



TOXTALK™

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SOFT 2013 ORLANDO

Submitted by Bruce Goldberger, Ph.D., DABFT

Meeting Host

bruce-goldberger@ufl.edu

SOFT 2013 is less than one-year from now – October 28 to November 1, 2013. The SOFT 2013 Program Committee is very busy planning scientific and social events. The tentative meeting schedule is published in ToxTalk, as well as on the SOFT web-site.

There are a few important deadlines to remember. Workshop proposals are due January 15, 2013 and abstracts must be submitted by May 15, 2013.

The meeting will be held at the Buena Vista Palace Hotel & Spa in Orlando, Florida. The resort is an official Walt Disney World Hotel and just five-minutes walking distance to Downtown Disney. The accommodations at the Buena Vista Palace Hotel & Spa are stylishly appointed and feature luxurious pillow-top mattresses and bedding, along with amenities such as a 32" HDTV, a mini-refrigerator, and high-speed and wireless Internet access. The room rate is \$185 per night (single and double), plus a \$10 resort fee which provides access to the heated swimming pools, Jacuzzi and the fitness room. The Buena Vista Palace Hotel & Spa also provides complimentary transportation to the Walt Disney World Theme Parks including Disney's Magic Kingdom Park and Epcot. Attendees will be able to reserve rooms through a link on the SOFT web-site beginning January 2013.

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

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

On-line meeting registration will be available in early March, 2013. Additional details regarding SOFT 2013 will be posted on the SOFT web-site. Finally, don't forget to mark your calendars – October 28 to November 1, 2013.



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2013 ORLANDO MEETING (CONTINUED)

SOFT 2013 Agenda

Sunday, October 27, 2013

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

Monday, October 28, 2013

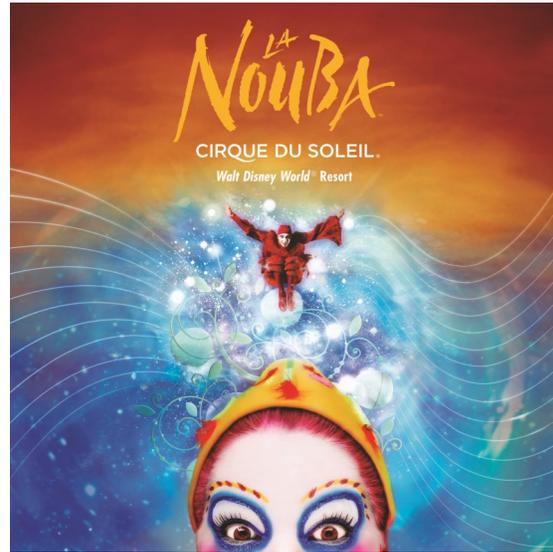
- Continental Breakfast (7am-8:30am)
- Registration (7am-6pm)
- ABFT Exam Committee (7am-12pm)
- SOFT Workshops (8am-5:30pm)
- FTCB Examinations (9am-12pm)
- Lunch On Your Own
- FTCB Board Meeting (2pm-5pm)
- SOFT-AAFS Drugs and Driving (5:30pm-7pm)
- Dinner On Your Own
- Tier 1 Sponsor Receptions (6pm-9pm)

Tuesday, October 29, 2013

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

Wednesday, October 30, 2013

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



Thursday, October 31, 2013

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

Friday, November 1, 2013

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

EXHIBITS OPEN

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

REVISED – December 1, 2012



PRESIDENT'S MESSAGE

Submitted by Marc LeBeau, Ph.D., DABFT

"The future depends upon what we do today."

I recently had the honor of participating in the 100th anniversary celebration of the University of Zurich's Institute of Forensic Medicine. The commemoration focused on the future of forensic science and the speakers were asked to predict the path of our discipline in the next couple of decades.

Our future changes with every choice we make. As members of this scientific field, forensic toxicologists will be faced with a number of choices in the coming years that will impact the direction of the field. The way I see it, we have four broad areas that will affect the future of our science: accreditation and certification, anchored practices, advanced instrumentation, and automation.

Accreditation and Certification: While some states have already made it mandatory that forensic laboratories be accredited, I think we all expect this to soon expand nationwide. A number of working groups and legislative proposals have already begun moving in this direction. What may be a surprise to some is that we are likely to see accreditation become much more specific to our specializations.

Certification of employees is also likely to become a requirement. The biggest question now will be to what level of expertise certification will be needed. Will it only be for those that testify or will it reach down to the technician level? And like accreditation, I expect certification to become more specific to the subdisciplines in toxicology.

Anchored Practices: I expect our field to move from the use of "good" laboratory practices to "exceptional" laboratory practices and become more anchored in doing so. While our accrediting bodies have general re-

quirements that must be followed, I anticipate that these requirements will become more specific. It is probably not overreaching to anticipate that accrediting bodies may adopt standards of practice – such as those being developed by SWGTOX – and make them requirements for our field. Further, we are likely to become much more reliant on statistics in our interpretations and opinions. Perhaps future case opinions will require us to establish a null hypothesis that must be disproven before accepting the alternative hypothesis. Or Bayesian statistics will play a role allowing us to report the likelihood of results occurring by chance.

Advanced Instrumentation: We are blessed to be in a field that frequently witnesses impressive technological improvements. We should all expect laboratories to become increasingly dependent on LC/MS/MS techniques. Additionally, I anticipate accurate-mass/high-resolution mass spectrometers will become more affordable and prevalent in our work. Of course, these instruments will continue to become more compact, thus occupying only a fraction of the space they currently require.

Automation: It is also not surprising that we continue to become more dependent on automation in our laboratories. Expect automation to become more prevalent at the front end of our analyses during sample processing and extractions and at the back end with our data processing and analysis. Robotic systems will continue to improve for virtually hands-off online extractions. Our data systems will become more dependable and productive in their ability to correctly identify peaks of interest, automatically compare mass spectra, and prepare reports of our results – even more so than we have seen in the last few years. Perhaps we will reach the point where

thorough human data reviews that are required today become obsolete.

But as Gandhi has told us, the future depends upon what we do today. For the future of the field of forensic toxicology to move in a positive direction, we all need to make contributions now. It is vital that we all do our part and help make the right choices that will impact the future direction we take.

But enough about the future, now let's talk about the present. Specifically, I would like to thank you, the wonderful SOFT members, for allowing me to serve as SOFT President this year. I have to admit that I have been blessed to serve in this capacity with a wonderful cast of supporting characters – this year's Board of Directors. They have been very dependable friends that have worked very hard for the SOFT Membership. My sincere thanks go to them all for their support.

