



Society of Forensic Toxicologists, Inc.

P.O. Box #5543. Mesa, AZ 85211-5543 • Telephone/FAX: 602-839-9106

ToxTalk

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PRESIDENT

Vickie W. Watts, M.S.
Forensic Toxicologists Associates
1851 W. Obispo
Mesa, AZ 85202
Tel/Fax: 602-831-1049
Email: toxilady@aol.com

VICE PRESIDENT

Joseph J. Saady, Ph.D., DABFT
Virginia Division of
Forensic Sciences
1 North 14th St.
Richmond, VA 23219
Tel: 804-786-8747
Fax: 804-371-8328
Email: Saady@GEMS.VUC.EDU

SECRETARY

Marilyn A. Huestis, Ph.D.
Lab of Chem. & Drug Metabolism
Addiction Research Center
NIDA, NIH
5500 Nathan Shock Dr.
Baltimore, MD 21224
Tel: 410-550-2711
Fax: 410-550-2971
Email: MHuestis@irp.nida.nih.gov

TREASURER

J. Robert Zettl, B.S., M.P.A.
Colorado Dept. of Public
Health & Environment
Alcohol Test Program
4210 E. 11th Ave.
Denver, CO 80220
Tel/Fax: 303-795-1654
Email: Robert.Zettl@State.co.us

ADDITIONAL DIRECTORS

Michael L. Smith, Ph.D., DABFT
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(ToxTalk Editor)

1997 ANNUAL MEETING HOSTS

Dennis Crouch/David Moody, Ph.D.
Center for Human Toxicology
Biomedical Polymers Research
Bldg., Room 490
University of Utah
Salt Lake City, UT 84112
Tel: 801-581-5117
Fax: 801-581-5034
Email: //lysine.pharm.utah.edu/
-dcrouch/soft97.html

EDITOR: Joseph R. Monforte, PhD, DABFT

EDITORIAL BOARD: H. Chip Walls, B.S., Jim Wigmore, B.Sc., Carl Selavka, Ph.D., Daniel Isenschmid, Ph.D.

PUBLISHER: Patricia Mohn-Monforte

IN THIS ISSUE

REGULAR FEATURES: Journal Club ✂ Professional Calendar ✂ Career Opportunities ✂
From the Editor's Desk ✂ Elmer Gordon ✂ Drugs in the News ✂ President's Message

TECHNICAL NOTES: Blutalkoholkonzentration ✂ **CASE NOTES:** Nicotine concentrations in
postmortem blood (Isenschmid and Hepler)

OF SPECIAL INTEREST: 1998 Nominating Committee Slate ✂ SOFT/TIAFT '98

INSERTS: 1997 SOFT Meeting Materials ✂ Minutes of the 1996 Annual Business Meeting ✂
Forensic Toxicology Laboratory Guidelines (draft with proposed changes) - *members only*

FROM THE EDITOR'S DESK . . . Joseph R. Monforte, Ph.D., DABFT

I'm happy to report that two persons have volunteered to provide "Drugs in the News" articles for ToxTalk. Both Vince Papa and Lauren Marinetti-Sheff will be regular contributors, and I am certain that we all look forward to their articles. As a reminder, all members are encouraged to submit articles. They may be submitted directly to Lauren or Vince.

By the end of August, we should be in our new house. The contact information is listed below. Please send future ToxTalk material to the Cave Creek address. The e-mail address remains monforte@juno.com.

As you can tell by the enclosures in this issue of ToxTalk, the 1997 Annual Meeting promises to be another great one. The Minutes of the 1996 SOFT Business Meeting are prepared as an insert so you may bring them to the Utah meeting for reference. I look forward to seeing you all there. ✂

ToxTalk is mailed quarterly (bulk mail) to members of the *Society of Forensic Toxicologists, Inc.* It is each member's responsibility to report changes of address to the SOFT mailing address (Mesa, AZ - above). Non-members may now receive **ToxTalk** for \$15 per calendar year. Make your check payable to SOFT, and mail it to the **ToxTalk** Editor.

All members and others are encouraged to contribute to **ToxTalk**. Please mail your contribution to:

Joseph R. Monforte, Ph.D., DABFT, ToxTalk Editor

42408 N. Sombrero Rd, Cave Creek, AZ 85331-2821

Telephone: 602-595-MOHN (6646) Fax: 602-595-MONF (6663) - *after 11 a.m. E.S.T. please*

E-mail: monforte@juno.com

DEADLINES: Feb. 1, May 1, Aug. 1, and Nov. 1. **NEXT DEADLINE:** *November 1, 1997*

SOFT is a supporting organization of the American Board of Forensic Toxicology

PRESIDENT'S MESSAGE by Vickie Watts, M.S.

With 1997 well underway, I am sure we are all looking forward to the annual meeting in Salt Lake City this fall. The summer is rapidly passing and the August 1st deadline for registration at the 1997 annual meeting is upon us. For those who have already registered, congratulations. For those who plan to but have been busy, the time is NOW. SOFT membership and attendance at the annual meetings has been increasing each year. The 1997 program has the SOFT trademark excellent and seven excellent workshops available to register for. Although the registration deadline is set for Sept. 5th, the workshops typically fill up early. Dave Moody reported that the program committee received over 60 abstracts at the July 1st deadline. The 1997 SOFT annual meeting at Snowbird ski resort outside of Salt Lake City will be one not to be missed. Room rates range as low as \$89, the registration fee includes a number of meals along with a great deal on the airport shuttle to the ski resort make this an extremely affordable as well as scientifically informational toxicology event for the year. The annual meeting hosts, Dennis Crouch and David Moody from the Center of Human Toxicology, have done an outstanding job of planning and preparing for you to attend this meeting.

The officers of SOFT have taken on substantially more responsibility in handling organizational activities of the SOFT office over the past few years. Our new treasurer, Robert Zettl has done a wonderful job of transitioning the SOFT treasurer's office and reinvesting the finances of the organization. Secretary Marilyn Huestis continues to increase the membership of the organization with her enthusiasm and tireless efforts. Vice President Saady, as chair of the meeting resource committee is finalizing the plans for the future 1998 and 1999 SOFT annual meetings.

In February I asked the 1997 SOFT Committee chairs to come up with foreseeable goals to accomplish this year. With the year only halfway over the Committees have already done an excellent job of completing these goals and we as SOFT members will benefit. The SOFT special issue of JAT has again met with record success thanks to the efforts of the special issue editor, Alphonse Poklis, and the membership of SOFT. The purpose of the SOFT special issue has been to premier original research submitted to the Journal of Analytical Toxicology from the SOFT membership. In light of this the Board last fall voted that acceptance of papers into the special issue must have at least one author as a member of SOFT. Even with this new restriction the number and quality of papers was overwhelming.

Have you visited our Web page lately? Bruce Goldberger has done an outstanding job of building the web page into a site representing the foremost reputation SOFT has attained with membership in the society. As SOFT president, I receive e-mails daily from people who want to know more information about our society based upon visiting the web page. Bruce also has prepared a cleaner version of the SOFT logo that will be available at the annual meeting for comments. This logo will copy and print cleaner on organizational stationary and rosters for future use by the members.

Bill Anderson is actively working along with the SOFT Board members in finalizing a Policy and Procedures manual to have available for the October Board Meeting for approval. A copy will be available at the annual business meeting for review of the membership. Joe Monforte continues to produce a timely and informative newsletter for the SOFT membership. Through his efforts as editor and Pat Monforte's as publisher we continue to disperse information to the membership on the activities of SOFT. Dave Moody reports his committee approving one ERA award at the amount of \$750 to Rebecca Jufer who will present a paper on her research at the annual meeting. Thanks to Dave the ERA announcement also has been revised to include guidelines for the ERA applicant.

In closing, I wish to thank the membership for being given an opportunity to serve you. I look forward to continuing the work of the committees and responding to needs of members who contact me. If you have any suggestions or ideas which will enhance the activities of SOFT please feel free to contact me at anytime. Looking forward to seeing all of you in Salt Lake City this September.

