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SOFT 2014 Grand Rapids Update

Submitted by hosts **Ben Kuslikis and Michael Smith**

The SOFT 2014 annual meeting is now less than 2 months away! If you haven't yet registered for this meeting, we encourage you to do so. The early registration period has ended as of August 31, thus an additional $150 will be added to each new registration. Online registration at http://www.soft-tox.org/registration will be available only until September 30. The hotel is full and the wait list is growing. If you have extra rooms reserved under your name, please cancel what you don't need so your colleagues can use these rooms.

We have 3 full day workshops and 10 half day workshops scheduled throughout Monday and Tuesday. Additionally, we have 54 platform presentations and 96 posters that will be presented Wednesday, Thursday, and Friday. On Thursday, we will be hearing about the progress of SWGTOX activities. The Professional Development Fair on Tuesday evening will expand and be open to all attendees this year.

There are many special events planned for this year's meeting. The social events start with a reception on Sunday evening hosted by Immunalysis. Tuesday evening will see the opening of the exhibit hall with the Welcome Reception, followed by the annual Elmer Gordon Forum, and finally SOFToberfest 2014 hosted by Thermo Fisher Scientific. We will be moving just across the Grand River to the Grand Rapids Public Museum on Wednesday night for dinner, live music and special exhibits at the museum. This will be followed by Nite Owl XV hosted by Cerilliant back at the Amway Grand Plaza. The social events culminate on Thursday night with the President's Reception and Dance.

We are very excited to share what Grand Rapids and Michigan have to offer this autumn. See you there.

Mike and Ben

SOFT GRAND RAPIDS 2014

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PRESIDENT'S MESSAGE

Submitted by **Peter Stout, Ph.D., F-ABFT**

Summer is past. I think this is a common sentiment for everyone to be scratching their head at where summer departed to. This means though that the SOFT meeting is coming soon. The meeting this year in Grand Rapids, Michigan promises to be another grand meeting. Our meetings take shape and happen because of the efforts of MANY volunteers. Remember SOFT has our Office administrator, Bonnie Fulmer as our lone paid staff. The meetings happen because of Bonnie's efforts and an army of volunteers. These meetings have become a significantly complex undertaking and are an invaluable asset for the community. "Thank you" is not nearly sufficient to express our gratitude to all the individuals who contribute to making meetings run, but "thank you" to everyone on the Grand Rapids planning committee.

We all benefit from the interactions and the information at the meetings and yes they are a fun event as well. I would ask of everyone attending to think about what you can do to contribute to the meeting. Yes, it is easy to ask "what can I do" and look to help hand out materials or other tasks. I would ask that you think about how you can make the information and the interactions at the meeting richer and more valuable.

I have thought often about the community's investment in the annual meetings. If you think through what is paid in registration fees by attendees and exhibitors and what everyone pays in airfare and hotels to simply come to the meeting, that is a lot. Then you add the costs of per diem and the costs that all the exhibitors have in shipping and materials for their booths. Add to that then the labor investment made by both individuals and organizations to have people at the meeting for a week. Our meetings are now typically 800-1000 people. That adds up to several million dollars of the community's investment to make the meeting possible.

We have about 35 hours over the week of scientific sessions, workshops and meetings in the agenda. Divide the investment by the time and you realize that the community invests $1,000 to $2,000 for every minute of the meeting for this to be possible. Yes this is a simplification and assumptions can always be argued, in any estimation it is a big investment.

Think about this; is your participation in the meeting living up to the community's investment? What can you do to make the information more valuable both sending and receiving? How can you make the interactions better and more productive? Are you confident that the 15 minute platform presentation you are giving is worth $15,000 to $30,000 of the community's investment?

I cannot pass up the opportunity to acknowledge the participation of several of our members on the national stage. Most are aware of the National Commission on Forensic Science and the recently formed Organization of Scientific Area Committees with oversight by the Forensic Science Standards Board. If you are unfamiliar with these, please visit http://www.nist.gov/forensics/osac/index.cfm for more information. These are prominent efforts at the national level to improve the practice.

We have several members who have been named to various parts of this organization.

Marc LeBeau is a member of the Commission and Marilyn Huestis is an Ex-Officio member of the commission.

Sarah Kerrigan, Laurel Farrell and Barry Logan have all been appointed to the Forensic Science Standards Board.

Marc LeBeau and Jeri Ropero Miller have been named to the Chemistry/Instrumentation Scientific Area Committee.

There are still more names that will be appointed to the Toxicology subcommittee under the Chemistry/Instrumentation SAC. Everyone should be pleased however at the representation that we have within these organizations. These are significant undertakings and we thank all of you for your willingness to serve in these positions!

I look forward to seeing everyone in Grand Rapids and to another brilliant meeting this year. Stay active, stay involved and come ready to make a difference at the meeting!

THE TIMES THEY ARE A CHANGIN'

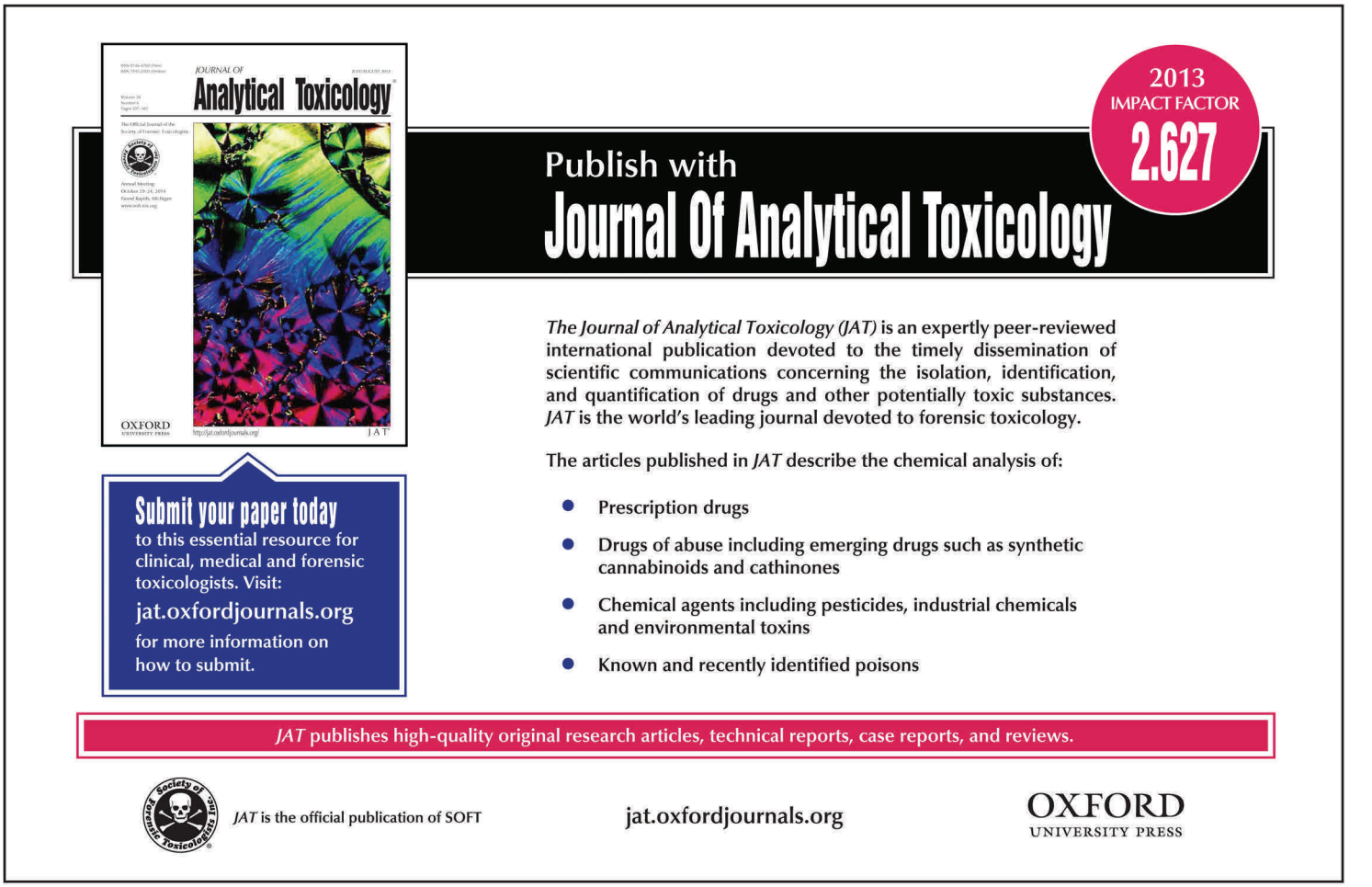
Submitted by **Dwain Fuller**—*Editor*

Nothing is more constant than change. These words are forever true. That applies to ToxTalk® as well. It is to our regret that we must say goodbye to a couple of folks who have been valued members of the ToxTalk® family.

Barry Levine, who has tirelessly contributed interesting articles "From the Toxicology Literature", will be relinquishing that role after the September issue. We are, however, happy that this change is a result of new opportunities for Barry. We wish Barry all the best and will be seeking his replacement in this important role.

Likewise, Nicole McCleary, one of our Publishing Assistants, will be stepping down as well. Nicole's contribution behind-the-scenes in taking all of the submissions and molding them into the finished product that you see on your screen has been vital, and makes the job of editing ToxTalk® so much easier. Like many of us, Nicole has taken on more responsibilities and travel in her job and must let something go. We wish Nicole all the best.

On the subject of behind-the-scenes, we have recently welcomed Kayla Ellefsen to ToxTalk® as a Publishing Assistant. Kayla hit the ground running and has put together the last three issues of ToxTalk®, counting this one. She has done a remarkable job. We would now like to welcome Patty Pisana to ToxTalk®. Patty has volunteered to help Kayla as a Publishing Assistant. I have known and worked with Patty for 16 years. I know her to be detail-oriented as well as an excellent proofreader. These behind-the-scenes folks are essential to the success of ToxTalk®. Laura and I look forward to working with both Kayla and Patty.



Nominating Committee Offers 2015 Slate of Officers

The **Nominating Committee's** task is to provide a slate of Officers and Directors to the full membership of SOFT at least 30 days prior to the annual Business Meeting, to be held in Grand Rapids October 23, 2014.

The President and Vice President each serve one year terms, while the Secretary and Treasurer serve two year terms which expire in alternate years. Five additional Directors are elected for a three year term. If a Director cannot serve his/her entire term, an interim Director shall be named by the Board to serve the remaining term.

The 2014 SOFT Nominating Committee comprised of Amanda Jenkins, Sarah Kerrigan, and Chair, Dan Anderson respectfully submitted the following slate of Officer Nominations for consideration by the membership.

President
Ruth Winecker, Ph.D., F-ABFT

Vice President
Jennifer Limoges, M.S., DABC

Treasurer (2 years)
Michelle Peace, Ph.D.

Director (3 years)
Dwain Fuller, B.S., F-ABFT, TC-NRCC

Director (3 years)
Matthew Juhascik, Ph.D., F-ABFT

Ruth E, Winecker
PhD, F-ABFT
President
(one year term)

Ruth E. Winecker, Ph.D. is currently the Chief Toxicologist for the State of North Carolina's Office of the Chief Medical Examiner (NC-OCME) in Chapel Hill, North Carolina. Prior to her appointment as Chief Toxicologist, she served as the Deputy Chief Toxicologist with the NC-OCME from 1996-1999. Dr. Winecker is one of two toxicologists that technically and administratively serve the State of North Carolina's medical examiner system. The toxicology laboratory functions for all 100 counties of North Carolina by providing forensic analytical testing of specimens and evidence from medical examiner cases. The laboratory is responsible for analytical testing, records maintenance and review of analytical testing for >10,000 medical examiner cases per year.

Prior to employment with NC-OCME, Dr. Winecker was a laboratory technician with SmithKline Laboratories where she primarily tested for performance enhancing drugs during the 1996 Summer Olympics. Previously, she was employed in Gainesville, Florida as a chemist/certifying scientist with a forensic urine drug-testing laboratory (DRL, Inc) and a technician in the analytical laboratory of a chemical manufacturing company (PCR).

Dr. Winecker received a Bachelor of Science (Cum Laude) degree in Biology from Oglethorpe University in Atlanta, Georgia (1987), and a Doctor of Philosophy Degree specializing in Forensic Toxicology and Clinical Chemistry from the University of Florida, College of Medicine in Gainesville, Florida (1996). Her doctoral research focused on the determination of cocaine and its metabolites in specimens of neonatal and maternal origin. The American Board of Forensic Toxicology awarded Dr. Winecker certification in the specialty of forensic toxicology in 2004.

Dr. Winecker has published articles, book chapters and abstracts related to forensic toxicology, whose topics include analytical methodology, reviews of therapeutic and abused drugs, the toxicology of metals, and the measurement of therapeutic and abused drugs in alternative matrices such as hair, amniotic fluid, umbilical cord tissue, meconium and breast milk. Additionally, she holds the academic position of Assistant Professor at the University of North Carolina School of Medicine, Department of Pathology and Laboratory Medicine.

