was also in the habit of using depressants to combat insomnia associated with their use.

CASE NOTES #2: FATALITY DUE TO MDPV (CONTINUED)

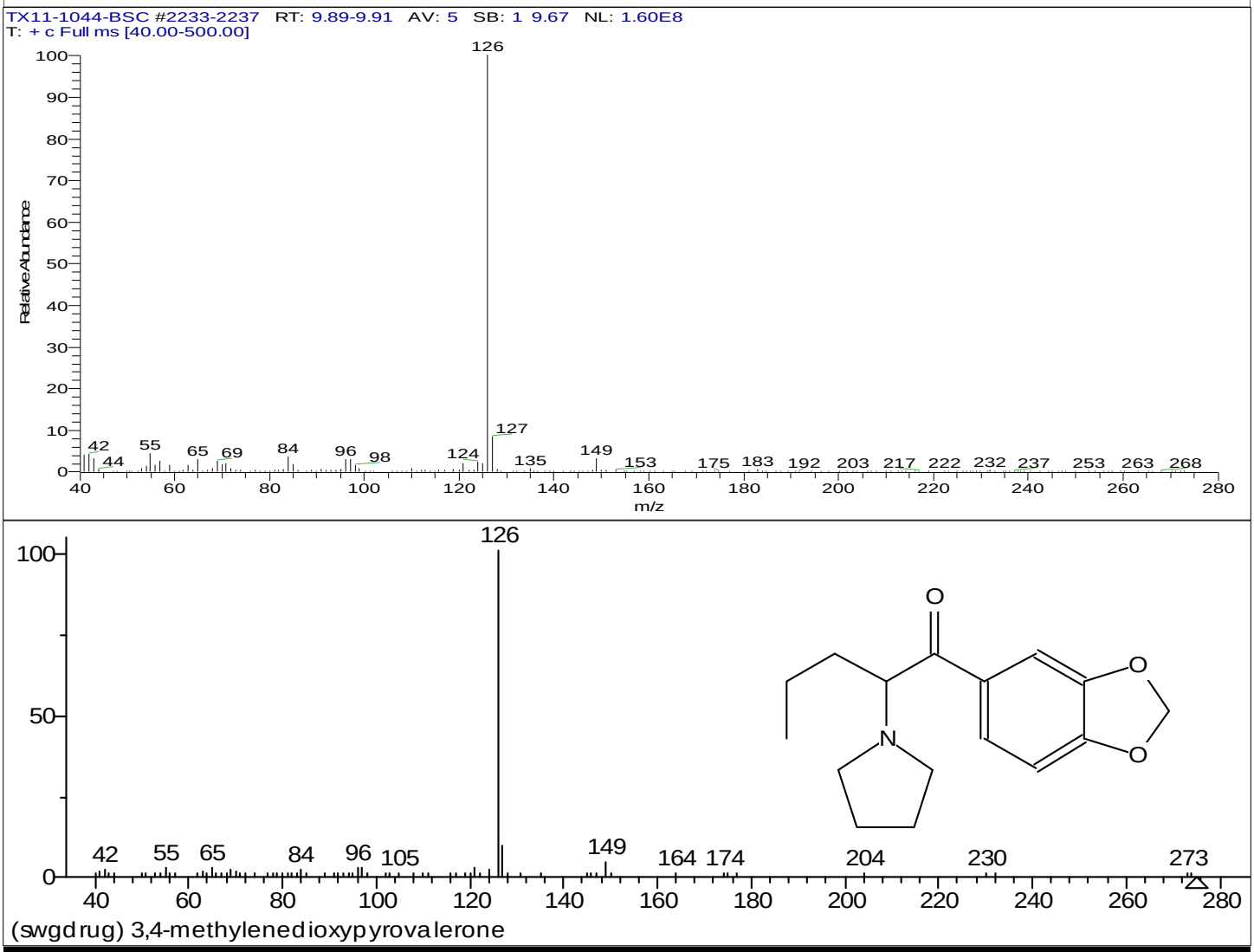


Figure 1. MDPV spectra. Top: spectrum from subject sample. Bottom: Reference spectrum from

MDPV was easily identified by GC/MS. Subsequent analysis of a commercial standard showed that MDPV does not cross-react with the amphetamine, methamphetamine or MDMA panels of the Randox Evidence biochip assay. If an immunoassay screen had been performed in this case, it would have shown nothing of interest. The case history information, and the suspicions of law enforcement that this was not a case of simple liver failure, were vital in deciding to pursue it further.

Many individuals have reported that MDPV produces very strong stimulant effects, even more powerful than cocaine or methylphenidate. They feel energized, attentive, creative and able to recall things readily from memory. Toxic effects reported include paralysis of extremities, loss of breath control, muscle rigidity, seizures, tremors, chest pain, visual hallucinations, feeling "zombie-like" (3). These effects are similar to those of the subject in this case. Although this drug produces some of the desirable effects of other designer stimulants, and its relative safety is difficult to determine at this time, it is becoming clear that at toxic levels, or in combination with other neurologically active compounds, symptoms can be life-threatening. The potential for MDPV users to suffer lethal overdose should not be taken lightly.

References

1. CDC "Emergency Department Visits After Use of a Drug Sold as "Bath Salts"---Michigan, November 13, 2010—March 31, 2011. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6019a6.htm
2. Baselt, RC. Diphenhydramine. In: Baselt RC, ed Disposition of Toxic Drugs and Chemicals in Man. 8th ed. Biomedical Publications, Foster City, CA, 2008; 489-492
3. https://www.erowid.org

CASE NOTES #3:
ZOLPIDEM AND FLUOXETINE RESIDUAL EFFECTS IN A DUID CASE

*Submitted by **George F. Jackson**, Ph.D., **Adela Enache**, M.S., Atlantic Diagnostics Laboratories, Bensalem, PA*

Zolpidem is an imidazopyridine derivative used in the treatment of insomnia and sleep apnea. Fluoxetine is a SSRI used for the treatment of depression. Both drugs list parasomnia (sleep-walking, sleep-driving, sleep-eating, sleep-talking, memory loss with amnesia and sex while sleeping) as one of their adverse effects. This case involves both zolpidem and fluoxetine in a sleep-driving DUID case.

ADL had a recent case involving a 52-year-old male with a prescription history of Ambien and Prozac. It was his normal routine to take an Ambien pill before bed (approximately 2200 hrs.). In the morning, (approximately 0900 hrs.), he would take the Prozac medication. The individual had been on this medication routine for three (3) months with no reported side effects, (able to safely drive to work, no work related impairment issues). He had complied with all of his physician's instruction concerning medications.

On the incident date, the individual was unable to sleep and took the Ambien medication at approximately 0200hrs in the morning. Upon waking at 0600hrs, he took the Prozac pill. He left for work at approximately 0645hrs. His vehicle traveled 600 feet before crossing the centerline and sideswiped an oncoming vehicle. The vehicle continued to travel in the wrong lane before leaving the roadway. Vehicle failed to stop at the signal light and rear ending another vehicle (low speed). No injuries were reported for this incident. The driver only recalls starting his vehicle.

Blood specimens were collected 30 minutes after the incident and submitted to the toxicology laboratory. The specimens were subject to analysis by headspace gas chromatography for volatiles, immunoassay for common drugs of abuse and LC/MS/MS screen for therapeutic and illicit drugs. Positive findings were identified and quantitated by LC/MS/MS. Analytical findings included Zolpidem 84ng/mL and Fluoxetine 186 ng/mL. No alcohol or other drugs were detected in the submitted specimens.

This individual had a number of risk factors that may have predisposed him to sleep-driving: sleep deprivation, antidepressant in medication regime and noncompliance in dosing schedule.

Judicial handling of this case is pending.