Warm (110 degrees in the shade) hugs from Arizona, Vickie Watts, SOFT President
Tel/Fax: 602-831-1049 e-mail: toxilady@AOL.com ☺

INTERNET "SITINGS": www.soft-tox.org SEND WEBSITE INFORMATION TO TOXTALK

SOFT ROSTER INCREASES BY 38

Since the 1996 SOFT Annual Meeting last October, 31 Full and 7 Associate applicants have been accepted as members of SOFT. As of 6/27/97, the current SOFT membership is 522, with 25 Charter, 388 Full, 80 Associate, 19 Retired and 10 Student members. We welcome our newest members:

Full: Dr. Michael Robertson, Dr. Donald Tocco, Robert Wall, Dr. Connie Dunn, Ghazelah Moayer, Emily Jochimsen, Judith Kuhnle, Dr. Ernest Lykissa, Dr. Rolf Aderjan, Dr. Brian Luckey, Phyllis Chandler, Dr. Jack Zaun, Dr. Michael Ottlinger, Dr. Robert Swanson, Anna Brown, Dr. Kevin Klette, Shirley Treacy, Dr. Hans Maurer, Sheryl Peyton, James Callies, Dr. Priscilla Orsulak, Dr. Rong-Jen Hwang, Leo Walter, Dr. Robert Breiner, Dr. Sheila Dawling, Randy Shaver, Joseph Jones, Neal Sto. Dr. Marthe Dalpe'Scott, Laura LeDone-Draka and Charles Aowata. Associate: Erin Boone, Dr. Steven Karch, LaRae McPartlin, Dr. Hoa Nguyen, Kabrena Goeringer, Frederick Whalen IV, and Marta Davis. ☺

NOMINATING COMMITTEE ANNOUNCES 1998 SLATE

Submitted by H. Chip Walls, Nominating Committee Chair

PRESIDENT - Joseph J. Saady, Ph.D., DABFT

Dr. Saady works as a Forensic Toxicologist for the Virginia Division of Forensic Science. He received his M.S. in Pharmacology and Toxicology and a Ph.D. in Pathology/Toxicology from Virginia Commonwealth University, where he holds an affiliate appointment as Clinical Associate Professor. He currently serves on various national committees including the National Academy of Sciences - Committee on Toxicology, the American Conference of Governmental Industrial Hygienists - Biological Exposure Index Committee, and the Toxicology Review Board for the U.S. Army. An active member of SOFT, Dr. Saady is currently Vice President and previous service includes Director, E.R.A. Committee, SOFT/AAFS DUID Committee, and 1993-96 Treasurer. He is a Diplomate of the ABFT, serves on the editorial board of the Journal of Analytical Toxicology, and has more than forty published scientific papers.

VICE-PRESIDENT - Marilyn Huestis, Ph.D.

Dr. Huestis received a bachelor's degree in biochemistry from Mount Holyoke, a master's degree in clinical chemistry from the University of New Mexico, and a doctoral degree in toxicology from the University of Maryland in Baltimore. Dr. Huestis has been working in the fields of forensic and analytical toxicology and clinical chemistry for more than twenty years, including the position of chief toxicologist of Nichols Institute's San Diego laboratory. Currently, she is a senior research scientist at the Addiction Research Center, NIDA, studying the pharmacokinetics/pharmacodynamics of drugs of abuse. Dr. Huestis has had numerous papers published on the effects of marijuana. She was awarded the AAFS Irving Sunshine Award for outstanding research in forensic toxicology by a young investigator in 1992. She currently serves as Secretary of SOFT, is 1998 Program Chair for the Toxicology Section of AAFS, is an active member and former Secretary of CAT, serves on the Therapeutic Drug Monitoring and Clinical Toxicology Committee of AACC, and is a member of the International Association of Forensic Toxicology.

SECRETARY - Michael L. Smith, Ph.D., DABFT

Dr. Smith, currently a US Army colonel and Chief Deputy Medical Examiner over the Forensic Toxicology Laboratories in the Office of the Armed Forces Medical Examiner, Washington, DC. He earned a bachelor's degree in chemistry from Kansas State Teachers College, Emporia, KS, and a Ph.D. in bioanalytical chemistry from Purdue University, W Lafayette, IN. Dr. Smith received Diplomate status from the American Board of Forensic Toxicology. Past professional positions include Director of Clinical Research at army medical centers and commander of the US Army Forensic Toxicology Drug Testing Laboratory that served the European Theater in the late 1980's. Dr. Smith has 120 professional publications and abstracts and served as an expert witness in over 50 federal cases. The Forensic Toxicology laboratories he currently directs include the Department of Defense (DoD) Central Postmortem/Human Performance Laboratory, the DoD Testing Quality Control Laboratory, and the DoD Forensic Toxicology Research Branch. Dr. Smith has been a full member of SOFT since 1988 and will complete his 3-year term as a Director this year.

BOARD OF DIRECTORS (1998-2000) - Bruce Goldberger, Ph.D., FTS

Dr. Goldberger is an Assistant Professor and Director of Toxicology in the Department of Pathology, Immunology and Laboratory Medicine in the College of Medicine at the University of Florida in Gainesville. His laboratory provides analytical services for several State of Florida Medical Examiner Offices and governmental, academic, and private organizations. Dr. Goldberger received a Bachelor of Arts Degree in Zoology from Drew University in Madison, NJ, and a Master of Science and Doctoral Degrees in Forensic Toxicology from the School of Medicine at the University of Maryland in Baltimore. Dr. Goldberger is an active member and past chairman of the AAFS Toxicology Section and also a member of AACC, National Safety Council - Committee on Alcohol and Other Drugs, and SOFT. He is a member of the editorial board of the Journal of Forensic Sciences, the Journal of Analytical Toxicology, and Toxicology Methods. ☺

The election of officers and a board member will take place during the SOFT Annual Business Meeting in Snowbird.

Only current, full members of SOFT may vote.

TREASURY NOTES

Submitted by *J. Robert Zettl, SOFT Treasurer, 1500 East Mineral Place, Littleton, CO 80122-2911*
Phone for voice: 303-795-1654 Phone for fax: 303-795-1654 #99 E-mail: JRZettl@Ecentral.com

Dues for SOFT are \$50.00 (U.S.) annually, due the first of each calendar year, with a \$5.00 late fee added after February 1st of the same year. Thanks to those who have paid their 1997 dues.

SOFT tries to be considerate of its paid membership but sometimes errors do occur. It is incumbent upon all SOFT members to keep their dues current. Due to rising mailing costs SOFT discontinued sending late notices for delinquent dues. If you have any reason to believe you have not paid your dues for 1997 please contact me.

All inquiries to the SOFT treasurer should be directed to the new address and numbers listed above. ☺

A Closer Look at: MEETING RESOURCE COMMITTEE

Submitted by *Joseph Saady, Ph.D., DABFT, SOFT Meeting Resource Committee Chair*

The Meeting Resource Committee assists local meeting sponsors (hosts) when possible, and relays information to the SOFT Board.

One of the primary functions of SOFT as a scientific organization is to sponsor national scientific meetings where members can remain current in toxicology by attending scientific programs and interacting with colleagues, etc. The Meeting Resource Committee is typically chaired by the SOFT Vice President and the functions are to work with local meeting sponsors to assist in facilitating upcoming meetings and to keep the Board of Directors informed of meeting progress and plans. The local sponsors perform the enormous task of holding the meeting. This Committee provides advice and guidance.

The recent past meeting sponsor(s) are members of this committee to lend their experience to future meeting hosts. The current year meeting (Utah) is generally planned by this time, so there is little Committee involvement. Next year's joint meeting with TIAFT (1998 in Albuquerque, NM) is still in the planning stages by hosts Drs. Backer and Rao for SOFT and Spiehler for TIAFT. ☺

REVISED FORENSIC TOXICOLOGY LABORATORY GUIDELINES TO BE PRESENTED AT SOFT BUSINESS MEETING

Dr. Graham Jones, Chairman of the SOFT/AAFS Laboratory Guidelines Committee, has prepared a draft copy of the guidelines with proposed changes. Copies of the draft are included with this issue of ToxTalk for all SOFT members. This document will be voted upon at the annual business meetings of SOFT (October) and the Toxicology Section of AAFS (February).

It is anticipated that any additional changes resulting from these meetings would not require re-printing the document, but would rather be prepared on one or two sheets and distributed to the members of SOFT and AAFS through their official newsletters. In other words, this is probably the only copy of the revised guidelines you will receive except for any necessary changes that you will have to include in the enclosed copy when that information is distributed.