Finally, as we enter the end of the calendar year, I wish you all a safe and wonderful holiday season. Be sure to take some extra time to enjoy with your friends and loved ones. Remember – the work will always be there, in the future!

Marc LeBeau, Ph.D., DABFT
President





DRUGS IN THE NEWS

Send interesting “*Drugs In The News*” articles
to Section Editor

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

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CAFFEINE: The People’s Drug

Submitted by Section Editor, Dwain C. Fuller

It is inhumane, in my opinion, to force people who have a genuine medical need for coffee to wait in line behind people who apparently view it as some kind of recreational activity. I bet this kind of thing does not happen to heroin addicts. I bet that when serious heroin addicts go to purchase their heroin, they do not tolerate waiting in line while some dilettante in front of them orders a hazelnut smack-a-cino with cinnamon sprinkles. ~Dave Barry

Love it or hate it, it is here to stay. We are for all practical purposes addicted to our caffeine. With many of us it is coffee, perhaps the more refined among us drink tea, the younger set crave their energy drinks, the runners their caffeine-infused jelly beans, perhaps those less in denial, or just more pragmatic, go straight for the NoDoz®.

Caffeine is ubiquitous in our society. So much so, that several years ago I was involved in a research project where I was tasked with determining serum levels of caffeine. I remember two technical issues presented themselves: First, no deuterated standard was yet available and since caffeine is rather unique in its extraction chemistry compared to other drugs, it was difficult to find a suitable internal standard. I overcame this first obstacle by synthesizing a butylated caffeine analog from theobromine. However, as difficult as overcoming that obstacle was, the second was perhaps even more daunting; finding a caffeine-free human serum in which to prepare standards and controls was essentially impossible.

So what brings me to write about caffeine now? After covering synthetic cannabinoids, bath salts, and polonium 210, in the last several issues, caffeine is just not all that sexy. However, a news item caught my eye: “**Hagerstown Teen’s Death Prompts Lawsuit Against Monster Energy.**” The suit involves the family of a 14-year-old girl with an underlying heart condition, who drank two 24-ounce Monster® drinks in 24 hours and subsequently died. The drinks each purportedly contain 240 milligrams of caffeine. The article somewhat breathlessly exclaims that this is approximately seven times the amount of caffeine found in a 12-ounce Coca Cola®. However, according to McCusker, et al. each 24-oz Monster Energy would contain less than one 16-ounce (Grande) Starbucks® regular coffee, which they found to contain 259 mg of caffeine. Thus this level of caffeine intake is not out of the ordinary for many of us on a daily basis. I will leave the opinions in this case to the retained experts and the decision to the jury, but it does raise the question, “Just how safe or unsafe is caffeine?”

Caffeine is structurally similar to adenosine, an inhibitory neurotransmitter, and, not surprisingly, is an adenosine receptor antagonist. It has been argued that it is the accumulation of adenosine throughout the day that causes increasing sleepiness. Caffeine has also been shown to be an acetylcholinesterase inhibitor. The combined effect of these two actions is that caffeine causes an increase of acetylcholine, epinephrine, dopamine, serotonin, norepinephrine, and glutamate, resulting in overall stimulation and wakefulness in humans.

Caffeine has a bioavailability of 99%, a C_{max} of approximately 1- 1.5 hours, a volume of distribution of 0.4 – 0.6 L/kg, and a half-life of approximately 5 hours. However, the half-life is influenced by gender, age, use of oral contraceptives, pregnancy, and smoking. Caffeine’s half-life has been reported to be 20-30% shorter in females than in males. The half-life in newborns ranges from 50 to 100 hours, but gradually approaches that of an adult by 6 months of age. The half-life in females using oral contraceptives is approximately twice that observed for ovulatory females. During pregnancy, the metabolic half-life increases steadily from 4 hours during the first trimester to 18 hours during the third trimester. Cigarette smoking is associated with about a twofold increase in the rate at which caffeine is eliminated. Caffeine is metabolized in the liver by CYP1A2 enzymes to paraxanthine, theophylline and theobromine, with only a small percent being excreted unchanged in the urine. Caffeine has a pKa of 0.8, thus it is significantly protonated only at very low pH’s.

Many studies have been performed to determine if moderate doses of caffeine produce adverse effects in the human body. Most of the studies are consistent in determining that caffeine in moderate doses of less than or equal to 400-450 mg/day (the doses studied) have minimal to no effect on cardiovascular health, bone and calcium balance, mutagenicity, genotoxicity, and carcinogenicity. Studies suggest that caffeine intake of greater than 300 mg/day may adversely affect female fertility, fetal development, and increase the risk of

Drugs in the News: Caffeine (Continued)

miscarriage. Thus it may be prudent for women who are pregnant or are planning on becoming pregnant to limit their caffeine consumption to less than 300 mg/day.

How about the beneficial effects of caffeine? Beside the raving reviews from those of us who are long time devotees of the “drug”, there is growing scientific support for a number of benefits of caffeine. Caffeine’s alerting effects are well-documented, and that alone is enough for most of us. However, while more study is needed, several potential positive effects are now being reported: lower risk of cardiovascular disease and diabetes, minimization of age-related cognitive decline, reduced risk of cancer development, and the reduced risk of Parkinson’s disease. Of note to most of us interested in drugs and driving, a recent study by Mets, et al. reports a positive effect of small doses (80 mg) of caffeine on driving performance during monotonous driving conditions.

Regardless of the relative safety of caffeine, the Drug Abuse Warning Network (DAWN) reported approximately a tenfold increase in emergency room visits due to the use of caffeine-containing energy drinks between 2005 and 2009. Additionally, there are documented cases of caffeine overdose resulting in death. The acute lethal dose of caffeine has been estimated to be 10 grams, however deaths have occurred from oral use of as little as 5.3 grams, and survival has been reported after the ingestion of as much as 24 grams. A recent news article reports that a British man died after ingesting two spoonfuls of pure caffeine powder and washed it down with an energy drink. The coroner reported that this would be equivalent to ingesting 70 cans of Red Bull®. Baselt reports 14 cases of death due to oral ingestion of caffeine ranging from 5.3 – 50 grams with postmortem whole blood concentrations ranging from 79 – 344 mg/L (mean = 183 mg/L). Kerrigan and Lindsey report a case with a postmortem femoral blood concentration of 567 mg/L. There appears to be significant overlap in toxic and fatal concentrations, with perhaps the deciding factor being medical intervention. Dietrich and Mortensen re-

port the survival of a child who ingested 2 – 3 grams of caffeine resulting in a peak plasma concentration of 385 mg/L.