TECHNICAL NOTES:
THE USE OF THE AUTOMATED MASS SPECTRAL DECONVOLUTION AND IDENTIFICATION SYSTEM (AMDIS) IN THE ANALYSIS OF POSTMORTEM TOXICOLOGY SPECIMENS

*Submitted by **Douglas Caldwell**, **Russell Lewis**, Ph.D., **Bruce Quimby**, Ph.D., and **Dennis Canfield**, Ph.D., Bioaeronautical Sciences Research Laboratory, FAA, Oklahoma City, OK*

Forensic toxicology laboratories that deal in the analysis of postmortem specimens often receive samples that are putrefied and/or contaminated. The result is the presence of unwanted background interference. This makes it difficult to identify compounds of interest in a specimen. One possible solution to this problem is the use of deconvolution software. These programs, developed in the early 1970's (1) and improved upon in the 1990s (2), were originally developed for use in the identification of chemical warfare agents. This technology has been available but not routinely used in the field of toxicology. The National Institute of Standards and Technology (NIST) developed a deconvolution software package in the early 1990s called the Automated Mass Spectral Deconvolution and Identification System or AMDIS. This program proved very effective in the identification of chemical warfare agents. The utilization of this tool in the field of toxicology is not common, as exemplified by only a few published articles to date. Maurer et. al. (3) did demonstrate the utility of AMDIS for the analysis of urine samples.

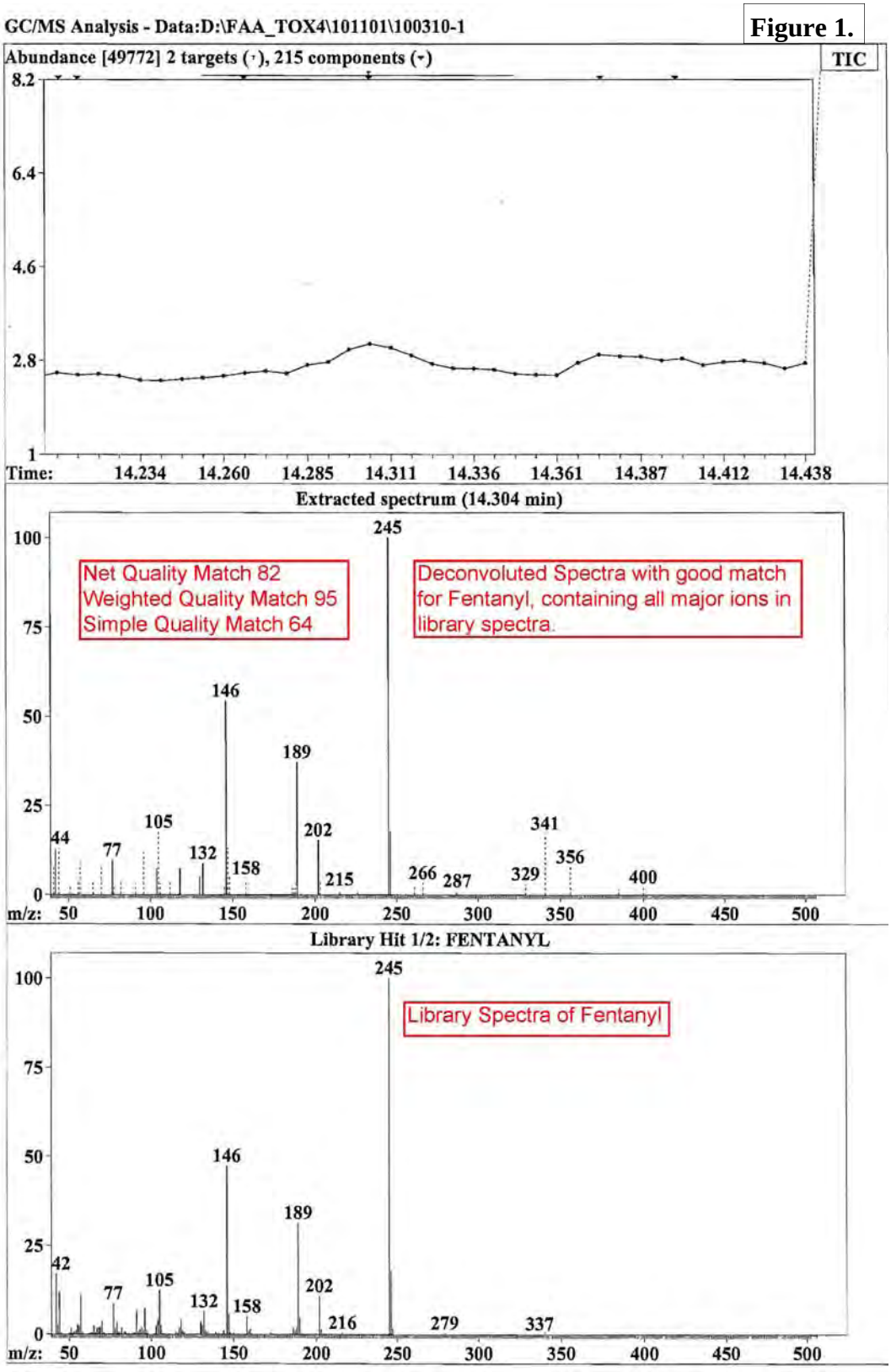
The FAA's Bioaeronautical Sciences Research Laboratory, located in Oklahoma City, Oklahoma, recently incorporated the AMDIS software, available from NIST and GC/MS manufacturers, into their

TECHNICAL NOTES (CONTINUED)

GC/MS screening procedure to assist in the identification of drugs/chemicals present in postmortem specimens. A recent case where the deconvolution program, AMDIS, was used gave a clear identification (figure 1) of fentanyl on a small peak at 14.307 minutes (Figure 2). Whereas the standard search protocol used by the GC/MS for spectral identification and the research chemist performing the analysis were unable to identify the drug from the background interference during the original analysis (figure 3). The specimen was subsequently sent for confirmation and quantitation using GC/MS SIM after AMDIS identified fentanyl. The specimen was found to have 14 ng/mL of fentanyl in serum. Fentanyl has a therapeutic range of 2 to 20 ng/mL in plasma. These normal low levels combined with even a small level of background interference makes routine detection with typical GC/MS screening tools difficult. This positive specimen would have been missed at therapeutic concentrations without the aid of the deconvolution program.

The software is easy to set-up and use. The evaluation of each data file only takes a few seconds and does not add a great deal of time to the chemist's normal work load. The AAFS library of 2500 spectra was converted to AMDIS format and used here. The library can be edited to suit the unique needs of any toxicology laboratory. This software can be run automatically with the correct configuration of the instrument. The CAMI laboratory is excited about the benefits this new tool provides and looks forward to its continued use.

Figure 1.