Congratulations to Dr. Jones and his committee, Dr. W. Lee Hearn, Dr. H. Horton McCurdy, and Rod McCutcheon for a job well done! ☺

ABFT NEWS

The ABFT Laboratory Accreditation Program is now in process. To receive specific information, please contact the ABFT Administrative Office. 1997 ABFT Annual Breakfast is scheduled for Tuesday, October 7 from 7:30 to 9:00. All ABFT certificants are invited to attend. Please see the SOFT Meeting registration form. You must be certified by ABFT to attend this event. The following ABFT Forensic Toxicologist Diplomates have successfully requalified for certification and will be recognized at the Annual ABFT Breakfast: Roy Altman, Jr., Ph.D., Paula Childs, Ph.D., C. Richard Crooks, Ph.D., D. Russell Lowe, B.S., Richard Schlesinger, Ph.D. and Michael Smith, Ph.D. New certificants will also be introduced and presented their ABFT certificates at the ABFT Annual Breakfast.

Forensic toxicologists with a doctorate or masters degree who are interested in certification by the American Board of Forensic Toxicology should contact: ABFT Administrative Office, P.O. Box 669, Colorado Springs, CO 80901-0669 Telephone: 719-636-1100) ☺

**SOCIETY OF FORENSIC TOXICOLOGISTS
ANNUAL TREASURER REPORT 1994, 1995, 1996**

INCOME	1994	1995	1996
Application fees	420	420	520
Dues (including late fees)	16395	16069	25769
ERA Fund donation	906	526	888
Interest (all accounts)	6052	9317	2495
Lab guidelines	575	540	510
Mail label lease	450	600	2200
Meeting 1993 / 1994 / 1995	20886	23018	16682
SUBTOTALS	45684	50490	49064

EXPENSES			
ABFT award, other	110	2500	0
Administrative office:			
Contractual labor	n/a	4114	2885
Executive Coordinator	5372	7031	n/a
Postage	418	1410	1395
Printing	328	1774	1465
Storage space	640	536	694
Supplies	1917	3122	3249
Telephone	806	675	1121
Bank fees	140	191	97
Bonding Insurance	n/a	n/a	200
Committees	436	217	0
CPA fee	420	1325	1850
ERA Fund Awards	1500	1500	2500
Incorporation fee	170	170	170
JAT special issue	187	2623	from meeting
Meeting expense 1994 / 1995 / 1996	3557	5000	5148
Officer expense	3102	1837	1582
SOFT sponsored hospitality@ AAFS	1463	1488	1181
ToxTalk:			
Contractual labor	4441	1781	2885
Postage	914	1302	1110
Printing	1599	863	1703
Supplies	246	605	172
Telephone	268	33	58
SUBTOTALS	28034	40097	29465

SOFT ASSETS ON 12/13/96

Checking balance \$48,322.01
ERA Fund \$63,095.92
Emergency Fund \$25,000.00


 by **Joseph J. Saady, '96 Treasurer**

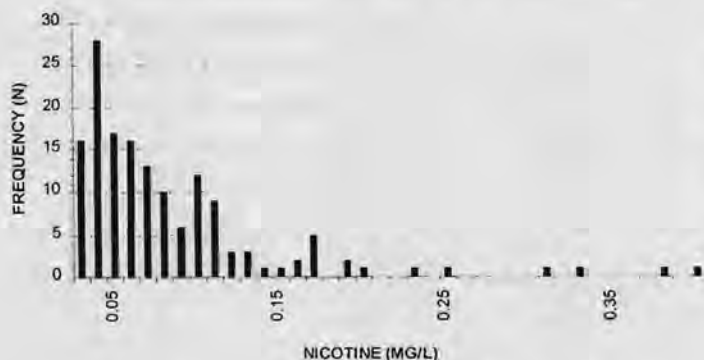
Case Notes: Nicotine Concentrations in Postmortem Blood

Submitted by: Dan Isenschmid, PhD and Bradford Hepler, PhD

Although nicotine is commonly identified in postmortem blood, it is rarely quantitated on a routine basis. With the recent availability of nicotine gum (Nicorette) as an over-the-counter preparation and the increasing use of nicotine patches, the need to establish a range for typical postmortem blood nicotine concentrations was thought to be useful. We measured nicotine in the blood of cases that required quantitative organic bases. Over a nine month period 682 cases were screened for organic bases. Nicotine was detected in the blood, urine or bile of 311 (45.6%) of these cases. Based on the presence of other organic bases requiring quantitation, 151 blood specimens were ultimately quantitated for nicotine. The overall positive rate for nicotine was fairly evenly distributed, regardless of the manner of death; however, all cases in which nicotine was quantitated were either positive for other drugs or were cases pending toxicology for which only blood was submitted. Cotinine was not measured.

The average nicotine concentration in the 151 cases analyzed was found to be 0.080 mg/L (range 0.022-0.40 mg/L, SD = 0.064, limit of quantitation 0.020 mg/L). The median nicotine concentration was 0.059 mg/L. The most frequent concentration range measured was 0.030 - 0.040 mg/L (n=28). These median and mode nicotine concentrations appear to be consistent with studies in which subjects smoked 7 cigarettes at the rate of 1 per hour [*] and 30 min. after a 6.5 hour ad libitum smoking period [*]. The distribution of nicotine concentrations in this study are shown below.

POSTMORTEM NICOTINE CONCENTRATIONS



Of the 151 cases quantitated, 6 were determined to be greater than 2 standard deviations above the average nicotine concentration. Although the nicotine concentrations in these cases (0.23-0.40 mg/L) were consistent with subjects wearing transdermal nicotine patches [*], no evidence of a nicotine patch was recorded in the case history. It was interesting, however, to note that 5 of these cases had significant drug or alcohol findings in the blood noted below (all concentrations in mg/L except ethanol (g%,

Case	Nicotine	Other Findings
1	0.40	Ethanol - 0.40%; Salicylates - 140; Diazepam - 0.093; Nordiazepam - 0.51; Chlorpheniramine - 0.093; Diphenhydramine - 3.0
2	0.31	Ethanol - 0.19%; Diazepam - 0.24; Nordiazepam - 0.041; Morphine - 0.40
3	0.25	Ethanol - 0.39%; Nordiazepam - 0.22
4	0.38	Chlorpheniramine - 0.025; Hydrocodone - 1.3
5	0.33	Acetaminophen - 26; Diphenhydramine - 9.4; Doxylamine - 0.30

The remaining case with an elevated nicotine concentration (0.23 mg/L) was positive only for hydrocodone at 0.055 mg/L.

The nicotine concentrations in post mortem blood in cases where ingestion of nicotine was the direct cause of death range from 5-5800 mg/L [*]. The highest concentrations found in our study were from 1-4 orders of magnitude lower than these nicotine concentrations suggesting that even the highest nicotine concentrations found were not toxicologically significant.

[*] All references used in this case report may be found in Disposition of Toxic Drugs and Chemicals in Man, Fourth Edition, R.C. Baselt and R.H. Cravey, editors; Chemical Toxicology Institute, Foster City, CA, 1995.

CALL FOR CASE NOTES

Your case note should be about 1/2 page in length, no more than a full page. Material on a disk (preferably using Microsoft Works/Word 2.0) may be mailed or faxed to the new address as follows after 8/20: Joseph R. Monforte, Ph.D., DABFT, ToxTalk Editor, 42408 N. Sombrero Rd., Cave Creek, AZ 85331-2821. Or fax: 602-595-MONF (6663). The e-mail address remains the same: monforte@juno.com

Other items of interest to SOFT members are also welcome.

Next deadline: NOVEMBER 1, 1997

Technical Notes: BLUTALKOHOLKONZENTRATION No. 17

Submitted by: J.G. Wigmore, B.Sc., Toxicology Section, Centre of Forensic Sciences, Toronto, Ontario, Canada

ANALYSIS OF FATALITIES WITH EXTREMELY HIGH BLOOD ETHANOL CONCENTRATIONS

M. Erkens, *Blutalkohol*, 19:38-44, 1982.

German title: *Analyse von Todesfällen mit extrem hoher Blutalkoholkonzentration*

This is a study of 17 victims with extremely high blood alcohol concentrations (BACs) who died of alcohol intoxication between 1977 and 1981. There were 9 males and 8 females who were between 30 and 63 year of age (mean age 43 yrs). The BACs were determined by the GC and ADH methods. In addition, the alcohol concentration of the urine, cerebrospinal fluid, intraocular fluid and synovial fluid were determined.