An active member of the American Academy of Forensic Sciences (AAFS), the Society of Forensic Toxicologists (SOFT), and the International Association of Forensic Toxicologists (TIAFT), Dr. Winecker has continually presented research data, chaired and co-chaired workshops and presented various topics at workshops at the AAFS, TIAFT and

Nominating Committee Offers 2015 Slate of Officers *(Continued)*

SOFT annual meetings since 1998. Dr. Winecker is currently serving as the Vice President for SOFT, on the board of directors for ABFT, on the board of directors for AAFS, as a member of the SWGTOX and on the editorial board of the Journal of Analytical Toxicology. She has held the following previous offices and appointments for the toxicology section of AAFS: workshop chair (2009-2010), program chair (2010-2011), secretary (2011-2012) and chair (2012-2013) and for SOFT: Board of Directors (2004-2006) and co-host and treasurer for the SOFT annual meeting held in Raleigh-Durham in October 2007. She has been a peer reviewer for the Journal of Analytical Toxicology, a guest reviewer for Journal of Forensic Science and the Journal of Opioid Management and an invited editor for Forensic Science Review SOFT Drug Monographs (Volumes 14 and 15).

Jennifer Limoges
MS, DABC
Vice President
(one year term)

Jennifer Limoges received her B.S. in Chemistry from Clarkson University and her M.S. in Forensic Science from the University of New Haven. She began working for the New York State Police as a Forensic Scientist in 1994. Currently, she is the Associate Director of Forensic Science for the Toxicology and Breath Testing departments of the NYSP Forensic Laboratory System. Ms. Limoges is an active member of the Society of Forensic Toxicologists (SOFT) and the American Academy of Forensic Sciences (AAFS). She currently serves on the SOFT Board of Directors as the Treasurer, is a member and past Chair of the SOFT/AAFS Drugs & Driving Committee, and has served on the SOFT Continuing Education Committee. She is a member and Past President of the Northeastern Association of Forensic Scientists (NEAFS), a member of the International Association for Chemical Testing (IACT), and a Diplomate of the American Board of Criminalistics (ABC). Ms. Limoges sits on the National Safety Council's Alcohol, Drug, and Impairment Division, and currently serves on their Executive Committee. She is a member of the Scientific Working Group for Forensic Toxicology (SWGTOX), and the National Commission on Forensic Science Subcommittee on Accreditation and Proficiency Testing. She is an assessor for the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB), an Associate Adjunct Professor for the Chemistry Department at the University at Albany, and served as the Guest Editor for the 2009 SOFT Special Issue of the Journal of Analytical Toxicology.

Ms. Limoges' primary area of expertise is in impaired driving issues. She was part of the panel organized by the Committee on Alcohol and Other Drugs (NSC), under contract to NHTSA, which produced the "Priorities and Strategies for Improving the Investigation, Use of Toxicology Results, and Prosecution of Drug-Impaired Driving Cases". She co-authored the 2013 publication "Recommendations for Toxicological Investigation of Drug Impaired Driving and Motor Vehicle Fatalities." She works regularly with the New York Prosecutors Training Institute (NYPTI), the New York Governor's Traffic Safety Committee, and Drug Recognition Experts on traffic safety matters. Ms. Limoges is a strong proponent of continuing education. She has hosted numerous workshops over the years at both the local and national level, providing training to toxicologists, law enforcement officers, and attorneys.

Michelle Peace
PhD
Treasurer
(two year term)

Dr. Peace holds a Bachelor of Arts degree from Wittenberg University in Springfield, Ohio where she majored in Chemistry. She has worked as a research technician for Liqui-Box Corporation and for Procter and Gamble Company in the Paper Products Division.

After several years at the manufacturing research bench, she returned to school to receive her Master of Forensic Science degree from George Washington University and a Ph.D. from Virginia Commonwealth University's School of Medicine, specializing in Forensic Toxicology. Her dissertation was in the emerging cross-disciplinary area of "entomotoxicology", addressing significant toxicological questions as they pertain to and involve entomology.

Nominating Committee Offers 2015 Slate of Officers *(Continued)*

Dr. Peace was employed as a laboratory manager and Alternate RP of Kroll Laboratories (now Alere Toxicology), serves as a member of SWGTOX, and served SOFT as the host of the 2010 Annual Meeting in Richmond, VA and a Director on the SOFT Board. She continues to provide continuing education for toxicology laboratories, and consults with companies developing drug testing programs. She has taught in numerous workshops for CSI and Homicide Detectives, and also trains and consults crime scene investigators in the identification, collection, and preservation of entomological evidence through Virginia's Forensic Science Academy. She has developed forensic science workshops for secondary education teachers and successfully implemented a grant in which she developed all-inclusive "kits" with forensic science based SOL driven curriculum for educators in high need school systems to "check out" at no expense. Dr. Peace also been recognized for her efforts in developing a service learning course which imbeds undergraduate forensic science students in high needs middle schools to mentor young people and engage them in fun activities that promote science and learning.

Dr. Peace currently serves Virginia Commonwealth University's Department of Forensic Science as the Interim Chair. She helped develop the undergraduate curriculum in forensic science and strengthen the graduate curriculum to address research and educational pressures in the forensic science community. She helped administratively evolve the "program" into a "Department", which is now proudly FEPAC accredited (Forensic Science Education Programs Accreditation Commission) in both undergraduate and graduate curricula. The Department has approximately 400 undergraduate and 48 graduate students, and maintains relationships with more than 75 agencies around the world for the advancement of forensic science research. The Department also produces significant research internally in forensic toxicology, forensic molecular biology and forensic chemistry and supports 25+ students annually to present at conferences.

Dr. Peace has served as a faculty mentor to 40+ students performing research in host laboratories on forensic toxicology questions, as well as general trace and drug analysis questions, while pursuing her own research initiatives at VCU with a small research team. In addition to broader teaching responsibilities in the curriculum, she teaches the graduate course Instrumentation in Forensic Chemistry and undergraduate Forensic Chemistry, specializing in problem-based active learning. She continues to build sustainable and significant relationships for the Department with agencies and programs that are committed to strengthening and advancing forensic science education and research.

Dwain Fuller
BS, F-ABFT, TC-NRCC
Director
(three year term)

Mr. Fuller is the Technical Director of the Toxicology and Clinical Mass Spectrometry Laboratories at the Veterans Affairs North Texas Healthcare System in Dallas, Texas, in addition to maintaining an active private consulting practice in forensic toxicology.

Mr. Fuller holds a Bachelor of Science degree in Chemistry from the University of Oklahoma.

Mr. Fuller began his career in forensic toxicology in 1984 as a bench chemist at the Office of the Chief Medical Examiner for the State of Oklahoma. In 1987, he accepted a position as the Assistant Director of Toxicology with Sierra Nevada Laboratories, Inc. Mr. Fuller was instrumental in bringing Sierra Nevada Laboratories, Inc. to SAMHSA certification. Through a series of corporate purchases and mergers, Sierra Nevada Laboratories, Inc. became a Laboratory Corporation of America laboratory. In 1993, Mr. Fuller was promoted to the Director of Toxicology, and became the Responsible Person (RP) for the SAMHSA lab, positions he held until accepting his present assignment in 1998.

Mr. Fuller is certified as a Fellow of the American Board of Forensic Toxicology (ABFT) and a Toxicological Chemist by the National

Nominating Committee Offers 2015 Slate of Officers *(Continued)*

Registry of Certified Chemists (NRCC).

Mr. Fuller is a member of the Society of Forensic Toxicologists (SOFT), where he has previously served as a member of the Board of Directors. Mr. Fuller is a Fellow of the American Academy of Forensic Sciences (AAFS), where he currently serves as the Toxicology Section Chair. Mr. Fuller is also a member of the Southwestern Association of Toxicologists (SAT).

Mr. Fuller has served on the Committee for Testing for Intoxication for the State of Nevada and as a panel member on the Governor's Conference on Safety for the State of Nevada. He has served on the faculty of the University of Texas Southwestern Medical Center at Dallas, as well as a faculty member for numerous courses for the National Judicial College in Reno, Nevada. Additionally, Mr. Fuller has served as a consultant to the Nevada Attorney General and to the U.S. Attorney's Office.

Mr. Fuller has authored or co-authored many papers and articles for both peer-reviewed and popular publications. Mr. Fuller has served as a reviewer for several of the special SOFT editions of the Journal of Analytical Toxicology and currently serves on the SOFT Editorial Board of the Journal of Analytical Toxicology. Mr. Fuller is currently the Editor of ToxTalk® and a member of the Document Development Committee on Toxicology and Drug Testing for Clinical Laboratory of the Clinical Laboratory Standards Institute (CLSI).

Mr. Fuller has chaired, co-chaired, and lectured at several workshops at annual meetings of AAFS and SOFT.

Mr. Fuller has extensive experience in consulting and expert testimony in both criminal and civil matters in the states of Nevada, California, Oklahoma, Kansas, Michigan, New Mexico, Arkansas, Iowa, Florida, Missouri, Hawaii, Idaho, and Texas and has qualified as an expert in forensic toxicology in numerous courts of all levels.

Mr. Fuller has appeared on Tru TV's program, *In Session*, as a guest expert in forensic toxicology and regularly serves as a technical consultant to several major television network programs on matters of toxicology and forensic science.

Matthew Juhascik
PhD, F-ABFT
Director
(three year term)

Matthew Juhascik is the Chief Toxicologist for the Montgomery County Coroner's Office/Miami Valley Regional Crime Laboratory. His current duties include oversight of the toxicology laboratory which handles casework involving drug-facilitated sexual assault, vehicle operation while under the influence of alcohol and/or drugs, and postmortem testing. He was previously the Deputy Director of Chemistry for the Massachusetts State Police overseeing toxicology, drug chemistry testing for controlled substances seized in the field, and the certification of breathalyzers used in the Commonwealth. He also previously worked as the Deputy Director/QA Officer for the postmortem forensic toxicology laboratory at UMass Memorial Hospital Laboratories in Worcester, MA. He received a B.S. in Chemistry from the University of Dayton in Ohio, and an M.S. degree in Forensic Sciences from the University of Illinois-Chicago. His Ph.D. was also from the University of Illinois-Chicago with a thesis on drug-facilitated sexual assault. His current research interests include method development/validation, LC/MS/MS and epidemiology of drug use.

SOFT
GRAND RAPIDS 2014

AAFS Meeting Update

Submitted By **Dwain Fuller**, AAFS Toxicology Section Chair

The 2015 American Academy of Forensic Sciences annual meeting theme is Celebrating the Forensic Science Family. We will celebrate the interdependence of all forensic disciplines in solving crime, identifying suspects, determining cause and manner of death, etc.

Perhaps each of our individual disciplines can be seen as immediate families; all a part of the extended family of forensic science as a whole. Our immediate family, the Toxicology Section, has a rich legacy which we have celebrated in many ways over the years, be it through tracing our professional family trees, paying tribute to our mentors, or simply making it a point to introduce our newest members to our most seasoned at an open forum. We know we stand on the shoulders of those who have come before us, and we celebrate that heritage.

This year will be no different. I hope you are making your plans now to join us as we go back to family-friendly Orlando to celebrate our Forensic Family. There is a fury of activity going on behind the scenes, as program chair **Rebecca Jufer Phipps** (rphipps@phipps.ws) and co-chair **Dan Anderson** (DAnderson@coroner.lacounty.gov) labor to produce an outstanding program. As a program preview, the tradition of special sessions of DUID topics and Pediatric Toxicology along with a joint session of Toxicology and Pathology/Biology will be maintained. In addition, and keeping with the forensic family theme, we will be having more interdisciplinary interactions; a joint session with the Psychiatry/Behavioral Sciences will occur with a small panel presentation of "Psychological Autopsy: Toxicology and Psychiatry/ Behavioral Sciences in a Working Relationship."

The deadline for abstract submission for the 2015 meeting has now past, the peer review process is underway and the final program elements have been submitted to AAFS for approval. It's a huge job, and Rebecca and Dan deserve a lot of credit for keeping within the tight AAFS deadlines. Official acceptance letters for abstracts and workshops from AAFS are to be sent in mid-October and the preliminary program will be published in November.

Additionally, now is the time for each AAFS Toxicology Section member to determine if you are eligible for promotion. If so, complete the application process. Some section activities (e.g. section officer or committee chair) require full membership or fellow status in order to participate. This year's deadline for receipt of all application materials is **October 1, 2014.**

See you in Orlando!

DRUGS IN THE NEWS

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

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

The Story of Heroin's Progression in the State of Ohio

Submitted By **Laureen Marinetti** – Section Editor

Heroin has been in the news most notably when a celebrity overdoses. However this is a much bigger problem than the news reports indicate. This article is about the State of Ohio but it is not the only state that is having problems with increased heroin use.

In second half of 2008 the Ohio Substance Abuse Monitoring Network (OSAM)[1] began to document a drastic increase in the availability of heroin to Ohio's residents. Drug dealers claimed that cocaine was becoming hard to obtain so they began selling heroin instead. Users claimed it was hard to find cocaine and easy to get heroin. Along with the increase in availability of heroin, its purity also increased from 30% to 60% to over 60% pure. New users would start out by snorting or smoking the heroin and then progress to injecting it. Some heroin users *believed that snorting the drug was less-addicting than needle use.* The most commonly cited "slang" names for heroin were "boy" and "dog food". Other names included: "brown", "dope" and "hank". Participants reported that powdered heroin is available in different quantities, with the most common unit sold being the $10 clear gelatin capsule or "cap", which usually contains about 1/10 of a gram. Participants gave the following pricing, with higher prices indicated for rural areas black tar, and higher quality powdered heroin: a gram sells for $40 – $50 in the city, and $80 – $150 in rural areas; 1/8 ounce (a.k.a., "half-booty") sells for $225 – $250; 1/4 ounce (a.k.a., "booty") sells for $500 – $700; an ounce sells for $1,800 – $2,400; a "finger", approximately 27 – 32 grams of uncut powdered heroin, sells for $3,200. The powders were white, tan, gray or brown and had a consistency that varied from fine to gravel like in appearance. Participants also reported that balloons or baggies (1/10 gram) of black tar heroin sell for $10 – $25. Balloons of black tar heroin are available in increments of $10, $20, $50 and $100 bundles. Another trend cited by a few participants and community professionals was that syringes are sometimes available from dealers. A treatment provider reported, *"I had heard that syringes were getting harder to get a hold of. They [dealers] were selling those along with the caps [capsules of heroin], too."*

By June of 2010 the availability of heroin was still on the rise. Many users that had been addicted to prescription pain killers were making the switch to heroin, due to the ease of obtaining it and the cheaper cost of using it. Prescription opioids sell for about $1 per milligram of opioid content. This resulted in even more dealers switching to selling heroin.