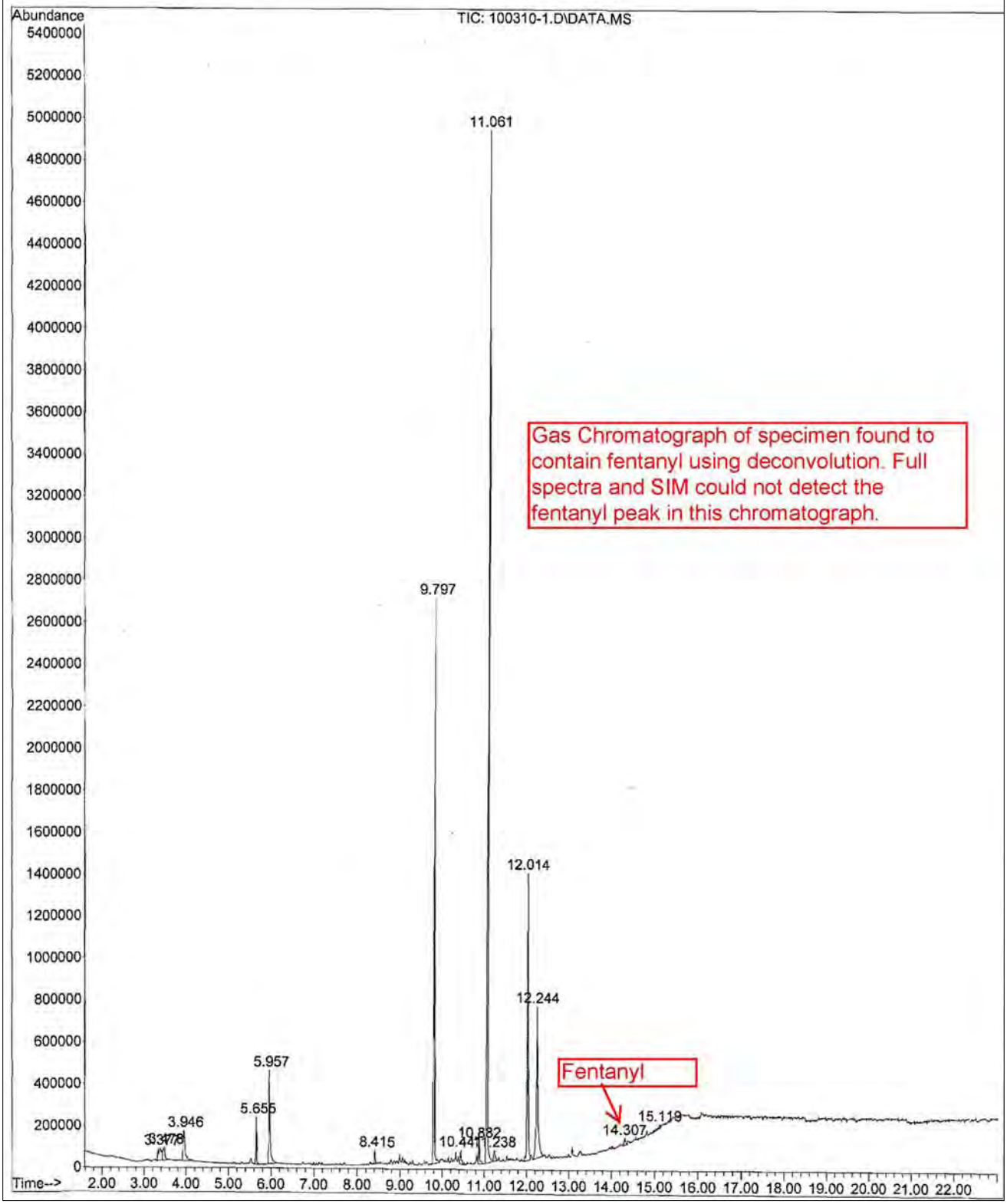


TECHNICAL NOTES (CONTINUED)

Figure 2.

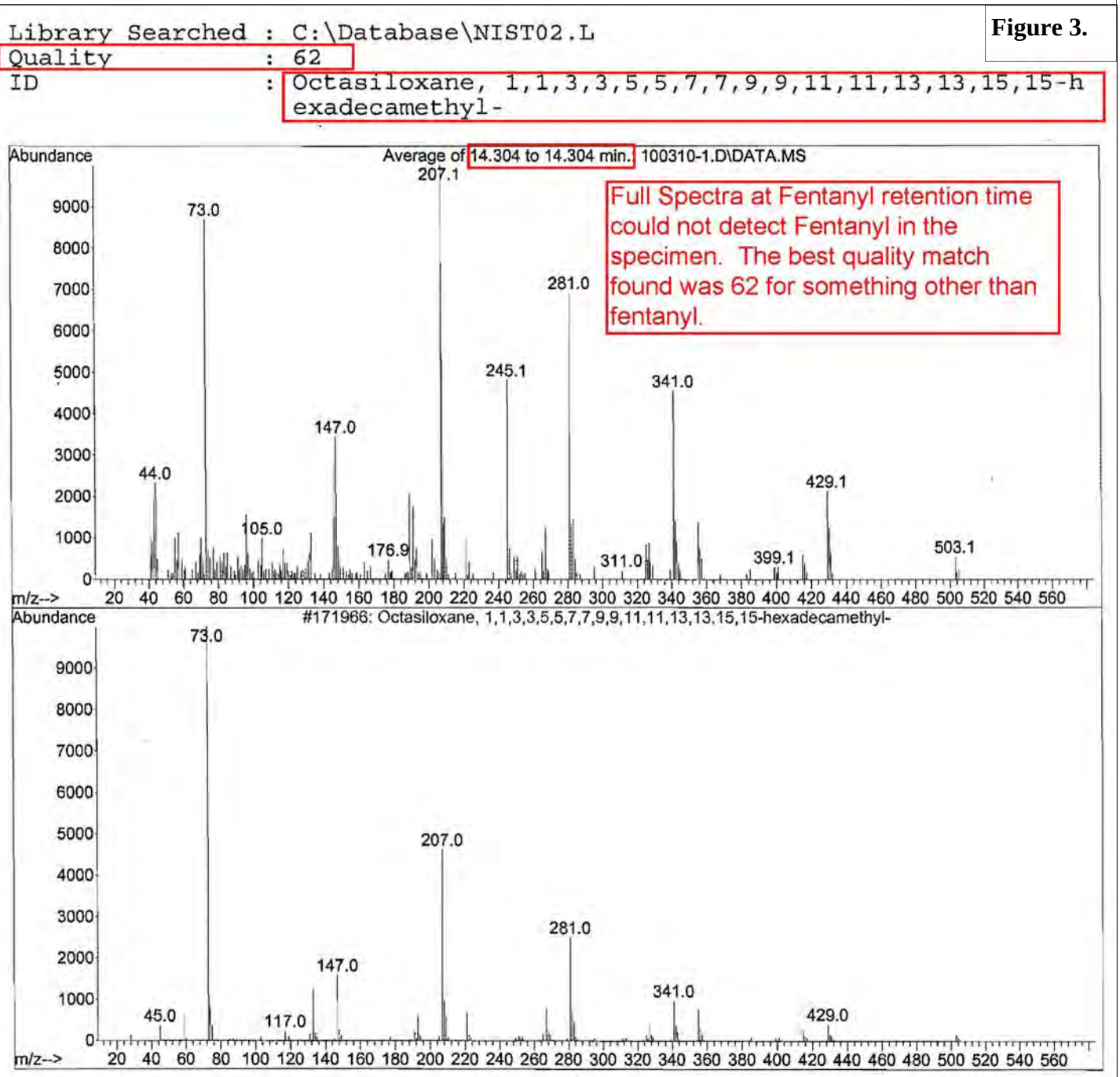
File: D:\FAA_Tox4\101101\100310-1.D

Date Acquired: 1 Nov 2010 1:13 pm
Method File: MSSCREEN.M
Sample Name: 10031010-1, Base, 3mL Serum
Misc Info:
Vial Number: 3



TECHNICAL NOTES (CONTINUED)

Figure 3.



References

1. Biller, J. W.; and Biemann, K.: Reconstructed Mass Spectra. A Novel Approach for the Utilization of Gas Chromatographic Data. *Anal. Lett., vol. 7,* 1974, pp. 515–528.
2. Colby, B. N.: Spectral Deconvolution of Overlapping GC/MS Components. *J. Am. Soc. Mass Spectrom., vol. 3(5),* 1992, pp. 558–562.
3. Meyer, M.R.; Peters, F. T.; and Maurer, H. H.; Automated Mass Spectral Deconvolution and Identification System for GC-MS Screening for Drugs, Poisons, and Metabolites in Urine. *Clinical Chemistry, vol. 56,* 2010, pp.575-584.

TECHNICAL NOTES: THE CERTAINTY OF MEASUREMENT UNCERTAINTY

Submitted by Marc A. LeBeau, Ph.D., DABFT, FBI Laboratory, Chem Unit, Quantico, VA

Brace yourself. I am about to say a "bad word". If there are any children around, please ask them to leave the room, as I don't want to scar them for life with the word I am about to blurt out!

Okay…brace yourself, because here it comes ….. UNCERTAINTY!!! Shocking, isn't it?

Over the past few years, we have witnessed an increased interest in measurement uncertainty in forensic toxicology. In particular, a number of state courts have ruled that the uncertainty of our blood alcohol measurements must be reported in DWI cases. The commotion and fear this has created is among the most I have seen on any topic in my 20-plus years in the field.

Some blame the need to know the "uncertainty" of our analytical measurements on the move towards ISO-based accreditation. The reality is that the ISO-based accreditation bodies have only made us more aware of measurement uncertainty and helped bring us more in line with other areas of analytical chemistry. In fact the concept of uncertainty in a legal setting can be traced back to the 12th century in the Trial of the Pyx. This is the procedure of ensuring that newly minted coins in the United Kingdom meet the required standards. Coins are randomly taken from the regular production of the Royal Mint, and placed aside in a "Pyx" - a boxwood chest - for presentation to the jury. Even in the earliest agreements between the Royal Mint and the King, the contract for the coinage stated that the trial would allow a tolerance in the weight of a single coin and in the aggregate weight of the entire contents of the Pyx to account for the uncertainty in accurately weighing the coins. So, you see, the concept of uncertainty in our measurements is really not new.

What Exactly is Meant by "Measurement Uncertainty"?