Caffeine Content of Selected Products

Product	Serving Size	Caffeine (mg)
Coffee, generic brewed	8 oz.	133 (range 102-200)
Coffee, generic decaffeinated	8 oz.	5 (range 3-12)
Starbucks Brewed Coffee (Grande)	16 oz.	320
Einstein Bros., regular coffee	16 oz.	300
Dunkin’ Donuts, regular coffee	16 oz.	206
Starbucks Vanilla Latte (Grande)	16 oz.	150
Starbucks Espresso, doppio	2 oz.	150
Starbucks Espresso, decaffeinated	1 oz.	4
Tea, brewed	8 oz.	53 (range 40-120)
Starbucks Tazo Chai Tea Latte (Grande)	16 oz.	100
Nestea	12 oz.	26
Snapple, Just Plain Unsweetened	16 oz.	18
Arizona Iced Tea, green	16 oz.	15
Jolt Cola	12 oz.	72
Coca Cola Classic	12 oz.	35
Mountain Dew, regular or diet	12 oz.	54
Diet Coke	12 oz.	47
Dr. Pepper	12 oz.	42
Diet Dr. Pepper	12 oz.	44
Pepsi	12 oz.	38
Diet Pepsi	12 oz.	36
5-Hour Energy	1.93 oz.	207
Monster Energy	16 oz.	160
Full Throttle	16 oz.	144
Red Bull	8.3 oz.	80
Amp	16 oz.	143
Hershey’s Special Dark Chocolate Bar	1.45 oz.	31
Hershey’s Chocolate Bar	1.55 oz.	9
NoDoz (Maximum Strength)	1 tablet	200
Vivarin	1 tablet	200
Excedrin (Extra Strength)	2 tablets	130
Anacin (Maximum Strength)	2 tablets	64

(From Center for Science in the Public Interest)

Drugs in the News: Caffeine (Continued)

While, as DAWN points out, "energy drink consumption by itself can result in negative health events serious enough to require emergency care", a purely pharmacological (one not exacerbated by underlying pathology or medical condition) fatal caffeine overdose is quite rare due to the extremely large amounts of caffeine required. Typically a fatal event requires the ingestion of relatively pure caffeine in the form of powder or tablets. While I can't claim to have performed an exhaustive literature search, I am unaware of any well-established and documented fatal overdose attributable to caffeine alone, where the source of the caffeine was coffee, tea, a beverage, or food substance sold as a consumer product.

As I am happy to report, it appears that the safety profile of caffeine is quite good, with it being nearly impossible for a healthy individual to incur a fatal overdose from ingesting coffee, tea, sodas, chocolate or even energy drinks, due to the large quantities that would be required. However, adverse effects are still possible with high intake and when combined with other drugs or alcohol.

I leave you with this disclaimer about the conditions under which this article was produced:

"As soon as coffee is in your stomach...there is a general commotion. Ideas begin to move...memories

charge in at full gallop...metaphors arise...the artillery of logic rushes up...on imagination's orders, sharpshooters sight and fire; forms and shapes and characters rear up; the paper is covered with ink."

~ Honore de Balzac (1799-1859)

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NEW DRUGS AND TECHNOLOGY TIDBITS
 Send interesting "New Drugs and Tech-IN Tidbit" articles to
 Section Editor **Dan Anderson, M.S., FTS-ABFT, D-ABC**
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NEW DRUG: METHOXETAMINE

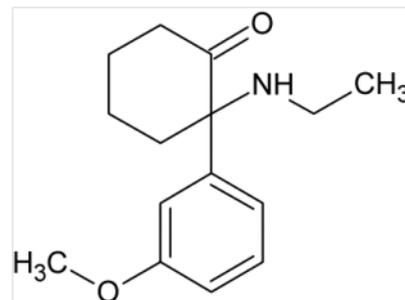
Submitted by

Shelli Martinez, sam@occl.ocgov.com and Ariana Figueroa, akf@occl.ocgov.com
 Orange County Crime Lab, 320 N. Flower St, Santa Ana, CA 92703

Methoxetamine is a 3-methoxy, N-ethyl analog of ketamine, with a similar abuse profile. Depending on dose, ketamine can cause pain suppression, tachycardia, hypertension, and altered perception and memory. Symptoms of toxicity are similar to ketamine abuse and present with dissociated and catatonic state, tachycardia, hypertension, nausea, vomiting and visual hallucinations. Pharmacology, toxicology and safety of this compound are not known. Methoxetamine is not currently scheduled under the U.S. Controlled Substances Act.

General Information

Chemical Name: 2-(3-methoxyphenyl)-2-(ethylamino)-cyclohexanone
 Synonyms: MXE; 3-MeO-2-Oxo-PCE
 Chemical Formula: C₁₅H₂₁NO₂
 Molecular Weight: 247.3327 g/mol
 Available: Cayman Chemical Company
 Catalog Item No. 11139 Methoxetamine Hydrochloride
 CAS Number : 1239908-48-5



Pharmacology

Intended Use: For research use only, not for human or veterinary use.

Other variables such as half-life, C_{max}, V_d, Bioavailability, Metabolism, Elimination, and Drug Interactions are unknown at this time.

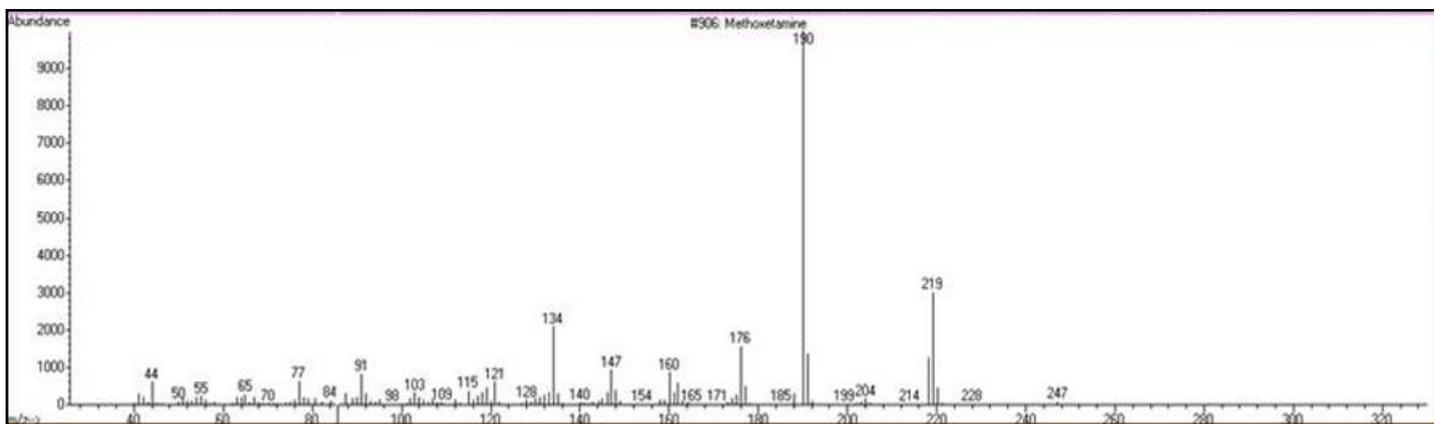
Toxicology

Extraction: Recovered by routine n-butyl chloride liquid: liquid basic drug extraction, including an acid back extraction.