By June of 2013 heroin use was believed to be at "epidemic" levels throughout the state with dealers "everywhere" and participants stating that heroin was easier to get than beer. Dealers would give customers free "testers" and aggressively pursue new clientele. Users preferred the powder forms over the black tar form, but they could get either one. Users began to complain that the quality of the heroin was going down as more people used it, as the dealers would cut it more. Dealers could cut the heroin with diphenhydramine, caffeine, lidocaine, procaine, quinine, mannitol, sucrose, boric acid and levamisole. Participants also stated that the time span of progression between snorting heroin and injecting it was shortening. In addition, several users talked about snorting heroin with water calling it "mud slide", "mud water" or "monkey water". It is no surprise that state health officials determined that heroin was the most urgent substance abuse problem in the state. Death from heroin overdose was climbing too, up to 58% of total drug death cases in some areas.

The Story of Heroin's Progression in the State of Ohio *(Continued)*

A profile of a typical user of heroin did not emerge from the OSAM data. Some participants noted that heroin is so ubiquitous that race and age do not appear to be factors. All participants continued to note use progression from prescription opioids to heroin. A participant stated, *"Pill [prescription opioid] users end up taking heroin. It's cheaper and stronger."* Many participants noted that while use ranges across many different groups, most users tend to be young and Caucasian. A participant reported, *"In the town I'm from, it's [heroin users] all Caucasian, young adults. It's a small town." Participants* also continued to recognize that new users are younger than previous users and lacked knowledge about the drug. A participant reported, *"I've seen a range of different types of people using heroin, but the younger people seem like they are dying more [overdosing]."* Law enforcement and treatment providers were able to identify typical heroin users. Law enforcement said, *"When I picture a heroin user, it's a younger, Caucasian person from the suburbs and rural areas". Treatment providers* agreed, with one stating that the users they see are typically, *"lower income, late 20s, and Caucasian".* An officer described the pathway of heroin as it travels through populations: *"The way it [heroin] gets here is very specific. Brown powder comes in to the US via Mexico. From there, it moves from African-American dealers to the Caucasian users."* Another officer agreed and recalled experiences in processing heroin arrests: *"I do all the interviews in the jails, and I have only had one African-American male say he was a heroin user. African-Americans are the dealers and they deal primarily to the Caucasians. I haven't had one Hispanic to interview as a user. A lot of the guys are from farm counties."* Treatment providers also continued to recognize the pill-to-heroin progression, and cited new heroin users to include: *"Caucasian females who are involved with a male who's done the progression; user starts off young with marijuana, is into cocaine by age 13 or 14, then they go right to injecting heroin. They don't even mess around with the pills."* Providers also continued to note the recent trend of younger heroin users, with one adding, *"I think it's [heroin use] just getting younger. When I came here, I couldn't believe they [clients] were doing heroin here. I had all cocaine people in my previous counseling job. Then my first 20 people here were all heroin. And they seem to get younger and younger."*

Reportedly, heroin is used in combination with alcohol, antihistamines, crack cocaine (a.k.a., "chasing the dragon" when smoked together), marijuana, methamphetamine, powdered cocaine (a.k.a., "speedball" when injected together), promethazine (i.e., Phenergan®) and sedative-hypnotics (e.g., sleeping pills, Valium®, Xanax®). A participant explained, "*I've seen people put heroin on the stem [pipe] with the crack cocaine. That's called, 'chasing the dragon'. It's also called, 'peanut butter sandwich'."* Participants reported a preference for some drugs that they believed to be narcotic enhancers. A user reported, *"I like Valium® because it stretches the high out".* Several participants noted how common speed-balling has become. A participant said, *"Some people won't do one [heroin] without the other [cocaine]. They're either that kind of heroin user or they're not."* Participants noted that dealers will typically accommodate users who speedball; one said, "*On my old phone, I had 40 dope boys [drug dealers] who sold coke [cocaine] and heroin. People that speed-ball want both or we're going to someone else [to buy]."*

Beginning in late October 2013 the Southern Ohio area began to see drug deaths that appeared to be from a heroin overdose but not containing any acute morphine or low concentrations of morphine in blood. The deaths were actually from fentanyl, heroin and fentanyl, fentanyl and cocaine, or mixtures of heroin, cocaine and fentanyl. The histories that accompanied these cases did not mention any pharmaceutical fentanyl product either located at the scene or prescribed to the decedent. At this same time the crime laboratory that serviced this same area began to see powder products sold in capsules that normally would contain heroin that contained the same fentanyl or mixtures with fentanyl that were encountered in the postmortem cases. The demographic data were similar to the data obtained by the OSAM network. The decedents were predominately Caucasian males.

The Story of Heroin's Progression in the State of Ohio *(Continued)*

However, the age range was not predominately young.[2] Undercover investigators knew that the source of the fentanyl was illicit.

This has happened before. In Wayne County Michigan in 2005 and 2006 the Medical Examiner's Office documented 101 fentanyl and heroin related fatalities with half of those cases having detectable cocaine concentrations.[3] During this same time frame Massachusetts saw 107 fentanyl deaths combined with opiates, cocaine or both.[4] From 2005 to 2007 Cook County Illinois experienced a series of 342 illicit fentanyl deaths with the greatest number of deaths peaking at 47 per month.[5,6] The fentanyl in the Cook County cases was traced back to a lab in Mexico and once that lab was shut down in 2007, the deaths ceased. In Philadelphia in 2006 the Medical Examiner's Office had a series of 7 cases which contained a combination of fentanyl, heroin and the animal tranquillizer xylazine.[7] Outside of the United States, Sweden had 8 fatalities when fentanyl was mixed with a low concentration of amphetamine powders with caffeine, phenazone and sugar as cutting agents.[8]

Why this progression to adding fentanyl to the heroin or swapping the heroin for fentanyl? It is not clear what the motivation is to create such combinations with fentanyl, but the resulting fentanyl or the mixtures with fentanyl are extremely dangerous with high mortality rates. The speculation is that the customers, being dissatisfied with the decreasing quality of the heroin, were driving the process for the dealers to obtain a better product. The dealers also knew that they could get more money for a better product, thus the "better" product was introduced. Apparently the dealers were not aware of what occurred in the past and must know that killing your customers is never good business practice. As of May of 2014 when I left Ohio, cases containing illicit fentanyl and mixtures were still being seen in the coroner (over 90) and crime laboratories (over 100).

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TECHNICAL ARTICLES

Screening Analysis of Heroin Samples for Possible Cutting Agents and Adulterants

Submitted by **Erin C. Strickland, Jeffrey R. Enders, Josué Monge, Frank Wallace, Gregory L. McIntire**

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Introduction

According to SAMHSA statistics from 2012, approximately 150,000 people over the age of 12 try heroin every year.[1] While this does not make heroin the most commonly abused illegal drug, recent media reports indicate that for 2014 heroin abuse has risen drastically, coinciding with a spike in heroin-related overdose deaths compared to previous years.[2-11] New cutting agents, such as fentanyl and acetylfentanyl in the heroin are believed to be the root cause of these deaths.[2,6,7,10] Heroin that is produced and sold illegally, is typically not a pure substance as it has many inherent impurities originating from the cultivation of the poppy plant such as codeine, morphine, and papaverine. Other impurities including 3-monoacetylmorphine (3-MAM) and 6-monoacetylmorphine (6-MAM) are inherent to the synthesis process, and arise from incomplete acetylation of the morphine. Beyond these common impurities many other seemingly-harmless compounds are added to "dilute" the heroin (e.g., sugars, flour, powdered milk), typically referred to as cutting agents. Other compounds, commonly referred to as adulterants, are used to "enhance" the effect of heroin by reducing the amount of heroin volatilized when heated or giving alternative effects of euphoria (*e.g.*, strychnine, acetaminophen, and caffeine).[12] Many adulterants are seemingly harmless or added in relatively low amounts; however, some adulterants can also be dangerous. A short list of common cutting agents or adulterants that have previously been reported can be found in Table 1.

Table 1: Common Impurities, Cutting Agents, and Adulterants Found in Heroin

Compound Name	Reference(s)
6-MAM/3-MAM	13
Acetaminophen	12, 13, 14
Acetylfentanyl	2
Caffeine	12, 13, 14, 15, 16
Codeine	13
Fentanyl	6, 7, 10
Lidocaine	15
Methaqualone	14, 16
Morphine	13
Noscapine	13, 14, 17
Papaverine	13
Phenobarbital	13, 14, 16
Procaine	13, 14, 15, 16
Quinine	15
Strychnine	12
Sugars: Dextrose, Glucose, Inositol, Lactose, Mannitol, Sucrose	14, 15

Screening Analysis of Heroin Samples for Possible Cutting Agents and Adulterants *(Continued)*

Significant increases in heroin-related overdoses in the Guilford County, NC metropolitan area have been reported in 2014.[18] There have been a series of heroin overdose deaths in Guilford County and there was a concern as to whether fentanyl had been added to the samples.[19] The Ameritox laboratory in Greensboro was contacted by local law enforcement entities requesting analyses of unknown heroin samples purchased by undercover police officers. In total, the laboratory received and screened 12 different heroin samples.

Materials and Methods

The laboratory received samples in 2 lots: 8 in the first lot and 4 in the second lot. Initially, each of the 12 samples was weighed out and dissolved in methanol to have a final concentration of 1 mg/mL based on total weight of the sample. These solutions were used as stocks and further diluted with water for screening by enzyme immunoassay (EIA) and mass spectrometry. The sets were treated somewhat differently, as the authors learned what was effective to achieve optimum results. Concentrations of 60, 6, and 0.6 µg/mL for the first 8 samples and 5 µg/mL for the second 4 samples were screened by EIA on a Beckman-Coulter Olympus AU5400. Kits for 22 different drug assays were acquired from Microgenics DRI® (amphetamine, barbiturate, benzodiazepine, cannabinoid, cocaine metabolite, ecstasy metabolite, methadone, methadone metabolite, opiate, oxycodone, phencyclidine, propoxyphene, tricyclic, EtG, and ethyl alcohol), Microgenics CEDIA® (6-MAM and buprenorphine), and Immunalysis (carisoprodol, tramadol, fentanyl, tapentadol, and mepridine).

After EIA screening, all samples were analyzed on an Agilent 6530 Q-ToF with a 1290 LC pump and auto-sampler. The initial methanol 1 mg/mL stocks were diluted in water at concentrations of 5, 50, 500, 1000, and 5000 ng/mL for the first set of 8 and 1000 and 5000 ng/mL for the second set of 4. Samples were diluted 1:2 with a hydrocodone-D6 (Cerilliant, Round Rock, TX) internal standard solution to ensure proper injection and instrument function. Each sample was run in duplicate on an 8 minute gradient using a Phenomenex Kinetex® 2.6 µm Phenyl-Hexyl 50 x 2.1 mm column, 10 mM ammonium formate with 0.1% formic acid used as mobile phase A and 50:50 methanol:acetonitrile, 0.1% formic acid used as mobile phase B. Data was processed using Agilent's Qualitative Analysis Software and PCDL Software. A compound database was created with the compound name and chemical formula using the compounds listed in Table 1 and searched against the data. Compounds were scored based on mass accuracy and fit to a theoretical isotopic distribution. Compounds that were identified with a score greater than 70, with less than 20 ppm mass error, and in multiple runs and concentrations at consistent retention times were considered "real" hits.

Results

All samples were screened against 22 different EIAs that included 6-MAM, amphetamines, cocaine, fentanyl, and opiates. As expected all screened positive for opiates and 6-MAM. Additionally sample 3B screened positive for fentanyl while all other screening results were negative. To confirm the EIA screening results and to discover additional compounds not screened with EIA, the mass spectrometer was used as an additional screening tool. All compounds in Table 1 and other compounds of interest were searched against the data and the results are summarized in Table 2. Heroin, 6-MAM, and morphine were identified in all samples, while codeine, noscapine, papaverine, and quinine were common in the majority of the samples. It was confirmed that sample 3B was positive for fentanyl. It was interesting to note that no sugars were identified, but many other compounds such as acetaminophen, caffeine, and lidocaine were identified in a few samples.