Measurement uncertainty is a non-negative parameter that characterizes the range of values attributed to the measurement. It is based on probability and reflects our incomplete knowledge about the true quantity. Of course, no measurement is exact, so all measurements have some uncertainty associated with them.

But when we hear the term "uncertainty", it suggests doubt or error. As scientists whose results may end up in a court of law, we tend to shy away from such a term; fearing how it may be misused. In fact, the use of the term is unfortunate because the true intent of the process of estimating uncertainty is to express the level of "certainty" or confidence in a given measurement.

Why Should we Embrace Uncertainty?

Yes, I did say "embrace" uncertainty. When uncertainty calculations are correctly done, they allow for one to say, with a given confidence level, that the true value for the item has a high probability of falling somewhere within the calculated uncertainty range. The range shows that we understand the variables that impact our measurement and that we are acknowledging this variation to those that are reviewing our results.

Further, uncertainty calculations allow for different measurement results (e.g. by different techniques within the same or different laboratories) to be compared and the reliability of a result to be assessed. Most importantly, measurement uncertainty allows one to assess the confidence that can be placed on a result when that result is to be used in decision making.

A practical example can help demonstrate my point. Let's say that two different laboratories performed a quantitative analysis for ethanol in the same blood sample. Laboratory A reported that the blood ethanol concentration was 0.075 g/dL, while Laboratory B reported a result of 0.085 g/dL. To the average person (i.e. judge, jury, neighbor, lawyer) reviewing these results, they will likely assume that one result is correct and the other is incorrect.

Now let's say that both laboratories report results and include the range of possible values at a given confidence level – the expression of uncertainty. Laboratory A reports 0.075 ± 0.003 g/dL (95% confidence), while Laboratory B reports 0.085 ± 0.009 g/dL (95% confidence). Now it becomes much easier for the results to be compared and evaluated. No wonder the courts want to see the uncertainty associated with our measurements!

Approaches to Estimating Uncertainty . . .

When it comes to estimating uncertainty, the first thing to realize is that there are a number of different approaches that can be used. The second thing to realize is that some approaches are better than others. For example, some laboratories have used professional judgment for their uncertainty estimates. This suggests that you know what the uncertainties of your measurements are without doing any calculations. A laboratory may declare that a method's measurement uncertainty is ±20% simply because that is the *acceptance criteria* for the positive control sample(s). The reality is that this approach is too simple for most applications and may lead to a serious over- or underestimation of the uncertainty.

Another approach is to simply rely on the procedure's *historical positive control data* to estimate uncertainty. This approach is much better than the first option because many times the process control data does provide a good way to calculate the reproducibility a method AND is commonly the major source of uncertainty in an analytical method. Unfortunately, relying solely on QC data to estimate uncertainty may lead to an underestimation since it ignores other contributions to the method's uncertainty.

The most widely-accepted approach is the GUM method – or *Guideline to the Expression of Uncertainty in Measurement*. The GUM is a document created by the Joint Committee for Guides in Metrology. It establishes general rules for evaluating and expressing uncertainty in measurements. It also provides a fairly simple, straightforward process that is widely used and internationally respected. By accounting for both the systematic and random effects associated with measurements, the GUM approach better characterizes the quality of a given measurement.

The GUM approach is flexible enough to be worked out on a sheet of paper with a calculator or with a variety of software programs available online. It also leads to a better understanding of the analytical method and helps identify the major sources of uncertainty in a method.

There are a number of useful resources available to help us with our uncertainty calculations including guidance documents, journal articles, workshops, and webinars on the topic. You are encouraged to consult multiple sources to improve your understanding of this topic.

Future of Measurement Uncertainty . . .

I am certain about one thing related to measurement uncertainty - it can no longer be ignored by forensic toxicology laboratories. There is really no sense in digging in our heels for a tug-of-war on the topic. Ultimately the courts are going to demand that we have an idea of how close we believe our measurements are to the "true value" with proof to back up our belief. The good news is that once you estimate the uncertainty for a method, it really should not change unless you make modifications to critical sources of uncertainty in your analytical method.

One final word of caution that is very important to remember. It is human nature to treat these calculations as a form of a contest – to see who can have the lowest uncertainty in their measurements. That is probably the worst thing that can be done. Remember that uncertainty is an estimate, but it should be a fair estimate. Therefore, if faced with two options for choosing the uncertainty associated with a particular step in a method, you should generally choose the larger of the two. At the end of your calculations, you should round your expanded uncertainty up for your final estimation. The idea is to make sure that the reported uncertainty captures the true value within the confidence level stated. If laboratories treat uncertainty as a contest to see who is best, they are likely to underestimate the true uncertainty. Remember, there is no gold medal given out for the lowest uncertainty. On the other hand, once you have fairly estimated a method's uncertainty, the GUM approach provides an easy way to identify where to focus for method improvement if a lower uncertainty is required.

In the end, "uncertainty" is really not a bad word. It helps us better understand our analytical methods, be a bit more humble in how we report concentrations, and, when done correctly, is a quantitative way for us to express our confidence that the true value of our measurements falls within the range of values stated in our laboratory reports.

TECHNICAL NOTES: TOXICOLOGY - FROM THE LITERATURE

*Submitted by **Barry Levine**, Ph.D., DABFT, OCME, State of Maryland, Baltimore, MD*

Am J Forensic Med Path 2011 Vol 32 June

Letsky et al reported a fatality with a femoral blood methadone concentration of 5.7 mg/L and an EDDP concentration of 2.1 mg/L. A review of the medical records indicated that the decedent had been on methadone for at least 3 years and the dosage at the time of death was 760 mg per day. At that dosage, she was alert during her office visits to the prescribing doctor. Since she had pneumonia at autopsy, the medical examiner of the case ruled that this was the competent cause of death. The authors warned that reliance solely on drug concentrations to determine the potential role of the drugs in a death is to be avoided.

J Analyt Tox 2011 Vol 35 June

Reisfield et al followed up an earlier study on potential alternative explanations for the presence of ethyl glucuronide (EtG) and ethyl sulfate (EtS) other than the consumption of alcoholic beverages. Eighteen people gargled with 26.9% alcohol antiseptic 4 times for 3.25 days. Multiple urine specimens were collected over the study period and tested for ethanol EtG and EtS. No ethanol (cutoff 20 mg/dL) was found in any specimen. One specimen contained detectable EtG above the LOQ of 100 ng/mL. The maximum EtG and EtS concentrations found were 173 and 104 ng/mL, respectively, well below the commonly used cutoff of 500 ng/mL as an indicator of ethanol consumption.

Leere Oiestad et al described a blood drug screening procedure using ultra-performance LC-MS/MS. A single liquid-liquid extraction step was performed prior to chromatographic separation. A total of 28 drugs, including opioids, benzodiazepines, THC, misc. CNS depressants and amphetamines were included with a cycle run time of 9 minutes. Analytical figures of merit were included for the 28 compounds.

Canadian Society of Forensic Science J 2011 Vol 44 March

McElrea et al examined the effects of truncating breath alcohol concentrations (BrAC) to 2 decimal places on pharmacokinetic parameters such as peak BrAC, plateau duration, and time to peak BrAC after drinking cessation. Data were collected from 14 drinking subjects who submitted a total of 297 duplicate breath samples. Reduced peak times, decreased number of subjects that had rising alcohol concentrations following the end of drinking and increased lengths of the plateau phase were observed when the third number after the decimal point was dropped. The authors cautioned that this truncation must be considered when making estimates of an alcohol concentration at an earlier time.

J Analyt Tox 2011 Vol 35 July

Apple wrote a letter to the Editor discussing postmortem redistribution. He pointed out that besides the release from tissues into the heart blood, postmortem redistribution can occur into peripheral blood as well. This has been demonstrated for drugs in multiple classes, including antidepressants, narcotic analgesics, cardioactive drugs and neuroleptics. He proposed the use of liver concentrations instead of blood concentrations for proper interpretation of PM results.

TECHNICAL NOTES (CONTINUED)

J Forensic Sci 2011 Vol 56 July

Palmiere et al reported an unusual fatality from methadone inhalation. The postmortem blood methadone concentration was 0.29 mg/L and the EDDP concentration was less than 0.05 mg/L. A blood alcohol concentration of 0.10 g/dL was also detected. Further investigation revealed that the methadone was stolen by a pharmacy technician and sold to abusers as cocaine.