Detection: GC/NPD: Limit of detection ~ 10 ng/ml / GC/MS Scan: ~50 ng/ml

GC/MS: Ions **190**, 219, 134 m/z

Elution order: MDMA, Cocaine, Ketamine, **METHOXETAMINE**, Methadone



References

1. Cayman Chemical (Methoxetamine hydrochloride) Product Insert, July 2012.
2. U.S. Department of Justice, Drug Enforcement Administration- Special Testing and Research Laboratory.

TECHNICAL NOTE : EVALUATION of a NEW MODEL to ASSESS DRUG PROPENSITY for POSTMORTEM REDISTRIBUTION

Submitted by *Iain M. McIntyre, Ph.D.*

County of San Diego Medical Examiner's Office
5570 Overland Ave. Suite 101, San Diego, CA 92123

Postmortem redistribution (PMR) is a phenomenon which describes the circumstance where drug concentrations determined in blood specimens collected at autopsy do not necessarily reflect those at the time of death [1]. Concentrations of some drugs may vary according to the sampling site and the interval between death and specimen collection. Passive release from drug reservoirs such as the gastrointestinal tract, liver, lungs, and myocardium may occur soon after death and, subsequently, cell autolysis and the putrefactive process are thought to participate in redistribution. Since precise mechanisms are both complicated and have incomplete understanding, the identification of compounds that are prone to PMR (together with an assessment of the degree of PMR that may be expected) has been difficult to assess.

Following early work by Prouty and Anderson [2] and Dalpe-Scott and coworkers [3], a ratio derived from the analyses of cardiac and peripheral blood specimens (C/P ratio) became the accepted benchmark to assess a drug's propensity to exhibit postmortem redistribution. Consequently, a ratio of 1.0 (or less) was considered indicative of a compound devoid of PMR, while a high C/P ratio was an indication that a drug had potential for substantial redistribution after death. Despite the fact that this approach has been useful, it has documented limitations. Reports of a C/P ratio greater than 1.0 have been published for several drugs which are not widely considered to be prone to redistribution; salicylic acid [4], carisoprodol [5] and tramadol [6]. Arterio-venous differences, anatomic variability within individuals, and statistical chance may result in a C/P ratio greater than 1.0 in drugs that do not redistribute. In addition, resuscitation attempts may result in a C/P ratio less than 1.0 [7]. Furthermore, inaccurate ratios may also be obtained as

an artifact of sampling when the cardiac blood volume is depleted by the collection of blood from connected blood vessels, or in cases of acute overdose where the drug has not undergone complete absorption and distribution [8]. Consequently, the established C/P ratios can be inconclusive and even misleading with respect to interpretation of PMR.

The liver to peripheral blood (L/P) ratio has been recently proposed as a more reliable marker for PMR: ratios less than 5 indicating little to no propensity towards PMR; and ratios that exceed 20 or 30 indicative of drugs with propensity for significant PMR [5].

A compilation of C/P ratios as well as L/P ratios available in the published literature has been produced to examine this model. A summary of these data is shown in Table I.

Table I:
Drugs with their respective literature mean L/P and C/P ratios
(Listed in order of increasing L/P ratio)

Drug	L/P	C/P
meprobamate	1.2	0.92
tramadol	1.6	1.1
carisoprodol	2.8	1.3
venlafaxine	5.0	1.3
mirtazapine	5.8	1.1
methadone	6.8	1.3
lamotrigine	8.6	1.0
quetiapine	9.0	1.4
citalopram	9.9	1.2
paroxetine	21.6	2.0
olanzapine	23.4	1.3
amitriptyline	25.1	3.0
clomipramine	57.8	1.9
sertraline	97.0	1.2

L=Liver concentration, P=Peripheral blood concentration, C=Central blood concentration

In the case of tramadol, the calculated L/P ratio of 1.6 is less than double the C/P ratio of 1.1. Similarly, carisoprodol has a calculated L/P ratio about twice that of the C/P ratio. Meprobamate, the metabolite of carisoprodol (also a medication in its own right), exhibited little difference between the two ratios. The L/P ratio for these drugs is less than 5, consistent with the proposed model [5], indicating little to no propensity for PMR.

TECHNICAL NOTE : EVALUATION of a NEW MODEL to ASSESS DRUG PROPENSITY for POSTMORTEM REDISTRIBUTION (*Continued*)

In contrast, the L/P ratios for the tricyclic antidepressants noticeably exceed 20. Amitriptyline and clomipramine, which have been well established to exhibit significant PMR [1], have L/P ratios of 25.1 and 57.8, respectively. The specific serotonin reuptake inhibitor (SSRI) antidepressants such as paroxetine and sertraline also have L/P ratios exceeding 20. Fluoxetine, another SSRI antidepressant, was reported in one case report to have an L/P and C/P of 55.6 and 3.5 [9], respectively, signifying strong propensity for PMR across this class of antidepressant drug as well. Similarly, the antipsychotic drug olanzapine with a reported L/P ratio greater than 20 suggests significant propensity for PMR, although a single case report of an overdose suggested that PMR was minimal [10].

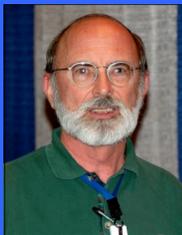
Drugs suspected to have low to moderate propensity for PMR are also identified in Table I with intermediate (5-19) L/P ratios. Citalopram, with an L/P of 9.9, is consistent with a report that PMR was minimal [10]. Similarly, lamotrigine, mirtazapine and quetiapine (L/P ratios between 5 and 10) have all been reported to demonstrate little PMR [11 – 13]. A relatively small number of cases investigated for venlafaxine have made determination of its susceptibility for PMR difficult to assess: some investigations suggesting significant potential and others are inconclusive [14]. Interpretation of PMR for methadone is complex, as tolerance to this drug is regularly observed and concentrations known to be therapeutic have been reported to overlap with toxic concentrations [15, 16]. However, this analysis suggests that PMR for methadone (in cases of therapeutic use) may be nominal; an interpretation consistent with the initial report from Prouty and Anderson [2].