Discussion/Conclusion

As heroin is known to be an impure drug and heavily cut with sugars and other white substances, it was interesting to note that few cutting agents and adulterants were found in the majority of the samples. There are predominantly two plausible explanations: 1) the cutting agents being used are there but were not detected or 2) there is little cutting agent used in these samples. The list of targeted analytes does not represent an exhaustive database of all cutting agents and adulterants, so it is possible that other compounds not being searched were used instead. It is also possi-

Screening Analysis of Heroin Samples for Possible Cutting Agents and Adulterants *(Continued)*

Table 2: Mass Spectrometer Screening Results

COMPOUND	SAMPLE											
	1A	2A	3A	4A**	5A	6A	7A	8A	1B	2B	3B	4B
6-MAM	X	X	X	X	X	X	X	X	X	X	X	X
ACETAMINOPHEN				X								
ACETYLFENTANYL												
AMPHETAMINE												
CAFFEINE				X			X					
COCAINE**				X								
CODEINE	X	X	X	X		X						
DEXTROMETHORPHAN												
DIPHENHYDRAMINE				X								
FENTANYL											X	
HEROIN	X	X	X	X	X	X	X	X	X	X	X	X
KETAMINE												
LIDOCAINE				X			X					
MDMA												
METHADONE				X								
METHAMPHETAMINE												
METHAQUALONE												
MORPHINE	X	X	X	X	X	X	X	X	X	X	X	X
NOSCAPINE	X	X		X	X		X		X	X		X
PAPAVERINE	X	X	X	X	X	X	X	X	X	X	X	X
PCP												
PHENOBARBITAL												
PHENTERMINE												
PROCAINE				X								
QUININE	X			X								X
SCOPOLAMINE**				X								
STRYCHNINE												
SUGARS*												

*Sugars searched included: dextrose, glucose, inositol, lactose, mannitol, and sucrose
**It should be noted that cocaine and scopolamine are isomers and could not be differentiated in this method

Screening Analysis of Heroin Samples for Possible Cutting Agents and Adulterants *(Continued)*

ble that the compounds used to cut the heroin were not identified because their concentration levels were below the EIA screen and the mass spectrometer detection limits (in positive ionization mode) or they may have lacked solubility in either the methanol and/or the water used for dilutions in the sample preparation. Alternatively, if the cutting agents really are lacking, this heroin would be of a greater strength than older, more diluted ("cut") samples. The current method is not quantitative and cannot be used to determine the purity of the samples, but the hypothesis that the heroin is of greater strength could be one explanation as to why there has been a significant increase in heroin overdoses compared to previous years as reported by the media.

In regards to the concern of heroin being adulterated with dangerous drugs, like fentanyl, it was noted that sample 3B did screen positive for fentanyl. This result confirms reports from the media that there are heroin samples being laced with fentanyl or other dangerous drugs that can potentially cause problems with users and sometimes lead to overdose and death. With only one of the 12 samples screening positive for fentanyl in the analyses it seems that at least in the Guilford County area, it is not quite an epidemic. After all, as Coomber states in a former publication, it does not benefit the procurer of illicit drugs to add lethal or toxic compounds to their products.[12] However, the presence of fentanyl and other dangerous adulterants should continue to be monitored. Enzyme immunoassay screening in conjunction with mass spectrometric confirmation methods is an effective way to obtain these results in an accurate and timely manner, thus benefitting local law enforcement in targeting and quickly removing these adulterated stocks from the streets.

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Screening Analysis of Heroin Samples for Possible Cutting Agents and Adulterants *(Continued)*

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Unintentional Deaths due to Medications, Alcohol, and Illicit Drugs in San Diego County, California

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The following graphs represent medications, alcohol, and prescription drugs that were either alone or in combination responsible for being the primary cause of death or contributing to the death. In other words, these substances were on the death certificate as having played a role in the death. In this publication, the word "drug" refers to illicit drugs and the word "medication" refers to medications.

In some cases, the intoxication contributed to the circumstances of the death and was *required* for an explanation of those circumstances, such as drowning in a bathtub while intoxicated (neurologically intact, sober adults should not drown in a bathtub unless they are unwilling or unable to get above the water line). However, in other cases – such as motor vehicle fatalities – although the crash may have been made more likely to occur because of the intoxication, by convention intoxications were not included as part of the cause of death in these circumstances. The deaths were due to the physical injuries.

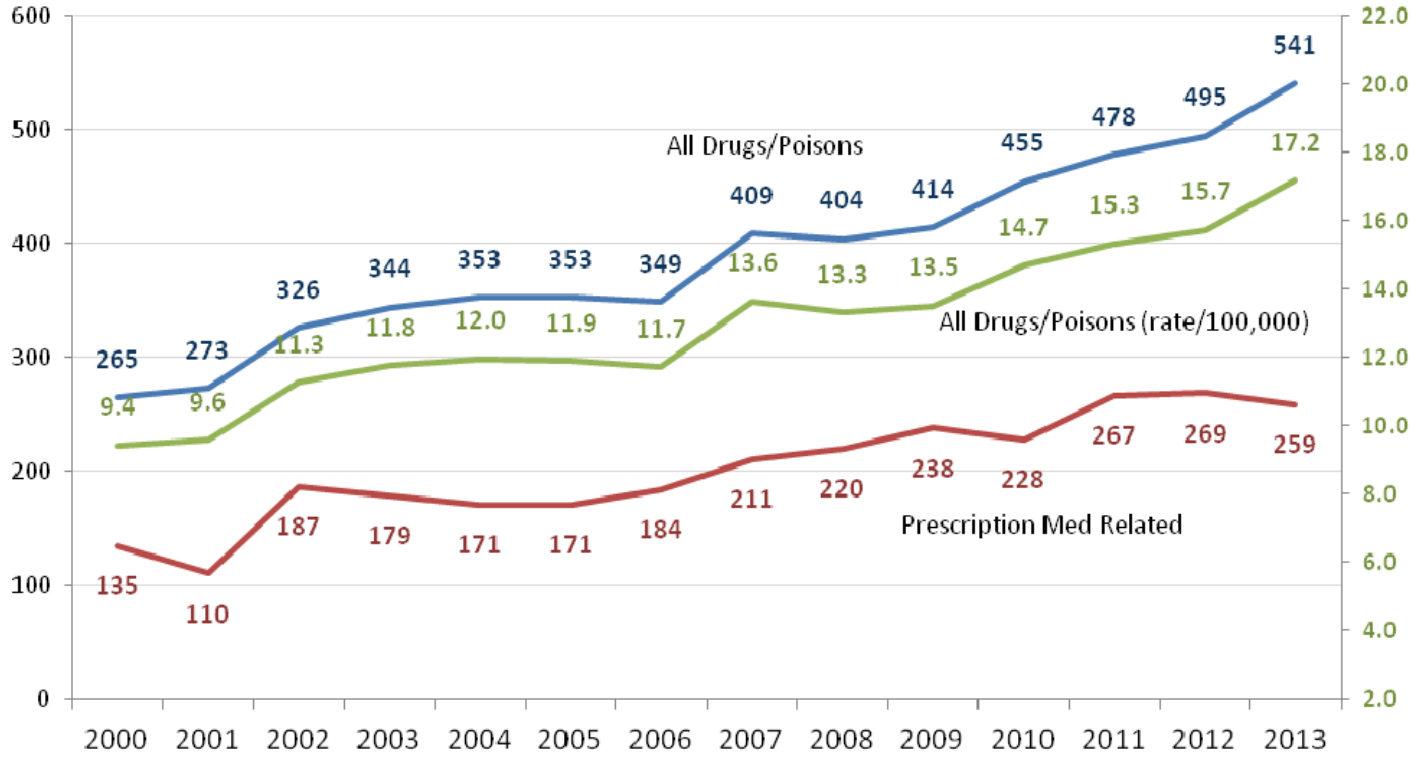
Where numbers of deaths related to an individual drug or medication are provided, one should not add the values of different substances to reach a total. This is because several medications may be involved in one case. In other words, the same case may be represented multiple times by different drugs or medications.

Unintentional Deaths due to Medications, Alcohol, and Illicit Drugs in San Diego County, California *(Continued)*

Some notable trends:

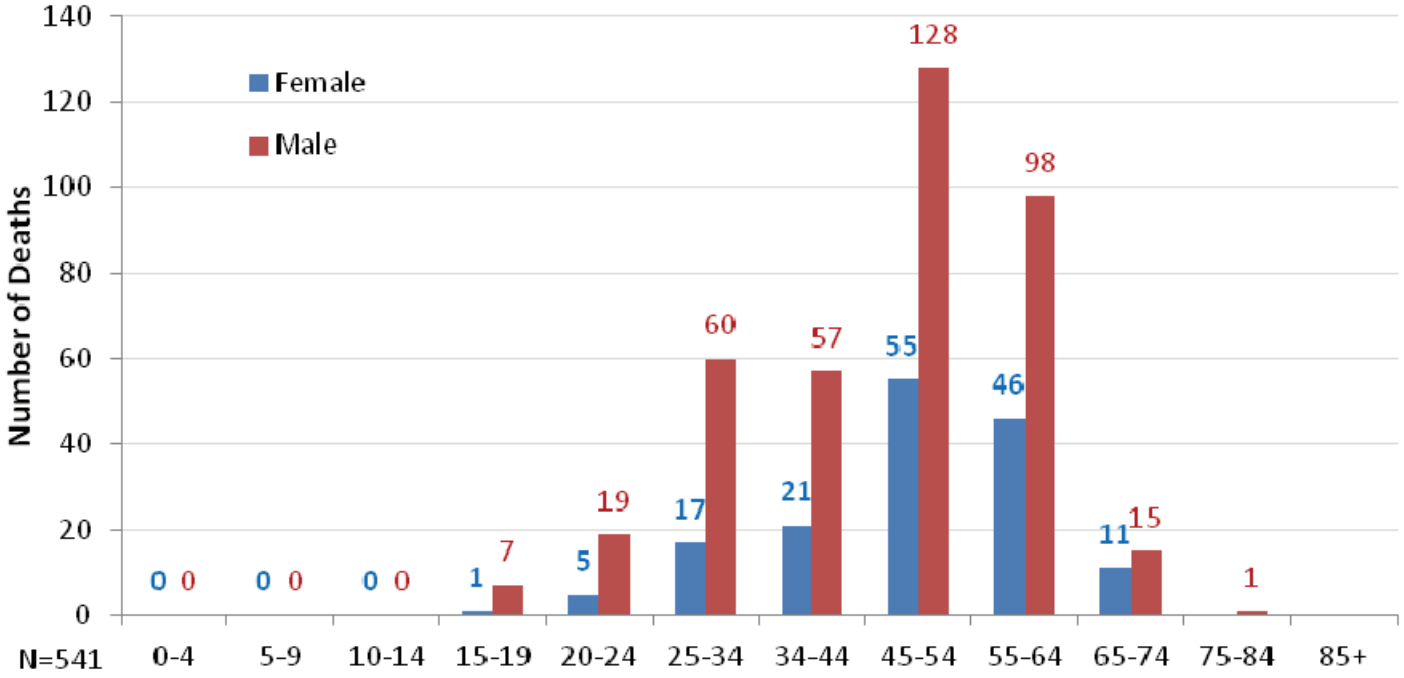
1. 2013 had a slight drop in the number of prescription related deaths, but levels are still the highest they have been in the last 14 years. The largest groups of medications are the narcotics (opiates and their derivatives), hypnotics, and sedatives.
2. Heroin has maintained the increase in frequency seen after 2006/2007 and was still the most common drug/medication in those between 20 and 29 years of age.
3. Methamphetamine was still the number one cause of drug/medication related deaths for the population as a whole, was at an all-time high number (190), and was the number one substance in those between 10 and 69 years of age.
4. Two deaths related to phencyclidine (PCP) appeared in 2013, with the last case being in 2009.
5. One case included two synthetic substances – methoxetamine (a derivative of ketamine) and something called AH-7921 (an opioid).
6. There was one death related to "Bath Salts" and two deaths related to ecstasy in 2013.

Number of Unintentional Drug/Alcohol Related Deaths, 2000 – 2013

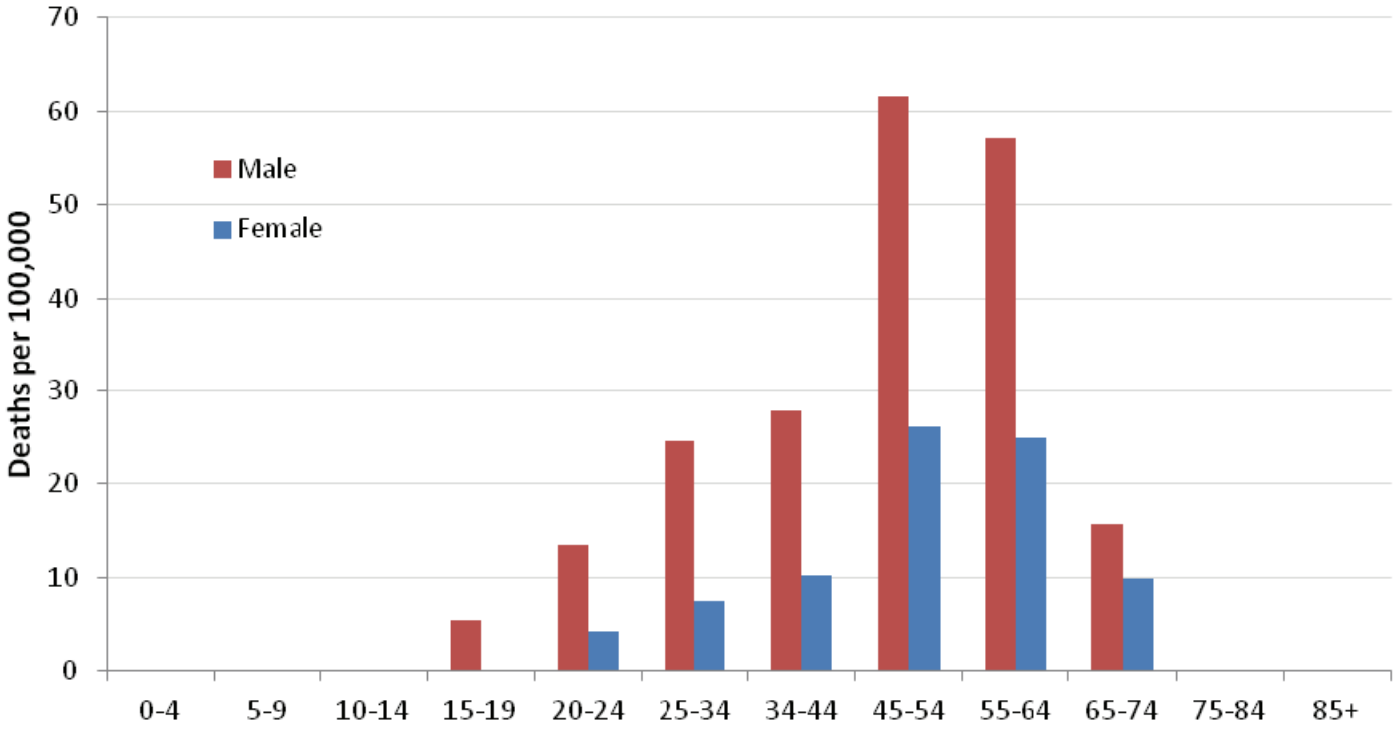


Unintentional Deaths due to Medications, Alcohol, and Illicit Drugs in San Diego County, California *(Continued)*