Forensic Sci Int 2011 Vol 210 July

Kriikku et al reported on the presence of methylenedioxypyrovalerone (MDPV), a "bath salt," in drivers in Finland. MDPV was found in 259 cases over a one year period. In 80% of these cases, amphetamine was detected and benzodiazepines were present in 67% of the cases. Cases positive for MDPV represented 5.7% of all confirmed DUID cases in Finland over the period. Blood concentrations were provided in 25 cases in a one month period; most concentrations were 0.5 mg/L or lower. However, one case had a blood MDPV concentration of 8.4 mg/L.

Blanc et al examined the variation in vitreous humor clinical chemistry results following different pretreatment methods. The 4 methods were heat, centrifugation, hyaluronidase digestion and ultrasound. The analytes studied were electrolytes, urea nitrogen, creatinine, glucose, calcium and lactate. In general, heat and enzyme treatment produced greater variations than ultrasound and centrifugation. The authors recommended mixing and centrifugation as the best way to treat vitreous humor specimens.

Lebeau et al evaluated two common assumptions associated with the interpretation of drug concentrations in hair by segmental analysis: the average hair growth is 1 cm per month and the hair is collected directly from the scalp. To evaluate the first assumption, a review of the scientific literature was performed. Although the average growth per month was 1.06 cm/month, there was individual variation in growth rates. The standard deviation was 0.06 cm per month. To evaluate the second assumption, 14 volunteers collected hair samples from long haired and short haired dolls; both inexperienced and experienced collectors were included. The shortest length of hair remaining was 0.4 cm and the longest length of hair remaining was 1.4 cm. The average length remaining was 0.9 ± 0.1 cm for inexperienced collectors and 0.7 ± 0.1 for experienced collectors. The authors commented that this remaining hair can have a significant influence on the timing of drug use when performing segmental hair analysis. They recommend waiting at least 8 weeks after the alleged event to ensure that the sample includes the time of the alleged event.

Science & Justice 2011 Vol 51 March

Sadler and Fox looked at intra-individual and inter-individual variations in alcohol kinetics in 16 students (8 male and 8 female) under 3 different conditions: after fasting, after a snack and after a light meal. Mathematically predicted Widmark factors based on each subject's height and weight were 0.64 (0.60-0.67) for women and 0.72 (0.67-0.76) for men. Ethanol bioavailablity was almost complete after fasting and snacking, but decreased to about two-thirds with the small meal. Similar results were obtained with men and women. They also found slightly lower elimination rates after food intake.

CONTINUING EVOLUTION OF THE NLCP

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

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

The Substance Abuse and Mental Health Services Administration (SAMHSA) Center for Substance Abuse Prevention (CSAP), with support provided by the staff of the Division of Workplace Programs (DWP), hosted the National Laboratory Certification Program (NLCP) Workshop for Inspectors and Laboratory Directors on September 25, prior to the 2011 Society of Forensic Toxicologists (SOFT) annual meeting. This was the 21st NLCP workshop held in conjunction with SOFT's annual meeting, and it took place almost one year after the October 1, 2010 implementation of revisions to the Mandatory Guidelines for Federal Workplace Drug Testing Programs. The Mandatory Guidelines establish the scientific and technical standards for federal workplace drug testing programs, as well as the NLCP accreditation standards for laboratories testing federally regulated workplace specimens. The October 2010 revisions are the fourth since the Mandatory Guidelines were originally published in 1988 and are the result of extensive work to ensure that the program remains the "gold standard" for forensic workplace drug testing laboratories.

The strength of the federal program is due, in part, to the contributions from leaders in the field who shared their knowledge, experiences, and insight for policy guidance and direction over many years. Invaluable information has also been provided by the certified laboratories, NLCP inspectors, members of SAMHSA's CSAP Drug Testing Advisory Board (DTAB), Medical Review Officers, federal partners, RTI International's Center for Forensic Sciences (the contractor to the Federal Government), and many others. This input has formed the basis for the proposed revisions to the Mandatory Guidelines, the accomplishments outlined below, and the future direction of the program.

The 2011 NLCP workshop included presentations on program activities and accomplishments over the past year. Among the topics were:

- Improved Communications
- Special Studies
- Information on Additional Drug Testing
- NLCP Continuing Education and Training
- NLCP Inspections and Performance Testing
- Changes to the Current Fee Schedule
- MRO Entity Guidance and FAQs
- Alternative Matrices in the Mandatory Guidelines
- Drug Testing Advisory Board Recommendations
- Electronic Federal Custody and Control Forms
- Continued Evolution of Forensic Technologies and Testing

One of SAMHSA's goals for the NLCP has been to increase and improve communication and information exchange with our federal partners, Federal Agencies' Drug Program Coordinators, DTAB members, MRO certification and training entities, the Drug and Alcohol Testing Industry Association (DATIA), the Substance Abuse Program Administrators Association (SAPAA), laboratory personnel, and other drug testing service providers. To further this goal, the NLCP initiated a newsletter called *Drug Testing Matters*, which focuses on important information for those involved or interested in workplace drug testing. *Drug Testing Matters* presents current data collected from certified laboratories to answer relevant questions and concerns regarding drug testing; information on drugs of interest, including future threats from illicit and prescription drugs; and other topics of concern for the drug testing community. The NLCP has also introduced web-based presentations that are available to the public, as well as web-based continuing education and training for inspectors and laboratory personnel on subjects such as specimen validity testing, immunoassay, sample preparation, chromatography, and mass spectrometry.

SAMHSA continues to gather important information from the laboratories certified under the NLCP. Data gathered in 2011 were used to assess the prevalence of the synthetic cannabinoids (cannabimimetics, Spice) and synthetic cathinones (bath salts) and to determine the testing capabilities of the certified laboratories for these compounds. The summarized information was provided to all certified laboratories. To meet federal agency workplace drug testing needs, SAMHSA now maintains a list of those certified laboratories that can test for additional Schedule I or II drugs or specific adulterants upon federal agency request, in accordance with the Mandatory Guidelines. Overall, the information has provided SAMHSA and our federal partners a better understanding of the current drug and adulterant testing menus of the certified laboratories.

The special studies conducted after the October 1, 2010 implementation date were designed to answer questions derived from donor specimen data collected under the revised Mandatory Guidelines. One such question concerned specimens positive for 6-acetylmorphine (6-AM) but with morphine concentrations below the 2000 ng/mL cutoff. SAMHSA and the Department of

CONTINUING EVOLUTION OF THE NLCP (CONTINUED)

Transportation (DOT) coordinated a NLCP study involving the reanalysis of these donor specimens; Cynthia Lewallen of RTI International presented the results of this study in a poster presentation at the 2011 SOFT conference. The presence of 6-AM was reconfirmed in all specimens when they were prepared and analyzed under mild conditions, leading to the conclusion that the observed 6-AM was not the result of an analytical artifact. Another study involved the re-evaluation of the current guidance for interpreting d- and l-methamphetamine enantiomer results, in light of the lower cutoffs now used for amphetamines. The current recommendation that 20% or more d-isomer indicates illicit drug use was based on laboratory testing capabilities in the 1980s. The 2011 two-part study included an evaluation of the methamphetamine enantiomer composition in currently available over-the-counter (OTC) nasal inhalers and a special proficiency testing set to assess current certified laboratory testing capabilities. Based on this study, the presence of d-methamphetamine at or above 10% may indicate a source other than OTC nasal inhalers. Other ongoing studies include an assessment of the incidence of synthetic opioids in donor specimens and the cross-reactivity of current opiate immunoassay reagents for synthetic opioids (e.g., oxycodone, hydrocodone, oxymorphone, and hydromorphone).

Over the past year, SAMHSA has continued to pursue the use of alternate specimen matrices and monitored the need to test additional analytes in federal workplace programs. Research into oral fluid as a potential, alternate drug testing specimen included establishment of SAMHSA working groups led by subject matter experts, special NLCP studies to assess oral fluid specimen validity testing, and the continuation of the NLCP Oral Fluid Pilot Performance Testing Program. Additionally, in the June 11, 2011 Federal Register, SAMSHA published a request for information from the public on five topic areas specifically related to the oral fluid specimen, including analytes and cutoffs, specimen validity, collection devices, collection processes, and available testing technologies. The information obtained through these various methods led to the following recommendations made to the SAMHSA Administrator by the DTAB in July 2011: 1. Based on the review of the science, DTAB recommends that SAMHSA include oral fluid as an alternative specimen and 2. DTAB recommends the inclusion of additional Schedule II prescription medication (e.g., oxycodone, oxymorphone, hydrocodone, and hydromorphone) in the Mandatory Guidelines for Federal Workplace Drug Testing Programs.