The postmortem BACs ranged from 0.436 to 0.929 g/100mL (mean 0.542 g/100mL). The water content of the blood was determined, and, if the BACs are adjusted for water content, the adjusted BACs would range from 0.548 to 1.324 g/100mL (mean 0.719 g/100mL). In all cases the urine alcohol concentration was less than the adjusted BAC which indicates that death occurred in the absorption phase.

The highest BAC was obtained by a 57-yr-old female who committed suicide by drinking approximately 500 mL of 80% (v/v) rum and left a note "Because I am afraid of a serious illness." She had a Billroth II gastroenterostomy which caused the stomach to dump, rather than empty gradually. ☹

"DRUGS IN THE NEWS"

by Joseph R. Monforte, Ph.D., DABFT

HEROIN/METHADONE: On August 01, 1997, The Arizona Republic reported that the Pima County (Tucson) Prosecutor has charged an addicted mother with first degree murder for breast-feeding her baby while using drugs after the child's birth. The mother is also charged with murder because the child's death resulted from child abuse and the father did nothing to stop it.

The child reportedly was dependent upon methadone at birth, and remained at the hospital for one month prior to release to the parents. Although the mother was informed of the danger of continuing her drug habit while breast feeding the child, she allegedly used heroin and methadone after the child was released from the hospital. The Article did not report the results of toxicology tests performed on the child.

This article reminded me of a similar case which occurred in Wayne County in the late 1970s. At the time we were performing extensive testing on infants, and detected methadone in the tissue of an infant whose death was initially attributed to SIDS. Subsequently, the death certificate was amended and the mother prosecuted. This death was included with other infant deaths involving methadone that we reported in JAMA.

COCAINE: In Phoenix, a hot-air balloon pilot was indicted on 14 felony charges after injuring 13 passengers in an accident which occurred in September 1996. The defendant faces 12 counts of endangerment, and single counts of aggravated assault and cocaine possession. A vial of white powder was found in the balloon and cocaine was reportedly detected in the defendant's system.[]

Send your material for "Drugs in the News" to:

Dr. Vince Papa, Brooks AFB, 2601 Westgate Rd, Ste 117, Brooks AFB, TX 78235-5240

Fax: 210-536-1451 e-mail: vincent_papa@platinum.brooks.af.mil - or -

Laureen Marinetti-Sheff, MI State Police Crime Lab - Tox, 714 S Harrison, East Lansing, MI 48823

Fax: 517-336-6511 e-mail: ljtoximp@aol.com

SOFT '97

Cliff Lodge, Snowbird, Utah

October 5-6 (Sunday-Monday) - Workshops

October 7-9 (Tues. - Thurs.) - Scientific Sessions

Hosts: Dennis Crouch and David Moody Ph: 801-581-5117 Fax: 801-581-5034

E-mail: //lysine.pharm.utah.edu/~dcrouch/soft97.html

Meeting materials are included with this *ToxTalk* mailing.

PREPARE NOW FOR SOFT/TIAFT '98

Drs. Ronald Backer and N.G.S. Rao, 1998 SOFT Meeting Hosts, have recently announced the following for the 1998 SOFT/TIAFT meeting in Albuquerque.

PRELIMINARY PROGRAM

Saturday 10/03/98: Pre-conference tours; Acoma Pueblo, City tour/Indian Cultural Center, Sandia Peak tram ride and mountain trails, Jemez Springs Mountain Area, Bandelier National Monument & CAP Inspectors' Workshop

Sunday 10/04/98: Pre-conference tours; Balloon Festival mass ascension at dawn, Albuquerque city tour & SAMSHA NLCP Workshop

Monday 10/05/98: Workshops: *Pharmacology and Analytical Toxicology of Drugs in Saliva - TLC: Current Use of an Old Technique - Analytical and Interpretive Challenges with Amphetamine Analogs - Practical Aspects of CI/MS for Drugs of Abuse Analysis - Interpretation Exercises in Medical Examiner Casework* & Welcoming Reception

Tuesday 10/06/98: Workshop: Medical Traditions in the Four Cultures: "*Herbs of the Curanderos*" at Rancho de las Golondrinas and "*The Scalpel and the Silver Bear*" in Santa Fe & Free afternoon in Santa Fe

Wednesday 10/07/98: Plenary Session & Scientific Sessions, oral and poster & Exhibits Open & Presidents Reception and Buffet Dinner & Elmer Gordon Forum

Thursday 10/08/98: Scientific Sessions, oral and poster & Exhibits

Friday 10/09/98: Scientific Sessions, oral and poster & Exhibits & SOFT Business Meeting & TIAFT Business Meeting & Farewell Banquet

Saturday 10/10/98: Post Congress Tours: Taos Pueblo, White Sands and Carlsbad Caverns

FEES: You will be offered two registration options: "Mesa" which includes all scientific sessions, a copy of the abstracts book, the welcoming reception, Presidents Reception and Buffet Dinner (Wed. p.m.), Thursday luncheon and all coffee breaks for \$125, or "Sandia" which includes all the above and Wednesday and Friday luncheons, the Farewell Banquet (Friday p.m.), Tuesday's "travelling" workshops, and the published Congress Proceedings for \$275. The Monday workshop fees will be only \$40 for each workshop. Non-members will be charged higher registration and workshop fees. A daily student rate will also be offered. All persons registering by 7/01/98 will receive a free t-shirt. A late fee will be applied after 8/01/98. A registration form with complete information and instructions will be included in a future issue of **ToxTalk**.

HOTEL RESERVATIONS must be made directly with the hotel. You are herewith officially advised that rooms are at a premium during this time which coincides with the famous Albuquerque Balloon Festival. Space is limited and will be reserved on a "first come" basis only. To qualify for conference rates, specify "SOFT" when making your reservations.

Albuquerque Hilton (Congress host Hotel) 800-274-6835: \$105 single/double; \$115 triple; \$125 quad
Fairfield Inn by Marriott (very close to Hilton) 505-889-4000: \$89 single/double; \$99 triple; \$109 quad

PAPERS: An abstract form with instructions will be included in a future issue of **ToxTalk**. Abstract deadline will be July 1, 1998. For further information contact SOFT/TIAFT 1998, 422 Tustin Ave, Newport Beach, CA 92664 or e-mail TIAFT98@aol.com -or- spiehleraa@aol.com.

SOFT/TIAFT 1998

October 5-9, 1998

Albuquerque, New Mexico

Look for more information in future issues of **ToxTalk**!

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ELMER GORDON OPEN FORUM

AN OPPORTUNITY FOR INFORMAL DIALOGUE

WHO? WHAT? WHEN? WHERE? AND WHY? Dr. Irving Sunshine is attempting to gather for posterity historical data and anecdotes relative to forensic toxicology, particularly the "early years." He would particularly like to hear from you if you . . .

- > were involved with the conception/inception of SOFT
- > were associated with an early forensic toxicology lab
- > trained under/with the recognized "mentors" in the field (Harger, Fomey, Blanke, McBay, Jones, Howard, Freimuth, Poklis, Kier, Dubowski, Rieders, Speaker, Sunshine (added by Editor), and any of the many others
- > worked an interesting or unusual case
- > are willing to share some biographical information, such as training and background, why toxicology was of interest to you, and how you got your initial position

Nothing elaborate required. Pen sketches are welcome. Biographical information may be a simple, brief statement. The future of this information will be determined by the quantity and quality of items submitted. If you would like to participate, send your written contribution to:

Dr. Irving Sunshine, 28150 W. Woodland Rd, Pepper Pike, OH 44124-5640 Fax: 216-464-3526

Congratulations to the Bruce Goldberger family on the arrival of a baby boy. ☺

TIME IS RUNNING OUT - REGISTER FOR THE 1997 SOFT MEETING TODAY! (AND DON'T FORGET THE HOTEL.)

CAREER OPPORTUNITIES

Positions available are listed for the consideration of SOFT members. There is no fee for this service. The information will be repeated in the next issue only if the information is confirmed by the person who submitted it.

PROFESSIONAL CALENDAR

SOFT Annual Meeting: Oct. 5-9, 1997, Snowbird, Utah, Dennis Crouch & David Moody, Co-Hosts.