Based upon literature data, the proposed L/P ratio model appears to be supported. A major advantage of this approach over the traditional C/P ratio is provided by the magnitude of the liver concentration compared to blood; liver drug concentrations are

often substantially higher than blood (see Table I: ratio range 1.2 to 97). This provides a greater potential for interpretation, and permits investigation into the identification of drugs that may exhibit intermediate degrees of PMR. Drugs such as mirtazapine, for example, can now be postulated to exhibit a smaller degree of PMR than citalopram, but more than that of carisoprodol. It has not been possible to differentiate an individual drug's potential for (or degree of) PMR with the C/P ratio model due to the fact that these ratios are frequently very similar (as seen in Table I). The C/P blood ratio for most drugs has been reported in a narrow range between 1.0 and 3.0. Indeed, only 22 of the 113 C/P ratios reported by Dalpe-Scott and coworkers were outside of this range; many of the low and high outliers being based on a sample size of a single case [3]. It is hoped that development and refinement of his new model will eventually lead to a greater confidence in determining propensity for PMR, and consequently an improvement and confidence in interpreting postmortem drug concentrations.

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CASE NOTES

Send interesting "Case Notes" to Section Editor

Matthew Barnhill, Ph.D., DABFT

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CASE NOTE : JUST the FACTS

Submitted by Theresa Hippolyte, M.S., Diane Boland, Ph.D. and Dr. Emma Lew

Miami Dade Medical Examiner Department

1851 Northwest 10th Avenue, Miami, FL 33136

Introduction

It is always important to let the evidence be the basis for a scientific conclusion especially in postmortem forensic toxicology. During the investigative process of a case many details are revealed, some of which are helpful, while others are misleading. Some helpful information gathered during the investigative process are verifiable facts and the pathology findings. When forming a conclusion, the toxicologist must remain objective and not become swayed by extraneous details that can be provided by the friends and family of the decedent. A scientific conclusion must be able to be verified and reviewed by others who can draw the same conclusion.

The following case is a good example of how the details of the investigation and the testimony of family members present some compelling information. Along with the test results and additional drug-abuse knowledge it made the toxicologist take pause and consider, was this a suicide, accident, or a homicide?

Case History

This is the case history presented initially to the Medical Examiner. It is the story of a 62 year old white male who was supposedly despondent over his impending divorce. The last person he spoke to was his secretary, advising her that he was late to proceedings involving said divorce. When the decedent did not show up to his scheduled meeting; his brother became concerned. The brother decided to perform a welfare check and found the decedent's bedroom door locked with loud music blaring from inside. The brother knocked continu-

ously with no answer so he forced entry into the bedroom. At that point the brother found the deceased lying face up unresponsive on the bed with numerous empty pill bottles strewn about the scene. Fire rescue responded and started performing life saving efforts. The decedent was taken to the hospital where he subsequently died shortly thereafter.

A meeting was arranged with the decedent's sister and the medical examiner staff involved in the investigation. At this meeting, new and compelling evidence was presented by the sister giving a more in-depth look into the decedent's possible emotional state. The sister stated that the decedent was pleased with the direction his life was moving. According to her, there had been tension for a long time between the decedent and his wife. Some of this tension stemmed from the wife's daughter and mother who moved in with them. He had been depressed in the past over his situation, but now he was moving forward. It was inconceivable to her that he would commit suicide. She believes that the wife may have poisoned him using oxycodone and a Brita water filter. The sister claims that the decedent and his wife were abusers of oxycodone giving plausibility to her assertions. She asked the detective in the case to re-interview the wife about her possible involvement. The detective, however, refused her request. At that point, the sister decided to consult with a medium to help her decide if she should pursue any further inquiries into her brother's passing. Her encounter with the medium affirmed that she was on the right track because her brother communicated to

her via the medium. He told her that her investigations were going in the right direction. During this encounter, the medium told her that a red cardinal would appear to his son which would be further evidence of the decedent's presence. She then went on to say that a red cardinal appeared to the son while camping and showed a video of the incident. The sister vowed to continue her pursuit of justice and clearing her brother's name.

Postmortem Toxicology

The following postmortem specimens were analyzed: saphenous vein blood, gastric, and urine. An EMIT and GC-MS screen were performed on the urine and gastric. A basic drug screen and acid-neutral screen were performed on the saphenous vein blood using a FID and TSD with confirmation via GC-MS. A benzodiazepine screen via ECD and quantitation via HPLC were performed on the saphenous vein blood. An opiate quantitation via GC-MS-MS was performed on the gastric and saphenous vein blood.

The toxicology results reported below are from the final toxicology report.

Gastric:
60 mg total Oxycodone

Saphenous Vein Blood:
9.20 mg/L Oxycodone

Discussion

At first glance, the case history is quite convoluted and riddled with many contradictory storylines. It is easy to become sidelined and bogged down in the details. The important thing to remember is to stay on course. The toxicology results re-

CASE NOTE: JUST the FACTS *(Continued)*

ported show an excessive amount of oxycodone in the blood, thus making it difficult to refute the claim that the decedent's death was not suicide. However the sister still maintains her position that he was poisoned. Unfortunately, the aforementioned water

filter system used in the alleged poisoning was never submitted to the Medical Examiner's Department for testing. Based upon the toxicology results, the pathologist's findings were acute oxycodone toxicity. The cause of death concluded by the pathologist

was supported by the evidence and not subjective inference. Sound scientific conclusions are always objective and supported by evidence not conjecture.

CALL FOR PAPERS—ABSTRACT SUBMISSION FOR SOFT 2013 ANNUAL MEETING

DEADLINE IS MAY 15, 2013

The SOFT 2013 Scientific Program Committee is requesting abstracts on all topics related to forensic toxicology. The Committee will select appropriate abstracts to be presented as either a 15 minute platform presentation or poster presentation. Refer to the SOFT website in the coming months for additional information.

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

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

CALL FOR WORKSHOPS—SOFT 2013 ANNUAL MEETING

DEADLINE IS JANUARY 15, 2013.

Workshop proposals for the 2013 annual meeting in Orlando, FL must be submitted electronically. The workshop submission form is available on the SOFT website under the Annual Meetings tab.

If you are planning to submit a workshop proposal, please contact Chris Chronister or Jeri Roper-Miller in advance. Any other workshop questions or suggestions are welcomed by the workshop Co-chairs.