The last topic is our Interagency Agreement (IAA) with the White House Office of National Drug Control Policy (ONDCP). The purpose of the interagency agreement is to provide the overarching technical and administrative framework to determine the validity of oral fluid as an alternate matrix by identifying, piloting, and implementing forensic standards and ongoing quality assurance for drugs of abuse testing in oral fluids. The product will be a federal consensus statement regarding the validity of oral fluid testing, and if approved, the best practices for collection, testing, and interpretation of oral fluid test results for laboratory-based testing. The utility of these activities will benefit ONDCP's *Strategy* for raising public awareness for drugged driving in national non-governmental organizations, local law enforcement, courts, and impaired driving enforcement programs by improving testing methods for identifying impaired drivers.

Our ongoing NLCP efforts will continue to ensure the full reliability and accuracy of drug test results for federally regulated specimens. DWP staff are working hard and looking forward to reporting our progress in the upcoming months.

A special thanks to those who participated in the 2011 NLCP Workshop and RTI International's Center for Forensic Science.

Resources:

1. The DWP website is located at http://workplace.samhsa.gov**.** Posted on the website are the current Mandatory Guidelines; resources for employers, specimen collectors, laboratories, and Medical Review Officers; and information on the federal custody and control form, the Drug Testing Advisory Board, and the Drug-Free Workplace Programs.
2. To receive the NLCP newsletter, *Drug Testing Matters*, please submit an email request to NLCP@rti.org.
3. NLCP training courses and other continuing education courses for forensic scientists are available from RTI International at https://www.forensiced.org.

ANNUAL MEMBERSHIP DUES NOTICES WILL BE MAILED IN JANUARY

$60 FULL/ASSOC.
$15/STUDENT

TOXICOLOGY - BITS & PIECES

*Section Editor, **J. Robert Zettl**, MPA (jrzettl1@msn.com)*

AAFS-TOXICOLOGY SECTION NEWS

*Submitted by **Phil Kemp**, Ph.D., Section Chair*

Fall is upon us in the USA and it is time to make your plans to attend the AAFS meeting in Atlanta, Georgia (February 20-25, 2012). This year's theme, Global Research: The Forensic Science Edge, has generated a great deal of interest and warrants your participation in the Toxicology Section program. Atlanta is a great city with superb dining and entertainment offerings to compliment the informative scientific program our hosts are putting together. The recent combined meeting of the Society of Forensic Toxicologists (SOFT) and the International Association of Toxicologists (TIAFT) was very successful in bringing together forensic scientists from all over the globe. The 2012 AAFS meeting will keep that international momentum going into the New Year.

The section officers have been busy working on the Atlanta events. Scientific Program Co-Chairs Dr. Loralie Langman and Dr. Ashraf Mozayani have been diligently reviewing workshops and abstracts, making food and beverage selections and arranging scientific sessions to get us educated, fed and entertained during our week in Atlanta. This year's Annual Lectureship Speaker has been selected. He is Dr. John R. Barr from the CDC in Atlanta. Dr. Barr, Chief of the Biological Mass Spectrometry Laboratory, will be presenting "Combating Ancient Diseases with Modern Technology: Forensic Chemistry in a Public Health Laboratory". We will also be educated by a presentation entitled "Prescription Drug Impaired Driving" given by Fay McCormack from the Georgia Prosecuting Attorneys Council. A favorite of the section chair will once again be part of the program as Dr. Rob Middleburg will moderate a special session on Pediatric Toxicology. This session always shines a little more interpretive light on how to deal with these difficult cases.

See you in Atlanta!

AAFS / SOFT JOINT DRUGS & DRIVING COMMITTEE UPDATE

*Submitted by **Jen Limoges**, M.S.*
Committee Chair

The SOFT/AAFS Drugs & Driving Committee held an excellent Special Session at the joint SOFT/ TIAFT conference, coordinated by Michelle Spirk. The Special Session for the AAFS meeting in Atlanta will be coordinated by Ashraf Mozayani, and will feature guest speakers discussing the prosecution and defense of prescription drugged driving cases.

Please check out the committee's area on the SOFT website, located under "SOFT Activities" - "Drugs and Driving". Member feedback and suggestions are welcome and appreciated.

NSC-CAOD NEWS

*Submitted by **Laura Liddicoat**, B.S.*
Secretary

The National Safety Council's Committee on Alcohol and Other Drugs met Sunday afternoon, September 25, 2011 at the SOFT/TIAFT meeting in San Francisco, CA. Committee officers for 2011 are:

Dennis Canfield – Chair
Randall Beaty – Vice Chair
Laura Liddicoat – Secretary
Mack Cowan –Immediate Past Chair

Current activities of the Committee include plans for a survey of laboratories performing DUID testing that will serve as a basis for an update to the previously published "Recommendations for Toxicological Investigation of Drug Impaired Driving" (Farrell LJ, Kerrigan SBA, Logan BK; Journal of Forensic Sciences; 2007 Sep).

It was announced that Boris Moczula is the 21st Robert F. Borkenstein Award laureate. The award presentation and banquet will be held on Monday evening, February 20, 2012 during the AAFS meeting in Atlanta. To be a candidate for this prestigious award, individuals must have a minimum of 25 years active service in the area of alcohol/drugs and traffic safety, contributed to that field to a degree that their achievements are nationally recognized and have a minimum of 20 years of active and productive involvement as a volunteer with the National Safety Council.

The next meeting of the Executive Board will be on Sunday, February 19th from 1-5pm and the full Committee will meet on Monday, February 20th from 9am – 1 pm. Meeting room information will be available at a later date.

To access CAOD policies, previous Borkenstein Award recipients or learn more about the committee go to www.nsc.org and type in "CAOD" under the NSC search engine or link to the CAOD home page directly at http://www.nsc.org/get_involved/divisions/Pages/CAODwebpage.aspx.

CFSO UPDATE

*Submitted by **Laurel Farrell**, B.A. (ljfarrellco@msn.com)*

The Consortium of Forensic Science Organizations was formed in 2000. The current forensic organizations that hold memberships in CFSO are SOFT and ABFT, who share a membership, the American Academy of Forensic Sciences, American Society of Crime Laboratory Directors, American Society of Crime Lab Directors - Laboratory Accreditation Board, International Association for Identification, and the National Association of Medical Examiners. These organizations represent over 15,000 members.

The mission of the CFSO is to speak with a single forensic science voice in matters of mutual interest to its member organizations, to influence public policy at the national level and to make a compelling case for greater federal funding for public crime laboratories and medical examiner offices. The primary focus of the CFSO is local, state and national policymakers, as well as the United States Congress. To accomplish this mission, our lobbyist continues to talk and meet with Senate and House staff to keep the needs of the forensic science community a priority both in the normal budget process and in regards to new legislation.

We all know that the national budget is tougher than tough. The House generally is making budget cuts and this is seen in the individual agencies budgets that they are supporting for FY12. The Senate may end up with a continuing resolution for FY12. The House of Representative's proposed budget at this time does support continued funding for DNA Initiatives, Byrne Memorial and Competitive Justice Grants and research funding for competitive grants that will be used for evidence-based programs and activities. The House is not supporting funding of Coverdell or COPS but the Senate is considering funding Coverdell. Forensic Toxicology laboratories may find funding opportunities in the funding proposed by the House as the wording in the DNA Initiative has been broadened to include use "for DNA-related *and forensic programs"*. Three words that hopefully will allow other disciplines to access some funding for priority needs!

Movement on legislation is still a possibility. The Senate sponsor, Leahy, is committed to the passage of the bill and is working on Republican support to allow movement forward in the legislative process with recommended changes from interested parties included. Many of the comments provided focused on the established forensic organizations that provide certification and accreditation and the strength of the Scientific Working Groups (SWGs) structure that is already in place. A revised bill has not been made public. The House seems to be in a wait and see mode - they appear to be waiting to see what will happen in the Senate and from the White House IWG. A letter signed by all CFSO organizations supporting the process of the legislative effort has been sent to Senator Leahy. SOFT is encouraging all laboratories and individuals to write their own letters of support. A request and a model letter will be sent to SOFT members by broadcast email in the next few weeks.