FUTURE SOFT MEETINGS: 1998 Albuquerque, NM, NGS Rao & Ronald Backer, Co-Hosts (Joint with TIAFT)

5th International Congress of Therapeutic Drug Monitoring and Clinical Toxicology: Nov. 11-14, 1997, Vancouver, British Columbia. Contact 5th International Congress, Events & Management Plus Inc., P O Box 1570, 190 Railway St, Kingston, Ontario, Canada K7L 5C8 (Tel: 613-531-9210, Fax: 613-531-0626)

A National Laboratory Certification Program Workshop: Nov. 21-23, 1997, Research Triangle Park, NC. (NOT HHS/NLCP Inspector Training). Contact Becke Harden, 919-541-7235. Tuition \$1,200.00 includes 2.5 day workshop, materials, continental breakfasts, breaks, and an evening banquet.

American Academy of Forensic Sciences (AAFS) annual meeting: February 9-14, 1998, San Francisco. Contact Brenda Papke, 719-636-1100. ☺

REMINDER - S.O.F.T. CONTACT INFORMATION:

- ① **VOICE MAIL & FAX 602-839-9106**
- ✉ **MAILING ADDRESS P.O. Box 5543, Mesa, AZ 85211-5543**

Annual Business Meeting Minutes
of the Society Of Forensic Toxicologists, Inc.
October 17, 1996

The Annual Business meeting of the Society of Forensic Toxicologists, Inc. was held on October 17, 1996 at the Marriott Tech Center, Denver, CO .

President H. Chip Walls called the meeting to order at 1:00 p.m. and requested that the Secretary establish a quorum. President Walls advised attendees to sign in and reminded those in attendance that only full members may vote. Upon a motion duly made, seconded and passed, the agenda was approved.

By motion duly made, seconded and passed, the minutes of the annual business meeting of the Society of Forensic Toxicology of October 13, 1995 as published in ToxTalk were approved by acclamation.

Presidents Report: H. Chip Walls

President Walls thanked and recognized the exceptional efforts of the officers and Board of Directors of S.O.F.T. for their assistance, patience, and their guidance during his term of presidency. He also expressed his appreciation to all the S.O.F.T. standing committees and their chairs for their diligent work and excellent contributions. President Walls stated that development of the S.O.F.T. Policy and Procedures manual, and the Meeting Host's Guidelines were his primary objectives for 1996. He thanked Bill Anderson and Vickie Watts for their efforts in these areas. He also indicated that the successful resolution of the IRS Tax Audit of the organization's 1994 activities was due to the hard work and skill of Treasurer Saady, and contributions of previous S.O.F.T. treasurers. He thanked them on behalf of all S.O.F.T. members. He expressed his appreciation to the S.O.F.T. membership, for their confidence in electing him to the highest position of our professional organization.

Vice President's Report: Vickie Watts, M.S.

Vice President Watts completed a draft Guidelines for Hosting Workshops and Annual Meetings. This extensive document provides valuable information for planning and hosting a successful annual meeting. One of the Vice President's primary responsibilities is to chair the Meeting Resource Committee as well as to facilitate the activities and reports of all of the S.O.F.T. Committees. Therefore, the Vice President's report will be combined with the Reports of the Committees.

Secretary's Report: Marilyn Huestis, Ph.D.

Secretary Huestis reported that the minutes of the February, 1996 Board of Directors meeting were prepared and distributed to the Board and have been approved at this Board of Directors Meeting. She indicated that the many members' and interested parties' inquiries about S.O.F.T. had been handled expeditiously. Secretary Huestis also stated that the S.O.F.T. Administrative Assistant, Ms. Bonnie Fulmer, had performed in an exemplary manner during the past year and that it was a pleasure to work with her. Membership information will be described under the Membership Committee report.

Treasurer's Report: Joseph Saady, Ph.D.

Treasurer Saady reported that he has presented to the Board of Directors a line by line itemized accounting and overview of our finances. He also announced that the IRS audit of fiscal year 1994 was successfully completed. One important finding was that the Executive Coordinator in 1994, Pat Mohn-Monforte, was judged by the IRS to be an employee. Additional taxes may be due, but no written response has been received to date. The current CPA contract, U.S. Treasury Bill investments, and proposed budget were included in the Treasurer's report. A budget of approximately \$30,000 was proposed for 1997. The monies previously held by the S.O.F.T. Treasurer for JCETT were transferred to the Secretary/Treasurer of JCETT. Insurance in the sum of \$100,000 was purchased for Employee Dishonesty Coverage for officers and directors of the association. The cost of the insurance is approximately \$200.00 per year.

Following acceptance of the new by-laws amendment at the annual meeting, members who have not paid their dues will be dropped from the active role by June 1 of each calendar year following two written notifications to the member that his dues are in arrears. As of December 31, 1995, S.O.F.T. had \$40,000+ balance in our general account. S.O.F.T. revenues for 1995 and 1996 were \$39,250.64 and \$36,330.23, respectively. The excellent 1995 S.O.F.T. annual meeting in Baltimore, MD produced a profit of \$16,681.67.

Treasurer Saady next reported on the expenses for S.O.F.T. The administrative office expenses, production of the ToxTalk newsletter, general printing costs, copying costs, committee expenses and postage were approximately \$8,600 for 1995. Total expenses to date in 1996 were approximately \$20,000. The ERA endowment fund and the Emergency Fund totaled \$62,213.08 and \$25,000.00 as of 12/13/95.

Reports of the Committees: Vickie Watts, M.S.

By-laws Committee: Kurt Dubowski, Ph.D.

Dr. Dubowski reported that the Committee proposed an amendment to the bylaws regarding termination of membership Chapter II, Section 3. In the past members who were two years in arrears in their dues were dropped from membership. The proposed amendment would terminate membership on June 1 following two written notices of failure to remit dues to the member. This change was considered necessary to reduce S.O.F.T. expenses for members who have not paid dues, to expedite the process of acting upon failure to submit dues, and to establish a date on which termination of membership occurs. A motion was made and seconded. The membership voted to accept the proposed change to the by-laws.

Budget, Finance and Audit Committee: James Valentour, Ph.D.

Dr. Valentour reported that the society's records were found to be in excellent order.

Membership: Marilyn Huestis, Ph.D.

Members of the 1996 membership committee include: Andrew Mason, Deborah Rector, Amanda Jenkins, and Marilyn Huestis, Chair. Secretary Huestis announced that the Membership Committee accepted 38 new members into the organization (28 Full members, 7 Associate members, and 3 Student members). New members were asked to stand and be congratulated by the membership. New members and individuals who were attending their first S.O.F.T. annual meeting were recognized with ribbons for the first time. This program was judged to be highly successful and helped members to identify and welcome these special people. Members who had not paid their 1995 dues were changed to an inactive status. As of 10/10/96, S.O.F.T. had 507 active members including 369 Full, 28 Charter, 80 Associate, 16 Student, and 14 Retired members.

Dr. Tully Speaker was recognized for his many contributions to the field of toxicology and to S.O.F.T. and his associate membership in S.O.F.T. was upgraded to a full membership with the enthusiastic support of those in attendance.

Nominating Committee: Vina Spiehler, Ph.D.

Members of the 1996 Nominating Committee were Jim Garriott, Yale Caplan, and Vina Spiehler, Chair. Dr. Spiehler announced that the report of the Nominating Committee had been published in the September issue of ToxTalk. The slate of officers and board members for 1997 are: Vickie Watts, President; Joseph Saady, Vice-President; J. Robert Zettl, Treasurer; and Amanda Jenkins and Tom Simonick, Board of Directors. The terms of office for the S.O.F.T. President and Vice President are for one year. The Secretary and Treasurer serve for 2 years and are elected in alternate years. Each S.O.F.T. director serves for 3 consecutive years.

ToxTalk: Joseph Monforte, Ph.D.

Dr. Monforte reported that ToxTalk remains the main vehicle of the Society for disseminating information to the membership and to emphasize scientific articles and case reports. Dr. Monforte thanked his editorial staff and his publishers for all their hard work and efforts this past year to prepare and distribute the quarterly newsletter of the Society of Forensic Toxicologists. The 1996 issues, to date, have been distributed in a timely manner to meet the specific needs of the membership. Dr. Monforte thanked all who participated in producing ToxTalk this year including Jim Wigmore, Chip Walls, and Carl Selavka, for their consistent excellent contributions. Dan Isenschmid was recognized for overseeing the Health and Safety Committee articles and Ed Cone for preparing the S.O.F.T. meeting abstracts. Dr. Monforte encouraged the Board and the entire S.O.F.T. membership to submit items to ToxTalk. The established deadlines for ToxTalk remain February 1, May 1, August 1, and November 1. Bulk mail rates continue to be utilized to contain costs; however, new sorting regulations will require additional handling fees.