Workshop Co-Chairs: **Chris Chronister** (chronist@pathology.ufl.edu) and **Jeri Roper-Miller** (jerimiller@rti.org)

ANNUAL MEMBERSHIP DUES—JAT—ADDRESS CORRECTIONS

Annual membership "dues notices" will be mailed out to all members January 1st. Dues for Full and Associate members are \$60/yr. Dues for Student members will be \$15/yr. Retired members owe no dues, but MUST sign the ethics statement and return the form to confirm current contact information.

Payments for dues may be mailed in by check, or paid on-line from the main SOFT website (www.soft-tox.org), by logging in at the "Member" tab (an email address & password will be needed).

Beginning in January 2013, ALL members of SOFT will receive a complimentary subscription to the Journal of Analytical Toxicology (JAT). This is a new arrangement with the Oxford University Press (new owner of JAT). This new subscription will include both a hard copy and an on-line access to the journal.

You will want to have the best address entered at the website member database, to receive your mail. PLEASE MAKE ANY EDITS NECESSARY ASAP TO YOUR MAILING ADDRESS AT THE ON-LINE DATABASE. Begin at <http://www.soft-tox.org/>, and find the top tab titled "Member Login".

Bonnie Fulmer
SOFT Executive Assistant



FROM THE TOXICOLOGY LITERATURE

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

Office of the Chief Medical Examiner, Baltimore, MD

Forensic Science International
Vol. 217 April 2012

Rees et al studied the stability of 6-acetylmorphine (6AM) in animal blood, vitreous humor and muscle in the presence and absence of sodium fluoride at room, refrigerated and frozen temperatures. Lower temperatures slowed, but did not prevent the breakdown of 6AM; in unpreserved blood, all 6AM disappeared at room temperature by day 14. The presence of sodium fluoride also slowed, but did not prevent the breakdown of 6AM at all temperatures in all specimens. The greatest stability of 6AM occurred at frozen temperature in the presence of sodium fluoride. Surprisingly, the decline in 6AM concentrations was not associated with a corresponding quantitative increase in morphine concentrations, especially at room temperature in unpreserved specimens.

Journal of Forensic Sciences
Vol 57 May 2012

Sterling evaluated the dissipation of mouth alcohol in 7 volunteers who rinsed their mouths with a vodka solution (50% 80-proof vodka: 50% water). The experimental design consisted of 2 parts: 1) breath alcohol concentrations were measured at times ranging from 1 to 5 minutes after rinsing; and 2) breath alcohol concentrations were measured for a period of time after a single rinse. The average time to reach baseline conditions after rinsing was 9.35 min with a range of 4 to 13 minutes, thus supporting the use of a minimum of a 15 minute observation period prior to the administration of a breath test. Moreover, the loss of mouth alcohol over 1-2 minutes suggests that duplicate testing 2 minutes apart would also detect mouth alcohol as the two results would be substantially different.

Canadian Society Forensic Science
Journal Vol 45 March 2012

Hu et al compared vitreous humor clinical chemistry data from 201 cases to previously published information.

Cases were categorized based on immediate versus delayed death, presence or absence of trauma or remarkable pathologic findings, medical history and postmortem interval. As expected, potassium results were unreliable in predicting postmortem interval. Only sodium, chloride and urea concentrations in the trauma group displayed a normal distribution. The concentrations (mean \pm standard deviation) in this group were: urea nitrogen 14 ± 3.9 mg/dL; sodium 139 ± 3.7 mM; and chloride 118 ± 3.5 mM.

Journal of Analytical Toxicology
Vol 36 May 2012

A series of five papers from Dr. Pesce's lab presented findings of urine drug and metabolite concentrations and ratios in pain patients. The drugs and metabolites covered were: carisoprodol and meprobamate; oxycodone and oxymorphone; methadone and EDDP, morphine and hydromorphone and hydrocodone and hydromorphone. Both intrasubject and intersubject variation data was presented. Inclusion data for a urine specimen was a creatinine concentration greater than 30 mg/dL and reported use of the parent drug. For each data set, concentrations (mg/g creatinine) and metabolite to parent ratios were discussed within and between subjects.

American Journal of Forensic Medicine
and Pathology Vol 33 June 2012

Kenerson and Lear-Kaul describe a death from airway obstruction that occurred after ingestion of drugs by "parachuting." This ingestion method involves wrapping crushed drug in a casing such as a paper towel and ingesting the entire wrap. The belief is that the wrap will slowly unwind in the stomach and produce a "sustained release" effect. In the presented case, the paper towel became lodged in the larynx, causing an occlusion in the airway. Toxicology testing identified oxycodone, alprazolam and diphenhydramine in the postmortem specimens.

Forensic Science International
Vol. 218 May 2012

Two papers with conflicting results were presented pertaining to the potential of ethyl glucuronide (EtG) appearing in a hair specimen as a result of external contamination. Sporkert et al reported a case of an individual who tested positive for EtG on multiple occasions. Subsequent investigation identified the use of a hair lotion that was not only positive for ethanol, but was also positive for EtG. Ferreira et al studied 7 volunteers by applying an ethanol containing hair treatment to one side of the scalp and then collecting hair specimens from both sides of the scalp. No differences in EtG concentrations were observed in hair specimens collected from the treated and untreated sides of the scalp.

Forensic Science International
Vol. 219 June 2012

Han et al evaluated postmortem redistribution of 76 drugs of forensic interest by comparing drug concentrations between the central blood and the femoral blood. Drugs within different classes and with different pH characteristics were included. Thirty three of the 76 drugs had paired data from multiple cases. When available, the presented data was compared to previously published data. For the drugs with multiple data points, an assessment as to the potential for postmortem redistribution was provided.

Verelstad et al presented data on 34 cases over a six month period where p-methoxymethamphetamine (PMMA) was detected, including 12 fatalities and 22 non-fatal cases. In the 12 PMMA fatalities, the mean and median peripheral blood drug concentrations were 2.02 and 1.92 mg/L, respectively (range: 0.17-3.30 mg/L). These cases included both single drug and multiple drug use; all deaths were attributed to drug intoxication. In the 22 non-fatal cases, the mean and median blood drug concentrations were 0.10 and 0.07 mg/L, respectively (range: 0.01 to 0.65 mg/L).