IACT

*Submitted by **Alka Lohmann***

The International Association for Chemical Testing (IACT) was formed in March 1988, in Chicago, Illinois, as a result of a symposium sponsored by the Department of Transportation in 1987, in Boston, Massachusetts. The organization is composed primarily of employees of governmental agencies involved in chemical (alcohol and drug) testing in relation to traffic and workplace safety. IACT's membership is composed of both scientific and criminal justice professionals, including researchers, criminalists, forensic scientists, attorneys, regulatory inspectors, manufacturing representatives, and law enforcement personnel. IACT's 25th Annual Conference will be held in Nashville, TN April 15-19, 2012. Visit the IACT website at iactonline.org for additional information.

ERA / YSMA APPLICATIONS

*Submitted by **Phil Kemp**, Ph.D. (*Philip.Kemp@faa.gov)

In order to accommodate the early 2012 July meeting, it will be necessary to move up the application deadline to Friday, February 3, 2012. Application requirements and instructions can be found at the SOFT website (www.soft-tox.org), under the "SOFT Activities" tab. Past ERA / YSMA Awardees are listed at this location. Awardees of these prestigious awards receive $2,000 and a complimentary registration to the annual meeting, where they will present their research at either an oral or poster session. Applications must be submitted to:

Phil Kemp, Ph.D., DABFT (ERA/YSMA Chair)
Bioaeronautical Research Laboratory
FAA-Civil Aerospace Medical Institute
6500 S. Macarthur
Oklahoma City, OK 73169

SWGTOX UPDATE

Submitted by SWGTOX Executive Committee

The Scientific Working Group for Forensic Toxicology (SWGTOX), a working group devoted to the development and dissemination of consensus standards for the practice of forensic toxicology, was established in October 2009 by the Forensic Toxicology Council (FTC). Since its inception, SWGTOX has held three meetings, with another scheduled for mid-November. The minutes of all SWGTOX meetings, as well as other important SWGTOX documents, are posted on the SWGTOX web-site – www.swgtox.org.

The activities of SWGTOX are facilitated by its Executive Committee members – Laurel Farrell, B.A., Bruce Goldberger, Ph.D., Daniel Isenschmid, Ph.D., Marc LeBeau, Ph.D., and Robert Middleberg, Ph.D. The current Co-Chairs of SWGTOX are – Bruce Goldberger, Ph.D., Robert Middleberg, Ph.D., and Marc LeBeau, Ph.D. Currently SWGTOX is comprised of 39 members from the United States and Canada representing Federal, state, local government laboratories, private laboratories, academia, research and accreditation bodies. Consultants from the United States, Europe and Australia are also serving on SWGTOX.

The scope of SWGTOX activities concerns forensic toxicological matters in:

- Post-mortem Toxicology (assist in determination of cause and manner of death)
- Human Performance Toxicology (DUI – both blood and breath alcohol, DUID, DFSA (drug facilitated sexual assault)
- Workplace Drug Testing (non-Federally mandated programs)
- Other types of Medicolegal and Criminal Investigations (*e.g.*, poisonings, attempted murder or other criminal cases)
- Court-mandated testing (Probation/ Parole, Child Services, Drug Courts)

While the work product developed by SWGTOX will be the standard of practice in all forensic toxicology disciplines, the scope of SWGTOX activities will not necessarily include those specialized areas where mandated, codified rules and regulations currently exist.

Following drafting, SWGTOX documents go through an extensive and thorough approval process which includes public comment. The following table indicates the status of several documents under development by SWGTOX.

If you have any questions or concerns regarding SWGTOX, please contact a member of the SWGTOX Executive Committee or send an e-mail message to comment@swgtox.org.

SWGTOX Document	Sub-Committee Draft	SWGTOX Member Comment Period	SWGTOX Member Approval of Draft	Public Comment Period	SWGTOX Adoption
Standard for Codes and Guides of Professional Conduct	✔	✔	✔	closed June 2011	
Standard Practices for Method Validation in Forensic Toxicology	✔	✔			
Standard Practices for Quality Assurance in Forensic Toxicology	✔				
Standards for Forensic Toxicology Certification Boards	✔				
Standards for Education for Forensic Toxicology Practitioners	✔				
Standard for Laboratory Accreditation in Forensic Toxicology	✔				
Standards for Research in Forensic Toxicology	✔				

DEA Schedules of Controlled Substances: Temporary Placement of Synthetic Cannabinoids and Cathinones into Schedule I

*Submitted by **Cassandra Prioleau,** Ph.D., Drug Enforcement Administration, Washinigton, DC*

The Administrator of the Drug Enforcement Administration (DEA) issued a final order on March 1, 2011 (76 FR 11075), to temporarily schedule five synthetic cannabinoids and a final order on October 21, 2011 (76 FR65371), to temporarily schedule three synthetic cathinones under the Controlled Substances Act (CSA) pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). These final orders were effective on the dates that the final orders were issued.

The Attorney General can temporarily place a substance into schedule I of the CSA for one year without regard to the requirements of 21 U.S.C. 811(b) if he finds that such action is necessary to avoid imminent hazard to the public safety (21 U.S.C. 811(h); 21 CFR 1308.49). If proceedings to control a substance have been initiated under 21 U.S.C. 811(a)(1), the Attorney General may extend the temporary scheduling up to an additional six months (21 U.S.C. 811(h)(2)). The Attorney General has delegated his authority under 21 U.S.C. 811 to the Administrator of DEA (28 CFR 0.100).

The synthetic cannabinoid substances are:

1-pentyl-3-(1-naphthoyl)indole (JWH-018),
1-butyl-3-(1-naphthoyl) indole (JWH-073),
1-[2-(4-morpholinyl)ethyl]-3-(1-naphthoyl)indole (JWH-200),
5-(1,1-dimethylheptyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol (CP-47,497), and
5-(1,1-dimethyloctyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol (cannabicyclohexanol; CP-47,497 C8 homologue).

The synthetic cathinone substances are:

4-methyl-N-methylcathinone (mephedrone),
3,4-methylenedioxy-N-methylcathinone (methylone), and
3,4-methylenedioxypyrovalerone (MDPV).

These actions were based on the findings by the Administrator that the placement of these synthetic cannabinoids and cathinones including their salts, isomers, and salts of isomers into schedule I of the CSA was necessary to avoid an imminent hazard to the public safety. As a result of these orders, the full effect of the CSA and its implementing regulations including criminal, civil and administrative penalties, sanctions and regulatory controls of schedule I substances will be imposed on the manufacture, distribution, possession, importation, and exportation of these synthetic cannabinoids and cathinones.

Young Forensic Toxicologists

*Submitted by **Jayne Thatcher, Ph.D.** , YFT Chair*

The Young Forensic Toxicologists committee would like to congratulate **Monique A. Oles** from the University of Massachusetts Memorial Department of Hospital Laboratories, Forensic Toxicology Laboratory. Her poster entitled "Evaluation of the i-STAT®1 Handheld Analyzer for Postmortem Vitreous Humor Chemistry Analysis" was selected as the Young Forensic Toxicologists Best Poster at the 2011 SOFT meeting in San Francisco. We would like to thank all young toxicologists that participated in the activities at the 2011 meeting and look forward to seeing you in Boston in 2012.

AMERICAN BOARD OF FORENSIC TOXICOLOGY (ABFT) NEWS

Submitted by Marina Stajic, Ph.D., DABFT, President

The annual ABFT certificant ceremony and reception was held during the SOFT/TIAFT meeting in San Francisco, CA, in September 2011.

CONGRATULATIONS to our colleagues who have successfully met all the requirements and joined the ranks of ABFT certificants:

David Nemeth, PhD, DABFT
Sabra Botch, FTS
Daniel Coleman, FTS
Robert Herndon, FTS
Jesse Kemp, FTS
Patrick Kyle, FTS
Bhavesh Patel, FTS
Marco Trauzzi, FTS
Sandra Viens ,FTS
Clifford Wong, FTS

CONGRATULATIONS to the staff of the Montgomery County Coroner's Office & Miami Valley Regional Crime Laboratory, Forensic Toxicology Laboratory, Dayton, Ohio, on successfully meeting all the ABFT requirements for laboratory accreditation.