Number of Drug/Alcohol Overdose Deaths by Age and Sex, 2013

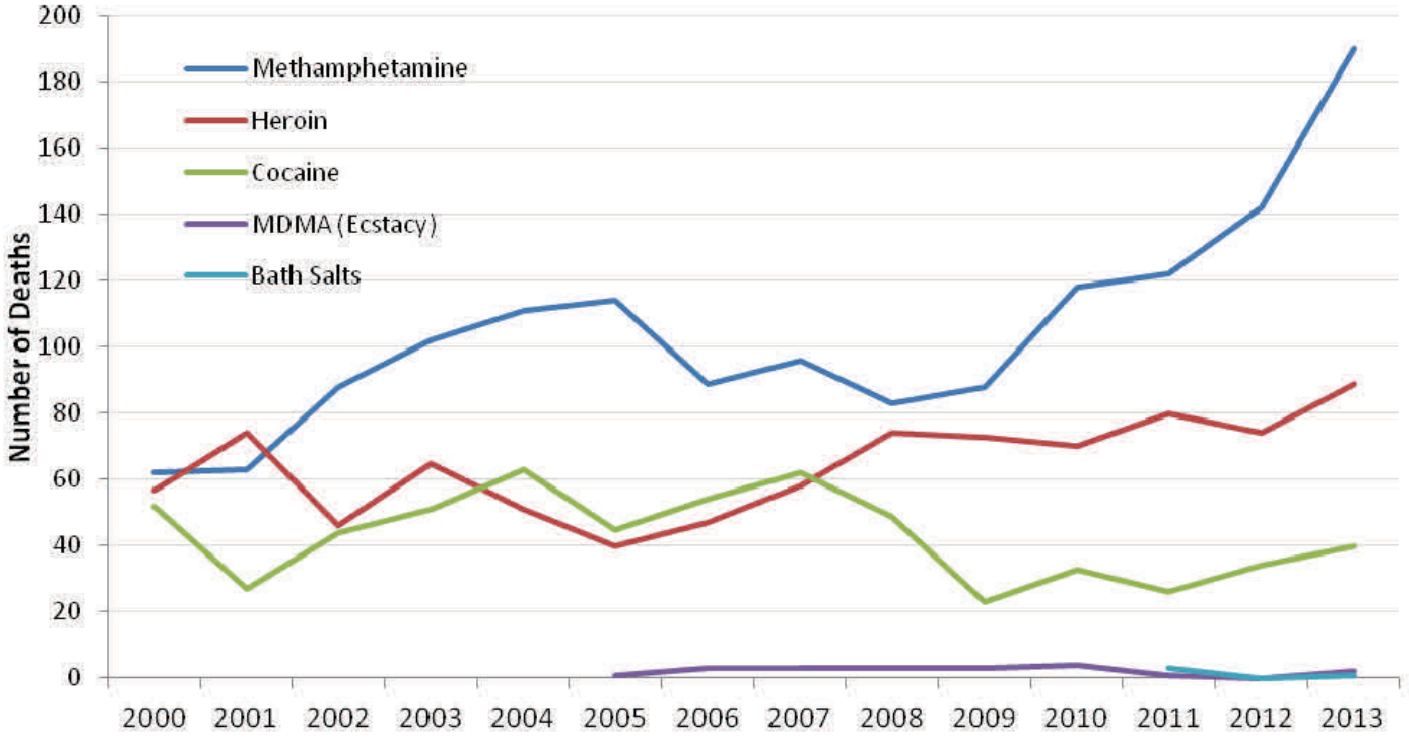


Rates of Drug/Alcohol Overdose Deaths by Age and Sex, 2013

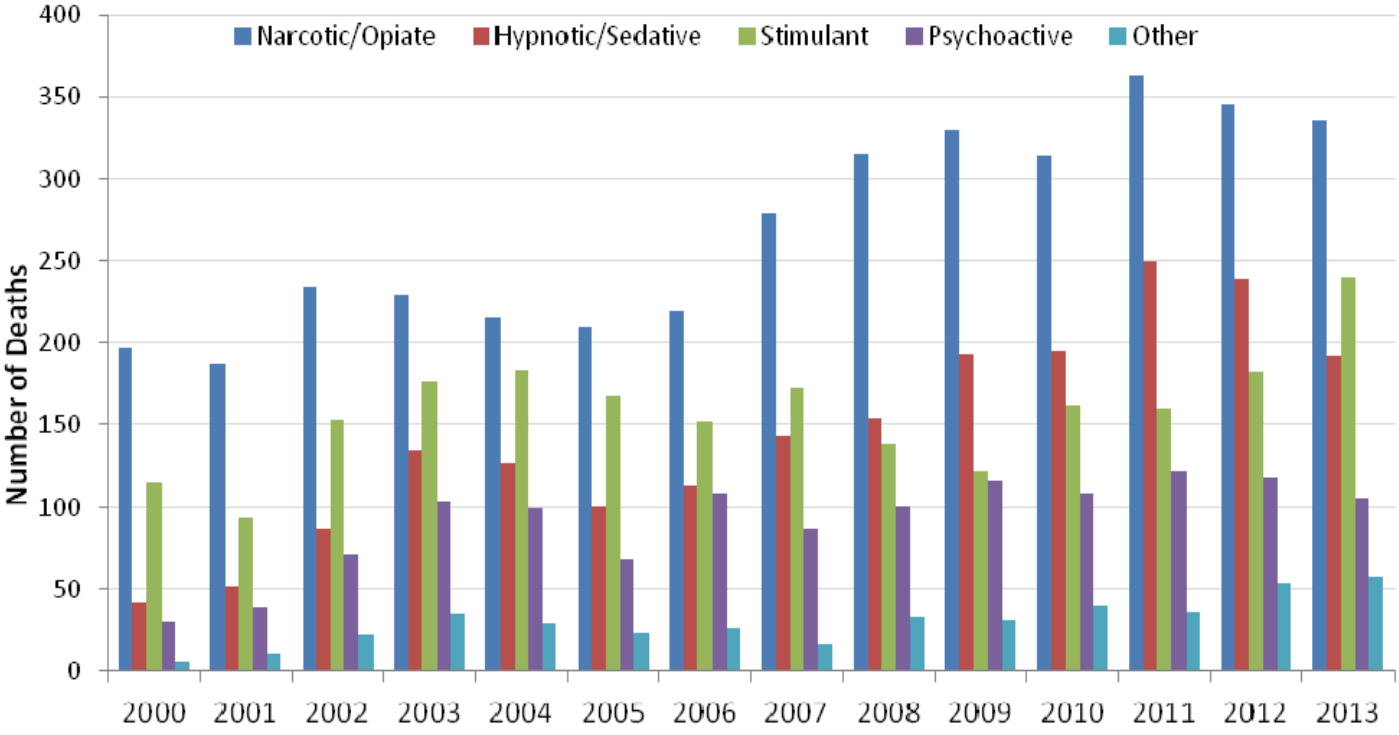


Unintentional Deaths due to Medications, Alcohol, and Illicit Drugs in San Diego County, California *(Continued)*

Unintentional Deaths Related to Illicit Drugs, 2000-2013



Unintentional Deaths due to Drugs/Medications, 2000-2013



Unintentional Deaths due to Medications, Alcohol, and Illicit Drugs in San Diego County, California *(Continued)*

Unintentional Deaths due to Drugs/Medications, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Narcotic/ Opiate	**197**	**187**	**234**	**230**	**216**	**210**	**219**	**279**	**315**	**330**	**314**	**363**	**345**	**336**
Hypnotic/ Sedative	**42**	**51**	**87**	**135**	**126**	**100**	**113**	**143**	**155**	**193**	**195**	**249**	**239**	**192**
Stimulant	**115**	**94**	**154**	**176**	**184**	**168**	**152**	**172**	**139**	**122**	**162**	**160**	**183**	**240**
Psychoactive	**31**	**39**	**71**	**103**	**99**	**68**	**109**	**87**	**100**	**116**	**109**	**122**	**118**	**106**
Other	**6**	**11**	**22**	**35**	**29**	**23**	**26**	**17**	**34**	**32**	**40**	**36**	**53**	**58**

Unintentional Deaths—Selected Drugs & Medications, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Methamphetamine	62	63	88	102	111	114	89	96	83	88	118	122	142	190
Alcohol	63	80	61	45	58	64	81	84	95	127	132	124	142	127
Heroin	57	74	46	65	51	40	47	58	74	73	70	80	74	89
Morphine	69	38	81	52	40	45	37	49	33	48	37	38	57	45
Cocaine	52	27	44	51	63	45	54	62	49	23	33	26	34	40
Diazepam	16	18	34	38	36	28	35	46	50	47	48	40	59	35
Methadone	7	10	18	20	29	32	35	43	47	41	53	53	44	47
Oxycodone	8	17	21	16	16	19	17	45	52	43	48	65	59	49
Hydrocodone	10	14	23	23	26	21	32	28	34	44	37	52	49	48
Diphenhydramine	2	5	14	13	14	10	14	21	17	21	21	30	25	30
Alprazolam		5	1	7	6	15	13	13	15	23	28	52	55	27
Fentanyl	7	5	9	9	8	19	23	20	23	23	12	14	12	14
MDMA (Ecstasy)	1			1		1	3	3	3	3	5	1		2
Phencyclidine (PCP)										1				2
Bath Salts												3		1
Other Synthetics														1*

*includes one case with both methoxetamine (a derivative of ketamine) and AH-7921 (opioid)

Unintentional Deaths due to Medications, Alcohol, and Illicit Drugs in San Diego County, California *(Continued)*

Unintentional Drug/Med/Alcohol Deaths by Combination, 2013

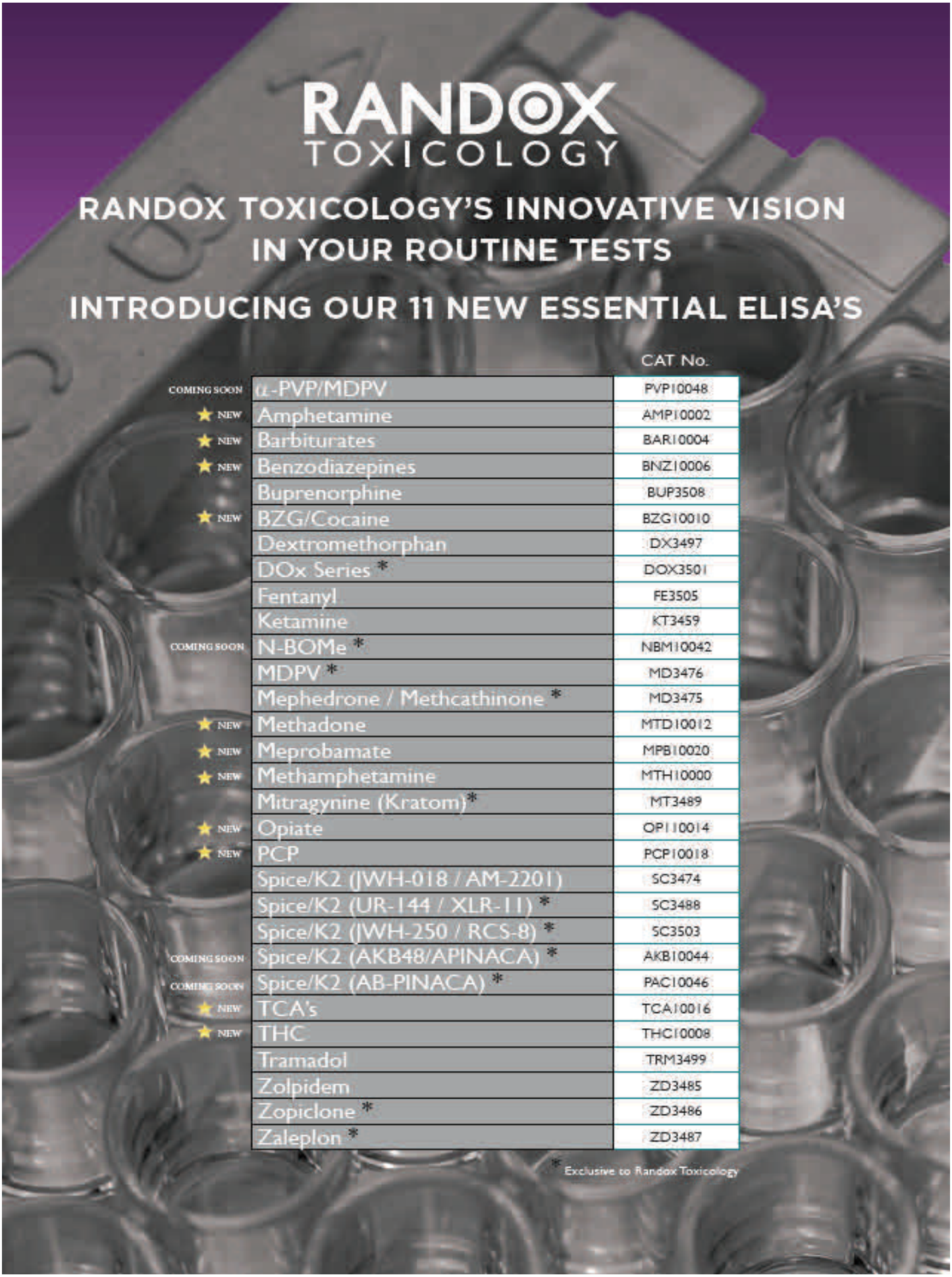
Illicit	208
Prescription	156
Alcohol	55
Prescription and Illicit	45
Prescription and Alcohol	39
Illicit and Alcohol	16
Prescription, Illicit and Alcohol	10
Prescription and OTC	5
OTC	3
Prescription, Alcohol and OTC	2
Prescription, Illicit, Alcohol and OTC	1
Prescription, Illicit and OTC	1

Note: includes all medication/alcohol/drug-related deaths whether the substance(s) were the primary cause of death or contributory to the death. Illicit – heroin, cocaine, ecstasy, methamphetamine, PCP, synthetics. Prescription – medications *normally* obtained by prescription. OTC – over the counter medications.