TOXICOLOGY-BITS & PIECES

Send interesting "News and Notes" to Section Editor

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AAFS TOXICOLOGY SECTION NEWS

Submitted by **Ruth Winecker**, Section Chair, **Ashraf Mozayani**, Program Chair and
Dwain Fuller, Program Co-Chair

The 2013 AAFS meeting will be held February 18-23, 2013 at the Marriott Wardman Park Hotel in Washington DC. The preliminary program has been published on the AAFS website and you can find registration information there as well (www.aafs.org). Program chair Ashraf Mozayani and co-chair Dwain Fuller are pleased to announce a very exciting program this year with 86 presentations (45 oral and 41 poster) and 3 workshops.

The workshops are:

- **Beyond the Numbers: An Objective Approach to Forensic Toxicological Interpretation**
- **Principles and Applications of Liquid Chromatography Mass Spectrometry for the Forensic Toxicologist**

- **Developments in Emerging and Designer Drug Markets 2013.**

Consider registering for the toxicology section luncheon to be held on Wednesday, February 20, 2013 at 12 noon. The program committee has arranged a very entertaining program based on toxicology history entitled "Whose shoulders do you stand on?" Brad Hepler will speak on Irving Sunshine, Bill Anderson will speak on Dick Prouty, Chip Walls will speak on June Jones and Mike Rieders will speak on Fred Rieders.

Please plan to attend the section business meeting on Wednesday afternoon to participate in all of the sections important business functions. We will

have a very full agenda that will include recognition of a full complement of very well deserved awardees. Please join me in congratulating **Phil Kemp** who will receive the Gettler award, **Rob Middleburg** who will receive the Harger award, **Patrick Harding** who will receive the Abernethy Award, **Sherri Kacinko** who will receive the Sunshine award and **Dayong Lee** who will receive the June Jones Scholarship. This is looking like it is going to be a great meeting. I hope to see you all there!

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THE CONSORTIUM OF FORENSIC SCIENCE ORGANIZATIONS (CFSO)

The Consortium of Forensic Science Organizations Monthly Reports for [September](#) and [November](#) can be found on the CFSO website www.thecfso.org.

SOFT and ABFT are members of CFSO.



51ST ANNUAL MEETING OF THE INTERNATIONAL ASSOCIATION OF FORENSIC TOXICOLOGISTS (TIAFT)

September 2-6th, 2013 Maderia, Portugal

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



51ST ANNUAL MEETING OF THE INTERNATIONAL ASSOCIATION OF FORENSIC TOXICOLOGISTS
Madeira, Portugal 2013

NEWS FROM THE AMERICAN BOARD OF FORENSIC TOXICOLOGY

Submitted by Bruce Goldberger, Ph.D., D-ABFT, President

The Fall has been a very busy time for the ABFT. The ABFT is in the process of inspecting several current and new laboratories, as well as certifying many new Diplomates and Specialists. In addition, the new laboratory accreditation checklist and manual are complete and under final review by the Board.

In 2013, the Board will begin to accept applications for its two newest certification categories – the Forensic Toxicology Analyst and the Forensic Alcohol Specialist. The Forensic Toxicology Analyst certification is appro-

priate for personnel who test and/or issue reports; and the Forensic Alcohol Specialist certification is appropriate for personnel who conduct blood and breath testing alcohol analyses and interpret results.

Shortly, all active Certificants of the ABFT will receive a continuing education submission form to complete and return to the Board by March 1, 2013. An electronic version of the form is available on the ABFT web-site (www.abft.org).

Congratulations to the following labo-

ratories which were recently accredited by the Board:

Bio-Tox Laboratories
Riverside, CA

**Office of the Chief Medical Examiner
Forensic Toxicology Laboratory**
Public Safety & Justice Cluster
Washington, D.C.

**Hennepin County Medical Center
Toxicology Laboratory**
Minneapolis, MN

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

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

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

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

SOFT/AAAFS DRUGS AND DRIVING COMMITTEE

Submitted by Jennifer Limoges, M.S., D-ABC

The National Highway Traffic Safety Administration (NHTSA), Office of Behavioral Safety Research, conducts a significant amount of research on impaired driving. Richard Compton, Ph.D., provided a summary of NHTSA's current alcohol and drug impaired driving projects to the Drugs and Driving Committee. The report can be found in Appendix 1.

JOURNAL OF ANALYTICAL TOXICOLOGY—SPECIAL ISSUE

Submitted by Madeline Montgomery, B.S., FTS-ABFT

Each year, the *Journal of Analytical Toxicology (JAT)* invites the Society of Forensic Toxicologists (SOFT), Inc., to edit a special issue of the journal to coincide with SOFT's annual meeting. It is my honor to be selected to serve as this year's special issue editor. I encourage all SOFT members to submit to this year's special issue of *JAT*. It is through sharing our work with colleagues in a peer-reviewed journal that we promote progress and growth in the field. Titles and abstracts are due March 1, 2013, while full manuscripts are due March 15, 2013. Submit your manuscript at <http://jat.oxfordjournals.org/> and designate the manuscript for the SOFT special issue.

Madeline A. Montgomery

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2012 S.O.F.T. COMMITTEE CHAIRS

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TOXTALK™ Deadlines for Contributions:

February 1 for March Issue

May 1 for June Issue

August 1 for September Issue

November 1 for December Issue



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

2013: Orlando, FL.....Oct. 26-Nov. 1, 2013..... Bruce Goldberger

2014: Grand Rapids, MI.....Oct. 18-25th, 2014.....Ben Kuslikis/Michael Smith

2015: Atlanta, GA.....Oct. 17-25th, 2015.....Robert Sears

2016: Dallas, TX.....Oct. 15-23rd, 2016.....Chris Heartsill/Erin Spargo

2017: Boca Raton, FL.....Sept.. 10-15th, 2017.....Ruth Winecker/Dan Anderson

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 to TOXTALK@soft-tox.org.



National Highway Traffic Safety Administration Office of Behavioral Safety Research

Alcohol- and Drug-Impaired Driving

August 2012

This is a list of NHTSA's Office of Behavioral Safety Research's current research on alcohol- and drug-impaired driving.

We also have an extensive research library, with individual reports available on-line. The searchable database houses pdf versions of our earliest reports through our most recent publications. To reach the link for this database, first go to the NHTSA website at www.nhtsa.dot.gov; then to Driving Safety, then to Research and Evaluation, then look for "Behavioral Research Reports Library." This library can also be found at: <http://ntlsearch.bts.gov/repository/ntlc/nhtsa/index.shtm>

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Problem Identification

Alcohol at any level can impair driving performance. More information is needed on the specific effects of alcohol on driving behavior and the incidence of impaired driving, and the crash risk of driving after drinking.

Determine the incidence and crash risk of alcohol and drug-positive drivers on the road.