The ABFT Board of Directors is pleased to announce the establishment of two additional certification categories: Forensic Toxicology Analyst (FTA) and Forensic Alcohol Specialist (FAS).

American Board of ABFT Forensic Toxicology ™

Qualifications for the new categories are as follows:

	FORENSIC TOXICOLOGY ANALYST (FTA)	**FORENSIC ALCOHOL SPECIALIST (FAS)**
Education	Minimum BA/BS degree in a natural science	Minimum BA/BS degree in a natural science
Institution	USOE accredited school or equiv evaluation by WES	USOE accredited school or equiv evaluation by WES
Courses	Undergraduate education in biology and chemistry	Undergraduate education in biology and chemistry
Training	Analytical toxicology	Pharmacology, toxicology and analysis of alcohol
Expert Capabilities	Includes laboratory personnel who test and/or issue reports without interpreting results	Include laboratory personnel who conduct blood and breath alcohol testing and issue reports; may include interpretation of alcohol results
Experience	One (1) year full time experience in forensic toxicology subsequent to earning highest degree	One (1) year full time experience in forensic toxicology subsequent to earning highest degree
	Minimum of one (1) year experience during three (3) years preceding application date	Minimum of one (1) year experience during three (3) years preceding application date
	Engaged in forensic toxicology at time of application	Engaged in forensic toxicology at time of application
Examination	Yes (written)	Yes (written)
CE	25 points/5 years	25 points/5 years

ABFT News (Continued)

Qualifications for Diplomate and Forensic Toxicology Specialist remain unchanged at the present time.

REMINDERS:

- ►Effective January 1, 2011, all ABFT accredited laboratories are required to submit an annual accreditation fee of $ 3500 regardless of whether it is a mid-cycle or on-site inspection year. A separate application fee is no longer required from accredited laboratories.
- ►Effective January 1, 2010, all ABFT accredited laboratories are required to subscribe to both the FTC (Toxicology) and the T-series proficiency tests of the College of American Pathologists (CAP). Laboratories are required to complete all challenges for the FTC set for which the laboratory has established, validated methods. All of the laboratory's usual screening and confirmation tests need to be completed for the T-series and for those quantitative challenges for which the laboratory has routine methods Results must be returned to CAP within the reporting period. In addition, laboratories must subscribe to the CAP AL1 Whole Blood Alcohol program or comparable program(s) with an equivalent number of challenges for ethanol and related volatiles. Laboratories are encouraged to continue participation in any other proficiency test programs to which they currently subscribe.
- ►ABFT Board of Directors has restructured the certification application, re-certification application and continuing education fees. Effective January 1, 2009, a non-refundable fee of $150 is applied to all new applications, replacing the previous $ 300 fee. The re-certification fee of $300 is no longer required every five years. Instead, a fee of $ 100 is required with the annual submission of continuing education credits. Certificants still need to submit a re-certification application every five years in order to remain in good standing.
- ►ABFT no longer has the USA/Canada residency requirement for certification. All other requirements remain the same. The examination is administered (in English only!) twice each year, at the American Academy of Forensic Sciences (AAFS) Annual Meeting and at the Society of Forensic Toxicologists (SOFT) Annual Meeting. Additionally, a candidate may request to have an examination administered at a different location under the direction of a member of the Board of Directors. We welcome and encourage our international colleagues to consider applying for ABFT certification. Please visit www.ABFT.org for more information.

JAT Special Issue on Sports

*Submitted by **Dennis Crouch,** FTS-ABFT and **Yale H. Caplan**, Ph.D., DABFT, Co-Editors*

The co-editors of the Journal of Analytical Toxicology's **"Testing and Interpretation in Sports - Review, Research, and Commentary"** invite you to review the upcoming Special Issue (Nov/Dec, 2011). As SOFT members and ToxTalk readers, you are aware that the consequences of positive anti-doping findings are among the most publically visible of all areas of analytical and forensic toxicology. Further, testing is exceedingly challenging because of the broad array of drug classes and individual drugs analyzed. Data interpretation is also challenging because of the scope of testing and the number of banned substances. We invite you to gain insights into the breath of anti-doping testing through articles on diverse topics such as the potential for glycerol ingestion to affect dehydration ("Identifying Plasma Glycerol Concentration Associated with Urinary Glycerol Excretion in Trained Humans"), detection of glycopyrrolate use in performance horses ("Validation of a Liquid Chromatography-Tandem Mass Spectrometry Method for Quantification of Glycopyrrolate in Horse Plasma"), the effects of cannabinoids and synthetic cannabinoids on athletic performance ("High Performance Sport, Marijuana, and Cannabimimetics) and the detection of stimulant drug and diuretic drugs (Liquid Chromatography-Tandem Mass Spectrometry Detection of Stimulants and Diuretics in Urine").

Rarely are we provided insight into how certifying and accrediting bodies develop testing menus. However, WADA scientists authored articles in the Special Issue that describe their internal review processes and their investigation of candidate drugs for inclusion in their prohibited substances list. ("The List of Prohibited Substances and Methods in Sport: Structure and Review Process by the World Anti-Doping Agency" and "Investigating the Use of Stimulants in Out-of-Competition Sport Samples").

It is estimated that more than one-half of American adults take dietary supplements and it is widely known that these products may contain various steroids, steroid-precursors, and other potentially dangerous drugs such as bumetanide. Despite the availability of steroids, steroid precursors and the fact that anabolic-androgenic agents are the most the commonly detected drugs in anti-doping programs, their detection and interpretation remain significant challenges. This is especially true of exogenous use of endogenous steroids (such as those often found in supplements). Detection of such agents is reviewed ("Screening Indicators of Dehydroepiandosterone, Androstenedione and Dihydrotestosterone Use: A Literature Review") and a potentially innovative approach to detecting steroid use is presented ("The Androgen Receptor and Its Use in Biological Assays: Looking Toward the Effect-Based Testing and Its Applications").

MEMBER NEWS

KURT M. DUBOWSKI, PH.D., DABFT—90TH BIRTHDAY, NOV. 21, 2011

Earlier issues of ToxTalk have described in detail Dr. Dubowski's exceptional accomplishments. In this issue, SOFT wishes him a Happy 90th Birthday - a milestone amongst milestones!

Enjoy some new and old photographs of Kurt in action. Thanks to Natalie Essary for sharing pictures.

Yale H. Caplan, Ph.D., DABFT

Early Lab Staff

The Borkenstein Faculty of 1986.

Honorary Texas Ranger

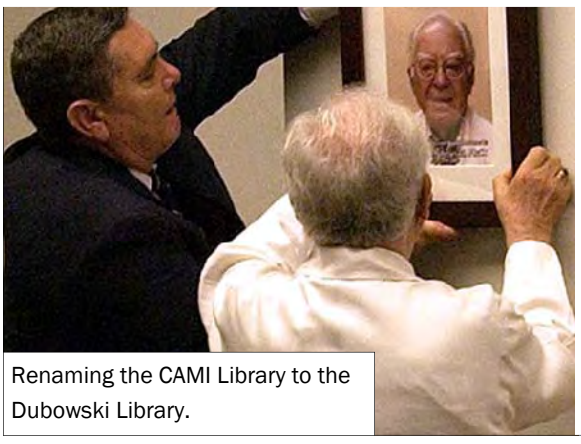
Member News

Kurt M. Dubowski, Ph.D., DABFT—90th Birthday, Nov. 21, 2011

Borkenstein Award Winners

NSC-COAD Florrisant, CO, 1970

Borkenstein Faculty



Renaming the CAMI Library to the Dubowski Library.

HAPPY BIRTHDAY KURT!

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Future S.O.F.T. Meeting Destinations:

2012:	Boston, MA……...June 30-July 6, 2012…….……...…….	Michael Wagner
2013:	Orlando, FL……...Oct. 26-Nov. 3, 2013……..……......	Bruce Goldberger
2014:	Grand Rapids, MI……Oct. 18-25th, 2014…….....	Ben Kuslikis
2015:	Atlanta, GA……...Oct. 17-25, 2015……...…...to be determined	

ToxTalk **Deadlines** for Contributions:

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

Celebrate The "4th" in Boston!

SOFT 2012
www.soft2012.org

We're on the Web!
www.soft-tox.org

SOFT 2012 - July 1-6, 2012—Boston

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