Most Frequent Drug/Medication Unintentional Deaths by Age, 2013

Substance	15-19	20-24	25-34	34-44	45-54	55-64	65+	Total
Methamphetamine	1	1	22	34	80	48	4	190
Alcohol	1	4	17	15	53	28	9	127
Heroin	2	13	25	18	15	15	1	89
Oxycodone	3	2	6	7	18	10	3	49
Hydrocodone		1	5	8	16	13	5	48
Methadone	2	4	8	6	8	18	1	47
Morphine			9	7	14	13	2	45
Cocaine		1	8	1	15	14	1	40
Gabapentin			3	11	11	11	3	39
Diazepam		3	5	4	12	8	3	35
Diphenhydramine	1	2	4	3	10	8	2	30
Alprazolam	2	4	7	2	5	5	2	27
Quetiapine			5	3	9	7	0	24
Trazodone		2	3	2	6	5	2	20
Tramadol		1	2	3	5	7	1	19
Zolpidem			3	4	4	5	3	19
Citalopram	1		4	4	5	4	0	18
Chlordiazepoxide			2	3	6	4	0	15
Clonazepam	1	1	2	4	4	2	0	14
Fentanyl	1	1	2	1	1	7	1	14
Carisoprodol			3	3	1	2	1	10
Fluoxetine				1	4	4	1	10
Hydromorphone			1	2	3	3	0	9

Note: Because an individual case may be due to a combination of medications, the medications are not mutually exclusive.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NEW PCP PCP10018
Spice/K2 (JWH-018 / AM-2201) SC3474
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Medical and Recreational Use of Marijuana: Have We Missed the Boat Again?

Submitted by **David M Benjamin, Ph.D. ,** medlaw@doctorbenjamin.com
Dept. of Pharmaceutical Sciences, Northeastern University, Boston, MA

Just as some state governments (like Massachusetts) have moved to decriminalize the possession of personal amounts of marijuana (1 ounce or less), and license "dispensaries" to sell marijuana for legitimate medical purposes, or allow the non-medical use of marijuana for recreational purposes (e. g., Colorado), the wisdom of these decisions has been questioned following reports of two deaths associated with the oral ingestion of marijuana-laced cookies or candy.[1]

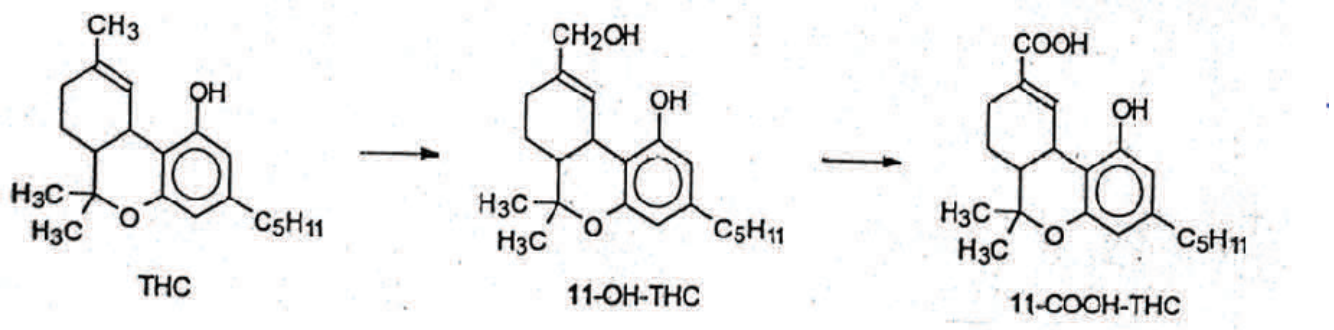
Case 1 involved a 19-year-old college student from Wyoming named Levi Thomba Pongi. According to the USA Today article, witnesses say that Mr. Pongi ate a marijuana-laced cookie and shortly thereafter began rambling incoherently. A little while later Mr. Pongi jumped to his death from the balcony of a Denver hotel. Mr. Pongi was reported to have had a blood THC concentration of 7.2 ng/mL, a concentration that would be found approximately 2 hours after smoking a 3.55% THC marijuana cigarette, and the Denver coroner listed marijuana intoxication as a significant factor in his death. One should remember that plasma THC concentrations are approximately twice those of whole blood, and due to the great variability in metabolism and distribution in the population, reliable correlations between blood or plasma concentrations and time of smoking cannot be reliably established.

The second case involved Richard Kirk of Denver, CO, who developed hallucinations and rambling speech after eating marijuana-containing candy and taking prescription medication at the same time. The prescription medication was not named. In the midst of Mr. Kirk's apparent psychotic break he fatally shot his wife while she was on a 911 call asking for urgent help because her husband was "totally hallucinating" and scaring the kids. Mr. Kirk now faces first-degree murder charges stemming from that fatal shooting. The USA Today article offers opinions from a psychologist, a psychiatrist, a legislator and a marijuana advocate on how the oral ingestion of THC induced psychosis, suicidal acts and violence not generally seen following the smoking of marijuana. However, none of those who commented were pharmacologists, or had advanced training in pharmacokinetics.

There is substantial pharmacology literature on the differences between smoking marijuana and ingesting it. Tetrahydrocannabinol (THC), shown in Figure 1, normally undergoes oxidation of the 11 CH_3 group to the 11-OH-THC metabolite, CH_2OH, by the polymorphic CYP2C9.[2] The 11-OH-THC metabolite is psychoactive, and is finally oxidized to the inactive, 11-nor–9-carboxy-THC (THC-COOH) acid which appears in the blood and urine.[3] When THC is smoked in the traditional ways, smoking of a single marijuana cigarette containing either 1.75% or 3.55% THC produced peak plasma levels of 11-OH-THC of 6.7-7.5 ng/mL which were measurable in the low dose group for 4.5 hrs and 11.2 hrs in the high dose group.[4]

The psychotropic effects of the 11-OH-THC metabolite were demonstrated by Lemberger in 1973, when he administered tritiated IV doses of THC, 11-OH-THC (formulated in ethanol) or ethanol, under blinded conditions, to nine casual marijuana users.[6] Following

Figure 1



THC; tetrahydrocannabinol

Medical and Recreational Use of Marijuana: Have We Missed the Boat Again? *(Continued)*

the administration of 1 mg of 11-OH-THC, a marked tachycardia and euphoric "high" occurred in 3-5 minutes, and psychologic effects correlated well with 11-OH-THC plasma levels. However, IV administration of 1 mg of THC required a latency period of 10-20 minutes after IV administration before the peak subjective "high" was reported by the subjects. Lemberger et al interpreted these results to indicate that the psychologic effects of THC were at least partially mediated through the 11-OH-THC metabolite and the latency period was indicative of the time required to convert the THC to 11-OH-THC.

Although we do not have any information on the genotype of CYP2C9 or capacity of the two victims to metabolize THC, Lemberger's study indicates that the genetic polymorphism known to be present with the CYP2C9 enzyme could significantly impact the effect of oral marijuana ingestion on the development of CNS toxicity and the probability of precipitating a psychotic reaction in fast metabolizers who rapidly produce large amounts of 11-OH-THC following oral ingestion of cookies and candy containing marijuana. The CYP2C9 exists as three genotypes, CYP2C9*1/*1, CYP2C9*2/*2, and CYP2C9*3/*3, which can be homozygous or heterozygous (e.g., CYP2C9*1/*3).[2] Studies indicate that the *1/*1 homozygous genotype is the most active enzyme and the *3/*3 the least active, with other heterozygous combinations somewhat interim. Subjects with the *1/*1 homozygous genotype had a shorter mean terminal elimination rate for THC (7.5 hrs) in comparison to the *3/*3 genotype (22.1 hrs), and more *3 alleles carried by a subject, the greater the sedation experienced.[2]

Both the case reports and the study by Lemberger also demonstrate how a change in the route of administration of a drug can turn a substance like marijuana, which Sanjay Gupta, MD on CNN, called a rather innocuous substance, into a dangerous psychoactive substance capable of causing psychotic episodes and precipitating great danger in the population at large. Another important lesson to be gleaned from these case reports is the apparent inadequate attention paid to the administration of marijuana by the oral route. Most of the published pharmacologic and epidemiologic studies on marijuana during the past few decades have focused on the smoking of marijuana, and relatively few publications have studied the metabolism and pharmacologic effects of marijuana by the oral route. The appearance of 11-OH-THC in the blood after smoking marijuana has been reported in several publications [3,4] although the 11-OH-THC is often less than 20% of the parent compound following smoking, while ingestion can produce 11-OH-THC blood levels comparable to THC, the parent compound.[5] Jokes about "marijuana brownies" have been made for decades, but it is apparent that differences in the route of administration of marijuana lead to a very different constellation of effects which dramatically change from mild to moderate euphoria by the inhalation route to severe CNS toxicity by the oral route.

Lemberger's study is 40 years old, but current investigators in the marijuana field have failed to look for toxic effects of marijuana when administered by the oral route. It is now apparent that oral administration of marijuana to a subject predisposes them to the possibility of a severe psychotic reaction. Those who produce a large amount of 11-OH-THC, due to a high level of CYP2C9 activity, are at the greatest risk. Since there is currently no way to routinely phenotype potential users and determine a level of risk prior to ingestion of marijuana, a critical public health issue exists. Therefore, those who wish to use marijuana should choose to smoke it, rather than eat it, in order to avoid the risk of a serious CNS adverse effect. While inhaling hot smoke certainly is not a healthy practice, the inhalation route appears to present less risk of a serious adverse psychiatric reaction, and the dose can be titrated by the user far more easily than the oral route.

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Medical and Recreational Use of Marijuana: Have We Missed the Boat Again? *(Continued)*

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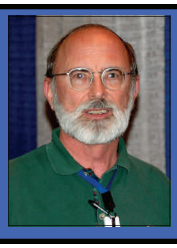

CASE NOTES

Send interesting *"Case Notes"* to Section Editor

***Matthew Barnhill, Ph.D.,* F-ABFT**

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Case Report of a Fatality Involving a New Designer Drug: N-(2-methoxybenzyl) 2,5-dimethoxy-4-bromophenethylamine (25B-NBOMe)

Submitted by **Dani Mata, MSFS** dmata@occlocgov.com**; Slavco Arsovski, MS**

Orange County Crime Lab, Santa Ana, CA

Introduction

N-(2-methoxybenzyl)2,5-dimethoxy-4-bromophenethylamine (25B-NBOMe), see Figure 1, is a derivative of the phenethylamine hallucinogen 2C-B.[1] It acts as a potent partial agonist for the serotonin $5HT_{2A}$ and $5\text{-}HT_{2C}$ receptors and appears to have stimulant and hallucinogenic effects on users.[1-3] It has been seen with LSD that the stimulation of the $5\text{-}HT_{2A}$ receptors appears to be essential for the hallucinogenic effects of the drugs.[1] This may account for the powerful psychedelic effects experienced at very low doses of the NBOMes.[2]

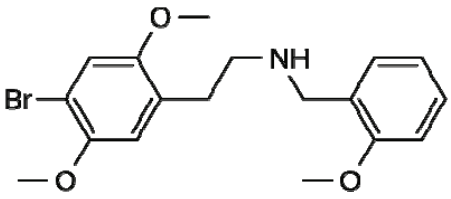

Figure 1: Chemical Structure of 25B-NBOMe

Unlike LSD, however, the NBOMes have significant sympathomimetic effects and can lead to acute toxicity, in addition to the behavioral hazards associated with LSD use.[2] Anecdotal reports indicate that the powder in doses of 50-250 µg may be administered sublingually by insufflation or applied to the buccal cavity. Blotter paper, the preferred choice of users (see Figure 2), usually contains higher doses ranging from 500-800 µg.[4] Based on user reports (EROWID), initial effects are felt within 15 minutes with a duration of up to 12 hours.[1,3] Individuals presenting to the emergency departments with acute NBOMe toxicity might experience cardiovascular complications, agitation, seizures, hyperthermia, metabolic acidosis, organ failure and death.[2]

Case History

An eighteen year old Caucasian female was at home with three friends and bought what they thought was LSD. Three individuals took the "LSD" which was on blotter paper. One individual took one blotter paper and the other two, including the deceased, took

Case Report of a Fatality Involving a New Designer Drug: N-(2-methoxybenzyl) 2,5-dimethoxy-4-bromophenethylamine (25B-NBOMe) *(Continued)*

two blotter paper squares. After approximately 15-20 minutes the two individuals who took two blotter papers had bad trips. The deceased's bad trip consisted of running up and down the stairs, routinely falling down, and walking into walls. At one point, the deceased was in the kitchen on her hands and knees barking like a dog at the dog's water bowl and pulled the curtains off the wall and bent the rod. All of the deceased's friends left her passed out on the bed after they saw her seizing and foaming at the mouth. They returned 2 hours later to find her unresponsive and called 911. The deceased had a past illicit drug history of daily marijuana use and infrequent use of MDMA and LSD. Parents claimed the deceased was insulin dependent diabetic, suffered from severe migraines, was bipolar and had sleeping difficulties.