- Determine the Crash Risk of Alcohol- and Drug-Positive Drivers (Amy Berning, 366-5587)
- 2013 National Roadside Survey of Alcohol and Drug Use by Drivers (Amy Berning, 366-5587)

Target Groups

NHTSA has conducted research projects focusing on the identification of target groups. However, the results of the research are often hard to interpret, and difficult to use in a practical sense. Better-defined target groups would allow for more tailored countermeasures and better use of resources.

Develop innovative methods of identifying high-risk and targetable groups.

- Replicate and Evaluate Strategies for Reducing DWI Among 21-34 Year Olds – under agency review (De Carlo Ciccel, 366-1694)

About a third of all drivers arrested for DWI are repeat offenders. NHTSA is conducting research to learn more about this target group.

- Examine the Percentage of Previously Convicted Offenders in Fatal Crashes

Enforcement and Adjudication

More effort needs to be focused on enforcing DWI laws. Although most Americans know that impaired driving is dangerous and illegal, they also know from their own experience, and from family and friends, that on the vast majority of drinking-driving trips, people do get home safely, and are not stopped by the police. The fear of detection, arrest, and sanctioning is not high enough to keep many from drinking and driving.

Officers must be given the tools necessary (including education) to effectively enforce impaired driving. In addition, officers must be motivated to make impaired driving arrests. Therefore, the arrest process must be streamlined as much as possible to assist the officer in making as many, and as "good" arrests (that is, will not be challenged in court), as possible. Enforcement efforts also must be strongly publicized and highly visible to create a general deterrence effect.

Examine all phases of the arrest process and develop strategies to increase the number of good DWI arrests and decrease alcohol-related crashes.

- Determine the Effectiveness of Flexible Checkpoints (Derece Smither, 366-9794)
- Improving the General Deterrence Effects of Sobriety Checkpoints (Alan Block, 202-366-6401)
- Update States' Breath Test Refusal Rates (Esther Namuswe, 366-2674)

Conduct strongly publicized and highly visible enforcement activities to create a general deterrence effect.

- Demonstration Tests of Different High Visibility Enforcement Models (Alan Block, 366-6401)
- Evaluation of Washington State's Target Zero Teams Project
- Evaluation of a Combined Occupant Protection and Impaired Driving Demonstration Project (Mary Hinch, 366-5595)
- Evaluation of a Model to Foster Leadership to Facilitate Impaired Driver Systems Improvement (Derece Smither, 366-9794)
- Evaluation of an Impaired Riding Crackdown (Amy Berning, 366-5587)

Although arrested, offenders can slip through the system due to poor DWI records. Easy-to-use tracking systems need to record information on prior arrests, convictions, pleas, sentences, and sanctions served. These records need to be available to prosecutors, judges, and probation officers. We are also interested in the relationship between components of the DWI arrest process and final outcomes.

- DWI Offenders' Failure to Reinstate Drivers Licenses - under agency review (De Carlo Ciccel, 366-1694)
- Breath Test Refusals and their Effect on Prosecution of DWI Cases - posted and available on NHTSA's website DOT 811 551 (Amy Berning, 366-5587)

It is important to know the impact of various sanctions for DWI offenders. NHTSA has been evaluating the effectiveness of several types of alternative sanctions over the last several years.

- Field Test of an Ignition Interlock Program - under agency review (De Carlo Ciccel, 366-1694)
- Evaluation of a Rural Alcohol Ignition Interlock Demonstration Program (Alan Block, 366-66401)
- Systems Analysis of Ignition Interlock Programs (Amy Berning, 366-5587)
- Utilization of Interlock Data: Is It Used for Offender Monitoring and Programming? (Randy Atkins 366-5597)
- Evaluate the Effectiveness of the SCRAM Device as a Tool in Criminal Justice Monitoring Alcohol Impaired Driving Offenders and its Effectiveness in Reducing Drinking and Driving (De Carlo Ciccel, 366-1694)
- Examine the Issues and Impact of 1st Time Offender Interlock Laws on the DWI System Program - under agency review (Derece Smither, 366-9794)

Legislation

Some people can't be reached with education or prevention programs, or through caring friends. For many, a change in behavior will require new, stronger laws. Age 21, Zero Tolerance, Administrative License Revocation, and .08 laws have proven effective. As tougher laws are enacted, they need to be evaluated. Information is also needed on the laws' implementation process, to identify obstacles that arise, and to develop strategies to minimize those problems in other states.

Determine the effectiveness of tougher anti-impaired driving legislation.

- Examine the Puerto Rico .02 BAC Law for Motorcycle Riders

Technology

Technology can assist us with the detection of alcohol use among drivers and people convicted of impaired driving offenses.

- On-going Updates of the Conforming Products Lists (Evidential Breath Testers, Calibrating Units for Evidential Breath Testers, Alcohol Screening Devices) (De Carlo Ciccel, 366-1694)
- Proposed Model Specifications for Breath Alcohol Ignition Interlock Devices (Federal Register [75 FR 61820] De Carlo Ciccel, 366-1694)
- Examine the Feasibility of an Ignition Interlock Program for Teenage Drivers (Amy Berning, 366-5587)
- Examine the Feasibility of Alcohol Interlocks for Motorcycles- report under agency review (Randy Atkins 366-5597)

Miscellaneous

- Evaluation of New Mexico's Comprehensive Impaired Driving Program – report under agency review (Amy Berning, 366-5587)
- Countermeasures that Work (Kristie Johnson, 366-2755) – 2011 edition is DOT HS 811 444 and is published and available at www.nhtsa.dot.gov
- An Exploration of Alternative Uses of Blood Alcohol Content Testing Data for Problem Identification – report under agency review (Kristie Johnson, 366-2755)
- Alcohol State of Knowledge Literature Report (Derece Smither, 366-6794)
 - Screening and Brief Intervention – report under agency review
- Review of Impaired Driving Assessments – report under agency review (Derece Smither, 366-9794)

Drug-Impaired Driving Research

Determine the nature and magnitude of the drug problem.

- Determine the Crash Risk of Alcohol- and Drug-Positive Driving (Amy Berning, 366-5587)
- 2013 National Roadside Survey of Alcohol and Drug Use (Amy Berning, 366-5587)

Examine impairing effects of drugs on driving skills.

- Examine the Effects of Inhaled Cannabis on Driving Performance

Develop improved detection and enforcement methods.

- Driving Under the Influence of Drugs: Enforcement and Adjudication in DEC and non-DEC States - under agency review (Dereece Smither, 366-9794)
- Explore the Predictive Validity of the DEC Program Tests (Dereece Smither, 202-366-9794)