Vice President Watts acknowledged and thanked Dr. Monforte for the excellent job he's doing with ToxTalk.

Publications: Edward Cone, Ph.D.

Dr. Cone thanked his committee members for reviewing submitted papers for the S.O.F.T. special edition of the *Journal of Analytical Toxicology*. He reported that 34 papers were submitted for publication to S.O.F.T. in the 1996 Special Edition of JAT. A special double issue including a total of 25 manuscripts was produced. One manuscript was withdrawn and eight were rejected. Dr. Cone thanked Tinsley Preston of JAT for his continuous and generous support of S.O.F.T.

Vice President Watts called for a show of appreciation to Dr. Cone for taking the challenge and helping to produce such an educational issue of JAT. Dr. Cone was presented with a plaque by Preston Publications for his efforts as Guest Editor of the 1996 Special Edition of JAT.

Educational Research Award: David Moody, Ph.D.

Members of the 1996 Educational Research Award Committee are Daniel Isenschmid, Barbara Manno and David Moody, Chair. The mission of the committee is to review all applications for the S.O.F.T. educational ERA, determine the responsibilities of the submitted proposal, and the monetary value to be awarded. Six

applications for the ERA award were reviewed. Robert Joseph, Matthew Slawson, George Behonick, and Tracy Williams were given awards. The committee proposed that the ERA award be modified to provide funding to the individual to present his/her research findings to the membership at the S.O.F.T. annual meeting. The application deadline will be changed to May 1 and require submission of an abstract to the upcoming annual meeting. Awards would be announced after acceptance of abstracts by the meeting's scientific program committee, approximately July 1.

Meeting Resource Committee: Vickie Watts, M.S.
1996 Denver, CO

Laurel Farrell and Robert Zettl, hosts of the 1996 Annual meeting in Denver, Colorado, announced that pre-registration for the 1996 S.O.F.T. annual meeting at the Denver, Colorado Marriott Tech Center included 357 general meeting registrants, and 653 registrations for seven excellent workshops. A special evening at the Lazy H ranch will be held on Thursday evening, as well as an optional excursion to Central City, CO on Friday evening. Vice President Watts thanked Laurel and Bob for doing an outstanding job both scientifically and socially with the 1996 meeting. The membership heartily concurred with the excellence of the meeting.

1997 Salt Lake City, UT

The Center for Human Toxicology, spearheaded by Dennis Crouch and David Moody, is hosting the 1997 Annual meeting in Salt Lake City, Utah. The meeting will be held at the Cliff House at Snowbird Mountain Resort, Sunday, October 5th through Thursday the 9th to prevent a conflict with the Jewish holidays and to allow members to take advantage of reduced airfares that require a Saturday night stay. A wonderful slide presentation of the meeting was presented. Cathy Cunningham, of the University of Utah meeting planner's group, presented plans for promoting the meeting. Room rates in the beautiful Cliff House will be \$89.00 and a variety of alternative accommodations are available. A beautiful logo of Delicate Arch in Moab, Utah has been designed for promoting the meeting.

1998 Albuquerque, NM

Drs. Rao and Backer for S.O.F.T., and Dr. Vina Spiehler for TIAFT will host the 1998 Annual meeting in Albuquerque, NM. The meeting will be held from October 5th through the 9th during the International Balloon Fiesta. This will be a joint meeting with The International Association of Forensic Toxicologists. The meeting will be held at the Albuquerque Hilton hotel and transportation to and from the Albuquerque airport will be free of charge. A session on Native American medicine will be included in the program.

Forensic Toxicology Guidelines: Graham Jones, Ph.D.

Dr. Jones stated that the Committee members for 1996 are Yale Caplan, Horton McCurdy, Mike Peat, Lee Hearn, Rod McCutcheon, Dick Shaw, Nick Hodnett, Joe Monforte, Marina Stajic and Graham Jones, Chair. The American Board of Forensic Toxicology will administer the laboratory accreditation program. Twenty-five applications have been distributed to date. It is anticipated that future revisions of the Guidelines will be necessary; however, changes will not be proposed during the startup period of the accreditation program unless there is a compelling reason to do so.

Health and Safety: Daniel Isenschmid, Ph.D.

Dr. Isenschmid reported that the 1996 committee members included John Cody, Laurel Farrell, Elizabeth Marker and himself as Chair. Due to the fact that most important health and safety-related issues have been covered in recent ToxTalk publications, Dr. Isenschmid recommended that the committee be dissolved at this time.

Drugs and Driving: Mark Lewis, B.S.

Mr. Lewis reported that committee members include Lisa Coughlin, Laurel Farrell, Teri Stockham, J. Robert Zettl, H. Chip Walls, and himself as Chair. The committee expects to receive two additional monographs on benzodiazepines and phencyclidine for review in 1997. The S.O.F.T. Drugs and Driving bibliography now contains more than 11,000 entries. It is anticipated that the presentation format for the bibliography will be finalized in 1997.

Continuing Education: H. Chip Walls, B.S.

Mr. Walls reported that the toxicology bibliography has been completed by Roger Foltz and himself and a means of distributing the data continue to be investigated. Lee Hearn, director of the visiting scientist program, encouraged interested parties and laboratories to contact him and take part in this important training opportunity. Each participating organization has a designated individual for members to contact to borrow materials from the lending library: Judy Stewart for CAT; Tom Rosano for AACC; Laurel Farrell for AAFS; and Vickie Watts for S.O.F.T. Materials, video tapes, workshop manuals, etc., from each of the four member organizations are available to all members. JCETT sponsored the Toxicology of Inhalants workshop at the 1996 S.O.F.T. annual meeting in Denver.

Policy and Procedures: William Anderson, Ph.D.

Dr. Anderson reported that committee members include Vickie Watts, Marilyn Huestis and himself as Chair. A policy and procedures manual, similar to those of the Toxicology Section of the AAFS and by CAT, is being prepared to guide S.O.F.T.'s activities. Dr. Anderson has abstracted 10 years of Board of Director's meeting reports and has developed an outline for the manual based upon review of the AAFS and CAT documents.

Liaison Reports:

ABFT: Yale Caplan, Ph.D.

Dr. Caplan reported that the certification program for post-mortem laboratories, administered by ABFT, was accepting applications and planning for the first laboratory inspection. The application fee is \$500.00 and the inspection fee \$2,025.00.

Old Business: None

New Business:

A motion to accept the proposed bylaw change concerning a change to inactive membership status following receipt of two written notices of failure to pay dues and amendments as printed in ToxTalk was moved and seconded. The membership voted to accept the proposed amendment.

Due to the increased printing expense of the S.O.F.T. Special Issue of the *Journal of Analytical Toxicology*, articles submitted by S.O.F.T. members will be given preference for acceptance in this issue.

Dr. Everett Solomons described the Forensic Toxicology Certification Board's application process, training workshop, and examination procedures.

Nominations from the Floor and Election:

No nominations from the floor were received. The membership elected all officers as nominated. Officers were applauded for their dedication and willingness to donate their time and energy to the organization. The newly elected 1997 S.O.F.T. officers and Directors:

President: Vickie Watts, M.S.
Vice-President: Joseph Saady, Ph.D.
Treasurer: J. Robert Zettl, B.S., M.P.A., for a two year term
Directors: Amanda Jenkins, Ph.D., for a three year term
Thomas Simonick, B.S. for a three year term

Awards and Recognition:

The membership thanked and acknowledged Mr. Tinsley Preston for his continued support of the S.O.F.T. Special Issue. Robert Joseph, Matthew Slawson, George Behonick, and Tracy Williams were congratulated on their receipt of an ERA award. Plaques of appreciation for their outstanding service to S.O.F.T. were presented to Vickie Watts, M.S., Vice-President 1996, Joseph Saady, Ph.D., Treasurer, 1995-1996, and W. Lee Hearn, Ph.D. and J. Robert Zettl, B.S., M.P.A., S.O.F.T. Directors from 1993-1996 and 1995-1996, respectively. A plaque was presented to President H. Chip Walls in appreciation for his hard work and guidance during the past year as President of S.O.F.T.

Adjournment: The meeting was adjourned at 3:00 p.m.