Figure 2: Blotter paper with 25B-NBOMe

Results

An autopsy was performed on the deceased. There were a few small lacerations on the arms and head and multiple bruises covered the body. The only other notable finding in the autopsy was a small square-shaped paper (approximately 1 cm^2) sticking to the mucosa in the upper esophagus and lower pharyngeal area. Microscopic examination of the tissues revealed nothing remarkable.

Volatile testing was performed using GC-FID/MS. Routine drug testing was performed by immunoassay, GC-NPD, GC-FID, and GC-MS for drugs of abuse, including benzodiazepines, cannabinoids, cocaine, methamphetamine, opiates, zolpidem, and other basic and weakly acidic compounds. The immunoassay was presumptive positive for cannabinoids. Other drugs detected at OCCL can be seen in Table A.

The blotter paper found in the deceased's house and the one square found in her throat at autopsy were tested by the Controlled Substance section of the OCCL. It was determined that 25B-NBOMe was present on the blotter paper using a GC-MS and GC-IR. No LSD was detected. A sample of heart blood was sent to NMS Labs to test for NBOMes and Lithium which the deceased was reportedly taking. The results from NMS labs can be seen in Table B.

Table A: Drugs detected by OCCL Lab

Drug	Matrix	Instrument	Concentration (mg/L)
Tramadol	Heart Blood	GC-NPD and GC-MS	0.352 ± 0.053
Verapamil	Heart Blood	GC-NPD and GC-MS	0.0682 ± 0.0092
Amphetamine	Heart Blood	GC-NPD and GC-MS	0.232 ± 0.015
Carboxy-THC	Heart Blood	GC-MS	Detected
Zonisamide	Heart Blood	GC-FID and GC-MS	Detected
Lamotrigine	Heart Blood	GC-FID and GC-MS	Detected

Table B: Drugs detected by NMS

Drug	Matrix	Instrument	Concentration
25B-NBOMe	Heart Blood	LCMSMS	Detected
Lithium	Heart Blood	ICP-OES	0.40 mEq/L

Case Report of a Fatality Involving a New Designer Drug: N-(2-methoxybenzyl) 2,5-dimethoxy-4-bromophenethylamine (25B-NBOMe) *(Continued)*

Discussion/Conclusion

There have been reports of deaths where an NBOMe has been found in the blood of the deceased throughout the country and across Europe.[3] There have also been many cases where individuals needed hospital treatment after ingestion and where individuals were inflicting harm to themselves after ingestion.[3] As with the other cases, aggression and hallucinations were observed with the deceased after ingestion. Other commonalities between this case and others reported is that the deceased believed she was taking a different drug than what was sold to her. In this case, the pathologist concluded the death was accidental due to the combined toxicity of the drugs, including 25B-NBOMe and Lithium, and other associated historical medical factors. Due to minimal scientific and clinical studies, the pathologist did not feel comfortable stating that 25B-NBOMe was the sole cause of death.

Acknowledgment

The author would like to thank all the analysts in the toxicology section, the Coroner's Division, Don Pekta of Trace Analysis, and Jeanne Putinier of the CSI Section for their work on this case.

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A Fatality Involving Methoxetamine and Dextromethorphan

Submitted by **Trista H. Wright, Ph.D. [1], Jennifer Bowers, M.D.[2]**
[1]Virginia Department of Forensic Science, Roanoke, VA
[2] Office of Chief Medical Examiner, Roanoke, VA

Introduction

Methoxetamine, 2 (3-methoxyphenyl)-2-(ethylamino)-cyclohexanone) is a recreational drug that first appeared in 2010 as a substitute to ketamine.[1] Oral, insufflation, rectal, and intramuscular injection administrations have been reported with recreational doses ranging from 20 to 100 mg and up to 750 mg for intoxication.[1-3] Side effects such as euphoria, agitation, hallucination, disorientation, confusion, tachycardia, respiratory depression, and vomiting have been reported, and effects can begin within 10 to 20 minutes after administration and last up to 2 to 3 hours.[1,2] Serum methoxetamine concentrations were reported by Woods et al. and Shields et al. to be 90-450 µg/L in living subjects.[4,6] Wikström found blood methoxetamine concentrations between 0.13-0.49 µg/g in four living subjects which also contained natural and synthetic cannabinoids.[1] A drugs and driving case was reported by Elian which contained 0.010 mg/L methoxetamine in whole blood as well as clonazepam, 7-aminoclonazepam, carboxy-THC, diphenhydramine, and MDMA.[5] Thus far only one fatality has been reported by Wikström which found a femoral blood methoxetamine concentration of 8.6 µg/g.

Dextromethorphan (DXM) is an over-the-counter antitussive and within therapeutic concentrations it is an effective cough suppressant with few side effects. When hyperdosing occurs, the drug can produce visual and auditory hallucinations, dysphoria, tremors, nausea, and blurred vision.[7,8] Normal daily total doses of DXM are 90-120 mg divided four times a day and have

A Fatality Involving Methoxetamine and Dextromethorphan *(Continued)*

been reported to produce concentrations between 1.8-231 µg/L.[8,9] DXM doses associated with dissociative and hallucinogenic effects have been reported by users to be 150-1500 mg or more.[8] Impaired driving associated with DXM has been documented in Wisconsin and Washington and found that those drivers had DXM concentrations of 5-1800 µg/L.[10,11] Postmortem DXM blood concentrations in adults, associated with fatality, range from 1100 to 18,000 µg/L.[12-14]

Case History & Autopsy

A 24 year old male was found dead after falling from a second story balcony. The police reported potential cocaine use; however, drug abuse history is unknown. The decedent sustained fatal injuries when he went over the balcony railing following the escape of a pet rabbit. There was no prior history of suicidal ideation or mental illness from family and friends. The autopsy revealed blunt force injuries to the head. The manner of death was postponed pending toxicology analysis for contributing factors to the cause of death.

Material and Methodology

Postmortem specimens were subject to comprehensive volatile and drug screening. Headspace gas chromatography with flame ionization detection was used to determine the presence of volatiles in the iliac blood. Enzyme-Linked Immunosorbent Assay (ELISA) was used to screen the iliac blood for cocaine metabolite, opiates, oxycodone, methamphetamine/MDMA, phencyclidine, barbiturates, benzodiazepines, carisoprodol/meprobamate, fentanyl, methadone, and zolpidem. The iliac blood and urine were screened for a broad spectrum of basic drugs using gas chromatography with mass spectrometry (GCMS).

Dextromethorphan and methoxetamine standards were purchased from Cerilliant Corp. (Round Rock, Texas) and Cayman Chemical (Ann Arbor, Michigan), respectively.

Identification and Quantification

A 2 mL aliquot of blood and urine was used in a basic drug screening assay by solid phase extraction (SPE). The specimens were prepared for SPE by the addition of acetonitrile followed by shaking, rotating and centrifuging the samples. The acetonitrile was evaporated to 1-2 mL, then distilled water was added to bring the total volume to approximately 3 mL followed by the addition of 2 mL of 0.1 M potassium phosphate buffer (pH 6.0). Varian SPE columns were preconditioned prior to adding the sample on the column. The eluent was evaporated at 50°C under nitrogen then reconstituted in 50 µL of ethyl acetate.

The dextromethorphan quantitation was performed on an Agilent 6890 series gas chromatograph with a nitrogen phosphorus detector (GC-NPD). Chromatographic separation was achieved using an HP-5MS cross-linked 5% phenyl methylsilicone capillary column (30 m x 0.2 mm x 0.25 µm).

The methoxetamine was quantitated by NMS labs (Willow Grove, PA) by high performance liquid chromatography/time of flight-mass spectrometry.

Results

Volatile and immunoassay screening of the iliac blood did not detect any drugs or drug classes. The broad spectrum screen by GCMS revealed the presence of methoxetamine and dextromethorphan in the postmortem iliac blood and urine. The quantitation by GC-NPD determined an iliac blood dextromethorphan concentration of 1900 µg/L. The blood methoxetamine concentration was determined by NMS Labs to be 1100 µg/L.

Discussion

The DXM concentration in the iliac blood was above the therapeutic range (10-40 µg/L) and consistent with the abuse of DXM.[8-11,15] Fatalities have been reported in adults with blood DXM concentrations as low as 1100 µg/L. The abuse of methoxetamine among recreational users is relatively new and only a few cases have been reported in the literature. Methoxetamine serum concentrations in living subjects have been reported to be as high as 400 µg/L.[4,6] One fatality involving methoxetamine revealed a concentration of 8.6 µg/g in femoral blood.

In this case the DXM and methoxetamine iliac blood concentrations were above the therapeutic and known recreational/abuse concentration ranges for each drug, respectively. The cause of death was determined to be blunt force trauma to the head and the elevated drug concentrations were not contributing factors in the circumstances surrounding the death.

A Fatality Involving Methoxetamine and Dextromethorphan *(Continued)*

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NEW DRUGS AND TECHNOLOGY TIDBITS

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Section Editor **Dan Anderson, M.S., D-ABFT-FT, D-ABC**

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NEW DRUG: Vortioxetine

Submitted by **Brittany Ciullo**

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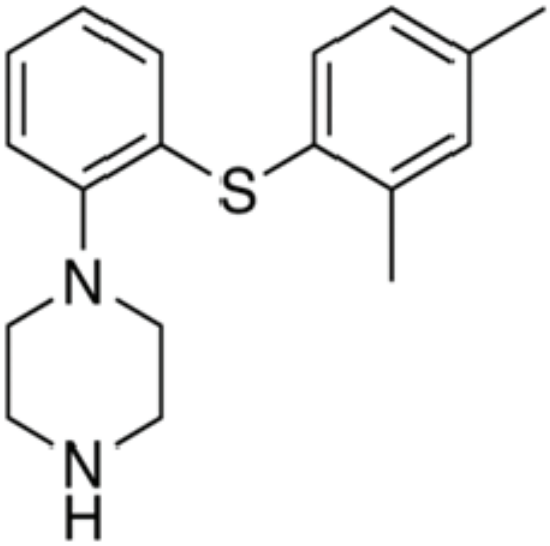
Vortioxetine, trade name BRINTELLIX™, is an atypical antidepressant that was approved on September 30, 2013 by the US Food and Drug Administration (FDA) for the treatment of major depressive disorder (MDD)[2]. Vortioxetine is prescribed in 5, 10, 15, and 20mg daily doses as an immediate-release tablet that is to be taken orally[1].

General Information

IUPAC Name:	1-[2-(2,4-Dimethyl-phenylsulfanyl)-phenyl] piperazine
Chemical Formula:	$C_{18}H_{22}N_2S$
Molecular Weight:	298.45 g/mol
Availability:	Medchem Express® HY-15414.
CAS Number:	508233-74-7



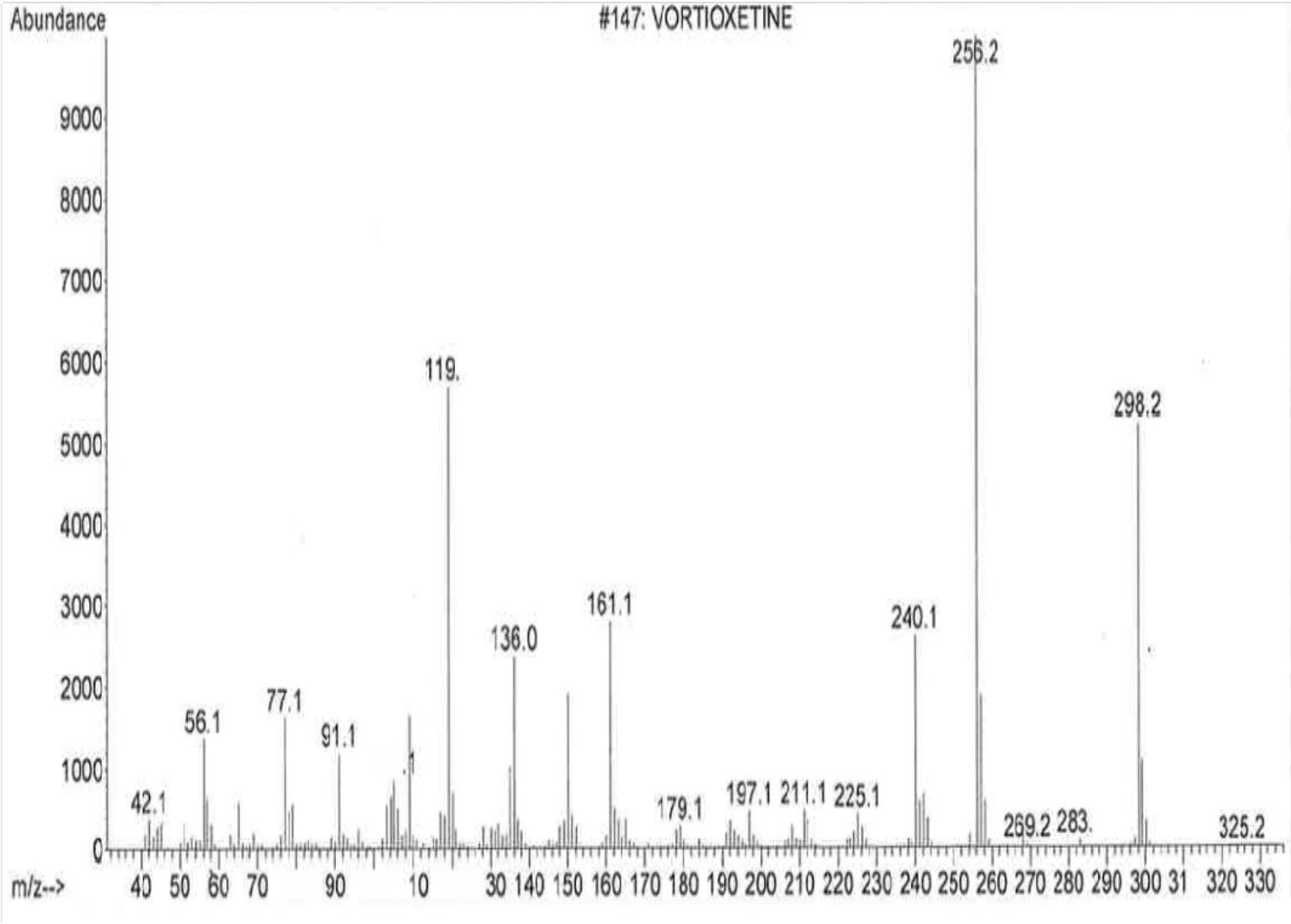
Pharmacology

Half-Life:	66 hrs
Cmax:	9, 18, and 33 ng/mL @ T_{max} 7-11 hours following doses of 5, 10, and 20 mg/day, respectively
V_d:	2,600 L
Metabolism:	Oxidation: carboxylic acid metabolite (pharmacologically inactive).
Elimination:	59% and 26% of the metabolites were recovered in urine and feces, respectively. Negligible amounts of the parent drug were recovered in the urine up to 48 hours.
Drug Interactions:	Bupropion and Rifampicin

Toxicology

Extraction:	Recovered by an n-butyl chloride liquid-liquid basic drug extraction with an acid back extraction.	
Detection:	GC/NPD:	Elution order: Carbinoxamine (IS), Sertraline, **VORTIOXETINE**, Paroxetine, Zolpidem
	GC/MS:	Ions: **256**, 119, 298 m/z

NEW DRUG: Vortioxetine *(Continued)*



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FROM THE TOXICOLOGY LITERATURE

Submitted by **Barry Levine, Ph.D., F-ABFT**

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Journal of Analytical Toxicology Vol. 38, April 2014

Three studies from a single research group were published in this issue that discussed the urinary metabolite distribution of drugs monitored in pain management testing. Carisoprodol, oxycodone and diazepam were each the subject of one paper. Data from metabolite ratios were presented. Factors such as co-administration of CYP inhibitors that would affect the particular drug's metabolism were also discussed.

Journal of Forensic Sciences Vol. 59, March 2014

Papoutsis et al studied the stability of morphine, codeine and 6-acetylmorphine in blood specimens stored under a variety of conditions for both refrigerated and frozen samples. Conditions included the type of storage tube (glass, polypropylene or polystyrene), presence or absence of sodium fluoride, type of anticoagulant (oxalate or EDTA) and length of storage (1 day to 3 months). All analytes showed some decrease in all conditions; however, no decrease in morphine and codeine concentrations greater than 30% occurred in any of the conditions examined. 6-Acetyl morphine showed the greatest instability. The presence of fluoride improved the stability of all analytes. Conversely, the type of anticoagulant had no effect on stability.

Journal of Analytical Toxicology Vol. 38, May 2014

Liu et al presented urinary concentrations of naltrexone and its major metabolite 6β-naltrexol (LOQ = 10 ng/mL) in a population of pain management patients prescribed the drug. Two hundred sixty five specimens from 89 patients were included. The median naltrexone concentration was 1.049 mg/g creatinine with a range of 0.013 to 25.729 mg/g creatinine. The median naltrexol concentration was 4.302 mg/g creatinine with a range of 0.063 to 45.209 mg/g creatinine. The median naltrexol to naltrexone ratio was 3.277 with a range of 0.728 to 92.972.

American Journal of Forensic Medicine and Pathology Vol. 35, June 2014

Hargrove and Molina investigated potential changes in femoral blood morphine concentrations in refrigerated bodies over a 24 hour period. One femoral vein was clamped and the other vein remained unclamped. Blood was sampled from each vein three times during the period prior to the autopsy. There were no significant differences in femoral blood morphine concentrations between the clamped and unclamped sites. This indicates that the procedure of storing bodies in the refrigerator for 24 hours prior to an autopsy does not produce changes in femoral blood morphine concentration due to postmortem redistribution.

Book Review: Disposition of Toxic Drugs and Chemicals in Man—Tenth Edition

Randall C. Baselt, Ph.D.
ISBN 978-0-9626523-9-4
Submitted by **Dwain Fuller**—ToxTalk® Editor

The "Red Book" or "Baselt", as it is often called, has been a staple of the forensic toxicologist's and pathologist's library since well before my career began in 1984, and now **Disposition of Toxic Drugs and Chemicals in Man** (DTDCM) is in its tenth edition. Those who have followed its transformation over the years will not be disappointed by the current incarnation. If you happen to be an edition or two behind, as was I, you will be favorably impressed by the inclusion of easy-to-find blood/plasma ratios that began with the eighth edition, and CAS numbers, empirical formulas and molecular weights, which are new to the tenth edition. Although I have always been a fan of **DTDCM**, I have at times been critical of the way some practitioners have attempted to apply the data they found there. Therefore, I was pleased to see the addition of a prologue by Dr. Robert Flanagan and Dr. Robin Whelpton on the interpretation of results. This prologue first appeared in the ninth edition and has been updated and expanded for the tenth.

The tenth edition contains an additional 280 substances beyond the ninth edition for a total of over 1500 unique chemical substances. The new entries include antidotes, artificial sweeteners, dietary supplements, flavoring agents, industrial contaminants, plant alkaloids, and new recreational drugs, to name but a few. Even though the tenth edition contains 2350 pages, the book retains its one volume format, and although not small, it's heft has been offset to some extent by the use of thinner page stock. In answer to the widely asked question, **DTDCM** is not available in an electronic format, due to the lack of sufficient copy protection technology at this juncture. However, owners of the print edition are welcomed to request searches or copies of specific sections by email, when needed.

In short, the tenth edition of **Disposition of Toxic Drugs and Chemicals in Man** continues to be an invaluable and essential resource for the forensic toxicologist and pathologist, and the tenth edition is even easier to use and will not disappoint.

Copies may be ordered from Atlas Books, P.O. Box 388, Ashland, Ohio 44805 http://www.bookmasters.com/marktplc/00431.htm

The Consortium of Forensic Science Organizations (CFSO) Update

Submitted by **Laurel Farrell, BA**

This has been a hectic and activity filled year for the Consortium of Forensic Science Organizations (CFSO), however, due to Congress's inability to act on any legislation most forensic initiatives are pending. Below is a summary of CFSO activities relating to both authorization and funding.

AUTHORIZATION

Justice For All Act houses most forensics legislation. The CFSO has been working with both the House and Senate to ensure Coverdell is in any forensic reauthorization legislation that passes.

* Coverdell is at risk in this back and forth with the House and Senate. It is very important for SOFT Members to educate their Members of the House on forensic toxicology's need for Coverdell funding. The victims advocate groups have been able to consistently raise the matter of rape kits to the highest level of DOJ and thus receive the lion's share of funding.

Community Oriented Policing Services (COPS) is up for reauthorization again and a bill has been introduced in the House and

The Consortium of Forensic Science Organizations (CFSO) Update *(Continued)*

Senate. Historically this funding has been for equipment such as body armor etc. However, the CFSO was able to get forensics added as a purpose area.

Leahy/Cornyn The CFSO continues to work almost daily with Congress on this bill. All CFSO Member comments have been provided to the Committee. Leahy/Cornyn are working to get cosponsors and hope to get the bill marked up in the Senate this fall. Please call your Members and express your support for this bill and your hope that they will be a cosponsor.

Rockefeller The CFSO was very successful working with the Senate Science Committee to make changes to the original bill. Currently, Senator Rockefeller is pushing for the passage of the bill as his legacy but our information is that the House will not bring up forensics in the House Science Committee.

Rapid DNA The CFSO has been working with Congress on various proposals from other entities regarding the use of Rapid DNA in law enforcement.

FUNDING

No budget yet: A Continuing Resolution to continue funding for the government at this year's budget level will be passed when Congress returns in September. An Omnibus Appropriations bill is expected to pass eventually but unlikely to succeed before November elections. The CFSO has worked actively to get all forensics programs funded in the FY15 budget. Specifically:

* **NIST grant programs** are funded in the Senate but not fully in the House. The CFSO has been working with the House and Senate to reach a compromise on this funding.

* **Coverdell** The CFSO has convinced the Senate to fund Coverdell at $12M for FY15. To that end CFSO members have held several meetings with the Senate and House staff to garner House support and all meetings have been promising. Looking ahead, the CFSO has begun to ask for meetings with the Attorney General to request Coverdell funding in FY16. Funding in the past is as follows, documenting the overall downward trend:

2010 = $33M
2011 = $27M
2012 = $10M
2013 = $11M
2014 = $12M

OTHER CFSO WORK

The Helping Families in Mental Health Crisis Act: (HR 3717)

Focuses programs and resources on psychiatric care for patients and families most in need of services. The CFSO supported NAME and AAFS activities on this bill.

Sudden Death in the Young legislation (HR.669/S.314)

This legislation would provide for the continued development and updating of protocols and data collection related to stillbirths and sudden, unexpected deaths in both infants and children. The CFSO has reached out to NAME to provide comment and expertise on this legislation.

Message to all ABFT and FTCB Certificants

On February 18, 2014, the American Board of Forensic Toxicology (ABFT) and the Forensic Toxicologist Certification Board (FTCB) merged into a single organization. The name of the American Board of Forensic Toxicology will be retained. All Certificants of the FTCB are now certified by the ABFT.

The leadership of the ABFT was expanded by the addition of six directors to include the former President, Vice President, Secretary and Treasurer of the FTCB.

As a result of the merger, the ABFT now recognizes all Certificants according to the following designations:

* ABFT and FTCB Forensic Toxicology Diplomates are now certified as Fellows of the ABFT in Forensic Toxicology and should use the following designation: F-ABFT.
* ABFT Forensic Toxicology Specialists are now certified as Diplomates of the ABFT in Forensic Toxicology and should use the following designation: D-ABFT-FT.
* FTCB Forensic Alcohol Toxicology Diplomates are now certified as Diplomates of the ABFT in Forensic Alcohol Toxicology and should use the following designation: D-ABFT-FA.
* FTCB Forensic Drug Toxicology Diplomates are now certified as Diplomates of the ABFT in Forensic Drug Toxicology and should use the following designation: D-ABFT-FD.

Emeriti of the FTCB will become Emeriti of the ABFT.

All Certificants will receive a new certificate reflecting the changes in designation by December 31, 2014. Certificate numbers and expiration dates will change as a result of the merger.

All current FTCB business including examination of previously qualified applicants and requalification of FTCB Certificants will continue until December 31, 2014. In addition, all former FTCB Certificants will be subject to the ABFT Continuing Education requirements effective 2015.

If you have any questions or concerns, please e-mail us at the addresses indicated below.

Sincerely,

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The American Board of Forensic Toxicology is accredited by the Forensic Specialties Accreditation Board

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TOXTALK® **Deadlines** for Contributions:

February 1 for March Issue

May 1 for June Issue

August 1 for September Issue

November 1 for December Issue

Future SOFT Meeting Destinations:

2014:	Grand Rapids, MI	Oct. 18-25th, 2014	Ben Kuslikis/Michael Smith
2015:	Atlanta, GA	Oct. 17-25th, 2015	Robert Sears
2016:	Dallas, TX	Oct. 15-23rd, 2016	Chris Heartsill/Erin Spargo
2017:	Boca Raton, FL	Sept. 10-15th, 2017	Ruth Winecker/Dan Anderson
2018:	Minneapolis, MN	Oct. 15-12th, 2018	Loralie Langman
2019:	San Antonio, TX	Oct.11-18th, 2019	Veronica Hargrove/Brad Hall

TOXTALK® is the official publication of the Society of Forensic Toxicologists, Inc. It is published quarterly for its members. It is each member's responsibility to report change of address and email information to the SOFT Administrative Office. To submit articles, address and email changes, please email TOXTALK@soft-tox.org.