Members in attendance at the 1996 Annual Business Meeting were: FULL MEMBERS: I. Abukhalaf, W. Anderson, D. Andrenyak, D. Armbruster, E. Armitage, M. Barnhill, M. Baylor, B. Beck, R. Bell, J. Bidanset, J. Budapest, S. Bogema, R. Bost, G. Branum, E. Briglia, C. Brown, B. Buchan, D. Bush, Y. Caplan, L. Caughlin, J. Cody, K. Cole, E. Cone, M. Corbett, D. Crouch, A. D'Addario, J. Driskell, L. Droz, R. Eberhardt, L. Farrell, J. Fisher, F. Fochtman, R. Foltz, D. Frederick, D. Fuller, J. Gangwer, L. Glass, J. Gere, J. Gorsky, K. Habben, M. Hall, W.L. Hearn, B. Hepler, N. Hodnett, M. Huestis, D. Isenschmid, W. Jeffrey, S.G. Jejurikar, A. Jenkins, C. Jones, G. Jones, J. Jones, K. Kalasinsky, P. Kemp, L. Kuykendall, G. Kunsman, M. Lewis, J. Lin, R-L. Lin, C. Lodico, B. Logan, B. Manno, J. Manno, L. Marinetti-Sheff, B. Marker, F. Mattos, H. McCurdy, M. McGee, L. McWhorter, R. Meatherall, J. Mitchell, J. Monforte, D. Moody, C. Moore, K. Moore, A. Mozayani, H. Nipper, B. Nuernberger, L. O'Dell, G. Ohlson, M. Pasquier, J. Patel, M. Peat, P. Pizzo, A. Poklis, N. Rao, D. Rector, M. Rieders, A. Reiter, J. Robb, G. Rugotzke, T. Rohrig, D. Rollins, T. Rosano, J. Saady, S. Salamone, R. Sears, R. Shaw, T. Simonick, J. Singh, P. Singer, M. Smith, E. Solomons, A. Spanbauer, J. Speaker, T. Speaker, V. Spiehler, E. Spratt, A. Springfield, J. Stewart, R. Turk, W. Wall, H. C. Walls, V. Watts, D. Wilkins, A. Wu, R. Zettl. ASSOCIATE MEMBERS: S. Brown, K. Kennedy, E. Loring, M. Toth. RETIRED MEMBERS: L. Dal Cortivo, A. McBay, I. Sunshine. STUDENT MEMBERS: R. Joseph, K. Höld, J. Roper, M. Slawson.

Submitted by Secretary Marilyn A. Huestis 6/27/97



Utah 1997

27th Annual Meeting

October 5-9, 1997



UPDATES FROM THE MEETING HOSTS: Plans for the 1997 Annual Meeting at the Snowbird Conference Center near Salt Lake City, UT are progressing. We are pleased to announce that Mr. Tim Thomas and Dr. Bill Rathje will be giving plenary talks. Mr. Thomas, site manager for chemical incineration at the Toole Army Depot, will discuss the storage and destruction of chemical weapons. Dr. Rathje is an internationally recognized anthropologist who has explored the forensic and anthropologic aspects of garbage dumps. His talk will be both entertaining and informative. The workshops are rapidly being finalized. A review of the attached workshop information demonstrates the breadth of topics and expertise of the presenters.

Information about the meeting can be obtained from the SOFT web site at www.soft-tox.org and at [//lysine.pharm.utah.edu/~dcrouch/soft97.html](http://lysine.pharm.utah.edu/~dcrouch/soft97.html). We regret that some members are having difficulties reaching the Utah address. The SOFT site now has a hot link to the Utah site and Bruce Goldberger has been instrumental in including the meeting information at the SOFT web site. He has included the agenda, workshop details, lodging options and local travel information. In addition, both the registration and lodging forms can be downloaded. Contacts for local tours are provided. October is a wonderful time to explore the mountains, desert and National Parks near Salt Lake City. There are 5 National Parks, 7 National Monuments and 2 National Recreation areas in Utah and additional facilities in the adjacent states. We invite you to take advantage of the opportunity to visit these magnificent natural resources. A preliminary program will be distributed in a separate mailing that should reach you in early September.

Attention all Graduating Graduate Students: The Program Committee for the 1997 meeting at Snowbird, is attempting to organize a special platform session. This session will focus on the results of graduate (Ph.D. or M.S.) research that is either recently completed, or nearing completion. Depending upon participation, we will try to schedule 40 minutes for each presentation (30 for presentation and 10 for questions). Students who have submitted an abstract and are interested in presenting at this session must contact Dr. David Moody at 801-581-5117. Past and present ERA awardees are especially encouraged to present their results at this session.

Additional activities are being organized by the following individuals:

- Tinsley Preston - Annual Tennis Tournament - 847-647-2900
- Christine Moore - GCQ/Ion Trap Users Breakfast - 312-421-7333
- Karla Moore - Fun Run/Walk - 301-319-0053

- moore@email.afip.osd.mil

(anyone interested in assisting Karla in designing T-shirts?)

Please assist SOFT in having an outstanding 1997 meeting by participating in the scientific sessions. Abstract forms are included.

**We look forward to seeing you in October. Your 1997 Meeting Hosts,
the Center for Human Toxicology**

Transportation: Snowbird is 29 miles (a 40 minute drive) from the Salt Lake International Airport. Transportation to Snowbird can be arranged by the airport shuttle, taxi or rental car.

Air - Delta Air Lines is the official airline for the meeting. Delta is offering meeting attendees a 5% discount on domestic fares. To make reservations, call Delta Air Lines at (800) 241-6760 or call Clawson Travel at (801) 582-0303 or (800) 825-2976 or FAX (801) 581-1938. Mention the name of the meeting and refer to File #V0502. Attendees requiring international flights will obtain the best fare from their local travel agent.

Airport Shuttle - You may arrange an airport shuttle directly by completing the attached lodging form. The cost is \$17, each way. The shuttle will pick you up at an arranged time.

Car Rental - Hertz, Inc. is offering meeting participants special rental car rates that include unlimited mileage. The rates are guaranteed for one week before and one week after the actual meeting dates. For reservations, please contact Hertz at (800) 654-3131. Refer to #17672.

Daily from Snowbird - A daily shuttle service will be available from the Cliff Lodge to Salt Lake City. A 24 hour advance reservation is required.

Tours: A number of local agencies are available to assist in organizing pre- or post-meeting tours. These include:
Adventours offers local tours that pick up at Snowbird. Rates shown are per person. Tour rates and times may vary. For information call (801) 288-2118.

- Salt Lake City - 2 person minimum, \$22, Mon.-Sat., 10:00am-2:30pm (a Sunday tour includes the Mormon Tabernacle Choir, check times).
- Park City - 3 person minimum, \$27, Tues., Thurs., Sat. & Sun, 2:30 pm-6:00 pm.
- City Tour plus Salt Lake Cruise - 6 person minimum, \$42, Wed. - Sat., 10:00am-5:00pm.
- City & Bingham Mine Tour plus Salt Lake Cruise - 6 person minimum, \$52, Wed -Sat., 8:00am-5:00pm.

Le Bus - offers daily trips to Wendover, the closest Nevada gambling destination. The bus leaves from downtown at 9:00 am and returns at 3:00 pm. Cost is \$9 per person. Call (801) 975-0202 or (800) 366-0288.

Hyde Encore Tour and Travel can be contacted for information about tours to Yellowstone, Jackson Hole and Southern Utah destinations, such as Arches, Bryce and Zion National Parks. Call (801) 966-4242 or (800) 748-4242.

The Salt Lake Tourist Information Center (a private org), (801) 534-1001 and the Utah Travel Council (an auto-menu), (801) 538-1030 or (800) 200-1160 can provide additional information.

SNOWBIRD INFORMATION

The Snowbird Advantage:

- Only 29 miles from Salt Lake International Airport.
- An unparalleled setting amid the peaks of the Wasatch Range, offering year-round recreational opportunities!
- Snowbird's pedestrian village offers easy walking between lodging, dining, and other facilities.
- SOFT 97 is being held at the Cliff Lodge Conference Center.

SNOWBIRD LODGING:

CLIFF LODGE:

- *Bedrooms* at \$89 (1-4 persons) offer either a canyon or mountain view. Each room has two queen-size beds and full bath.
- *Deluxe bedrooms* at \$138 (1-2 persons) have one king-size bed, dressing area, full bath, one double size sofa bed, wet bar, a balcony, and a small refrigerator.
- *One bedroom suites* at \$225 (1-6 persons) have a deluxe bedroom and a hotel bedroom. Some also have a balcony and dressing area.
- *Two-bedroom suites* (1-8 persons) at \$361 have a bedroom plus a deluxe bedroom.
- *Dormitory* accommodations have four twin beds and a full bath. The price is \$26/bed.

Additional amenities: Heated pools, hot tubs, sauna and steam room, health and beauty spa, bellman and valet service, 3 restaurants and lounges, safe-deposit boxes, room service, in-room babysitting, retail shops, game room and laundry facilities.

LODGE at SNOWBIRD and the INN:

- Five-minute walk from the Cliff Lodge.
- *Bedrooms* at \$72 (1-4 persons) offer a full bath, two queen beds, dressing area and exterior balcony.
- *Efficiencies* at \$72 (1-4 persons) have completely furnished kitchens, a full bath, an exterior balcony, one queen or king sofa bed with one double wall bed or two queen wall beds.
- *Studios* at \$72 (1-2 persons) have a complete furnished kitchens, a living and dining area, a king or queen convertible sofa bed, full bath, an exterior balcony and a fireplace.
- *One-bedroom condo or Studio Lofts* at \$147 (1-6 persons) have complete furnished kitchens, living and dining areas, fireplaces, a king or queen convertible sofa bed, two full baths, adjoining or loft bedrooms with two queen or double beds and a dressing area.
- *One-bedroom condo with loft* sat \$217 (1-10 persons) have complete furnished kitchens, living and dining areas, fireplaces, king or queen convertible sofa beds, one loft bedroom with two double or queen beds and a private bedroom with two queen beds.

Additional amenities: Saunas, heated pool, laundry facility, in-room baby-sitting, ice machine, masseuse, game room, whirlpool, steam room and health spa.

RESTAURANTS

- Cliff Lodge: Aerie Restaurant & Lounge, Keyhole Junction & Cantina and Summit Cafe.
- Lodge at Snowbird: Lodge Club Bistro & Lounge
Iron Blossom: Wildflower Ristorante & Lounge
- Snowbird Center: Steak Pit, Forklift, Rendezvous, Birdfeeder, Pier 49 Pizza and Rocky Mountain Chocolate Factory.

SOFT, 97: Preliminary Meeting Schedule (revision: 7/18/97)

Saturday, October 4, 1997

1:00pm - 6:30pm CAP Inspector Workshop (includes dinner)

Sunday, October 5, 1997

8:00am - 5:00pm Registration
7:30am - 8:30am Continental Breakfast
8:30am - 12:30pm SOFT Board Meeting
8:30am - 6:00pm Workshop 1 - Fundamentals of Alcohol Testing and Interpretation.
8:30am - 12:30pm Workshop 2 - The Pharmacology of Herbal Preparations.
2:00pm - 6:00pm Workshop 3 - Principles of Solid Phase Extraction.
Evening NLCP Inspector Workshop

Monday, October 6, 1997

8:00am - 7:00pm Registration
7:00am - 8:15am GCQ / Ion Trap User's Breakfast (informal)
7:30am - 8:30am Continental Breakfast
8:00am - 12:00n ABFT Examination
8:30am - 12:30pm Workshop 4 - Why Sample Mass Spectra and Library Spectra Don't Match.
8:30am - 12:30pm Workshop 5 - Automated Sample Preparation for Chromatographic and Mass Spectral Analysis.

12:00n 5:00pm ABFT Board Meeting
2:00pm - 6:00pm Workshop 6 - Fetal and Pediatric Pharmacology.
2:00pm - 6:00pm Workshop 7 - Forensic Applications of LC/MS.
6:00pm - 10:00pm Exhibitor set-up
7:00pm - Welcoming Reception

Tuesday, October 7, 1997

8:00am - 5:00pm Registration
7:30am - 9:00am ABFT Breakfast
8:00am - 9:00am Continental Breakfast
9:00am - 11:00am Plenary Session
 • Tim Thomas will discuss the destruction of chemical weapons at Toole Army Depot.
 • Dr. Bill Rathje will discuss forensic and anthropologic aspects of garbage dumps.
11:15am - 12:15n ERA Platform Session
12:15n - 1:45pm Buffet Lunch in Exhibit Area
12:00n - 4:30pm Exhibits open
1:45pm - 4:30pm Platform Session (ERA con't & open)
4:30pm - 6:00pm Free Time
6:00pm - 8:00pm Happy hour & Appetizers in Exhibit Area
8:00pm - 10:00pm Dessert & Elmer Gordon

Wednesday, October 8, 1997

8:00am - 5:00pm Registration
8:00am - 10:00am Poster Session / Continental Breakfast
9:30am - 4:00pm Exhibits open
10:00am - 12:00n Platform Session
12:00n - 1:30pm Buffet Lunch in Exhibit Area
1:30pm - 3:00pm Business meeting
3:00pm - 7:00pm Free Time
7:00pm - Murder Mystery Theater, Dinner & Dance

Thursday, October 9, 1997

8:00am - 3:30pm Registration
8:00am - 10:00am Poster Session / Continental Breakfast
9:30am - 1:30pm Exhibits open
10:00am - 12:00n Platform Session
12:00n - 1:30pm Buffet Lunch in Exhibit Area
1:30pm - 3:30pm Platform Session
1:30pm - Exhibit breakdown
3:30pm - Open or early departure
Evening Optional Downtown activities: Saints (Tabernacle practice) & Sinners (Pub Crawl)

Friday-Sunday, October 10-12, 1997

See Available Travel Packages for Tours to Scenic Sites

Note: Anyone planning an auxillary meeting/event needs to contact the meeting hosts ASAP.

Workshops

WORKSHOP #1: Fundamentals of Alcohol Testing and Interpretation.

Coordinator: Yale Caplan, Ph.D., National Center for forensic Sciences.

Forensic alcohol analysis is one of the most frequently performed of all forensic analyses. All states within the US have statutes regulating operation of motor vehicles under the influence of alcohol. This workshop will focus on the pharmacology of ethyl alcohol, disposition of alcohol into various pre- and post-mortem tissues, analytical techniques, and state and federal regulations regarding alcohol use. The workshop fee includes a copy of the new edition of "Medicolegal Aspects of Alcohol determination in biological Specimens", edited by James Garriott.

Yale H. Caplan	Introduction and Overview
James C. Garriott	Pharmacology and Toxicology
Kurt M. Dubowski	Physiology and pharmacokinetics
Richard F. Shaw	Specimen Handling and Analysis
Graham Jones	Postmortem and Clinical Considerations
Yale H. Caplan	Breath Testing and Workplace Considerations

WORKSHOP #2: The Pharmacology of Herbal Medicines.

Coordinator: Diana Wilkins, Ph.D., University of Utah.

The use of plants for medicinal purposes extends back to earliest recorded history. Today, about 80% of the world's population relies to some extent on various herbal remedies. This workshop will discuss the prevalence and toxicity of the more widely used herbal preparations.

Diana G. Wilkins	Introduction
Jeanette Roberts	Herbal Medicines I
Laura Shane McWhorter	Herbal Medicines II
Barbara Crouch	Poisonings with Herbal Medicines: Case Studies

WORKSHOP #3: Principles of Solid Phase Extraction.

Presenters: Glynn Chaney, M.S. and Mike Telepchak, United Chemical Technologies, Inc.

SPE has become a key tool in drug identification, confirmation and quantitation. This technical workshop will focus on both theoretical and practical aspects of the extraction of abused drugs from urine, blood, serum, plasma and tissues by SPE. A brief history of SPE will be followed by an in-depth description of sorbent functionalities and extraction protocols.

WORKSHOP #4: Why Sample Mass Spectra and Library Spectra Don't Match.

Presenter: Larry Bowers, Ph. D., Indiana University

A major use of MS in toxicology is to increase confidence in the identification of unknown compounds. Identification criteria require agreement of the intensity of "diagnostic ions." This course will review mass spectral interpretation to help define "diagnostic ions". Library matching algorithms and factors that affect the quality of a library match will be discussed.

WORKSHOP #5: Automated Sample Preparation for Chromatographic and Mass Spectral Analysis.

Coordinator: Rodger L. Foltz, Ph. D., University of Utah.

Automated techniques for preparing biological samples for analysis by GC, LC and MS have reached the stage of development where they deserve consideration by all toxicology laboratories that perform repetitive analyses. This workshop will provide registrants with an appreciation of the capabilities and advantages of various commercial robotic systems. It will include presentations by both vendors and users.

Armie Istars	High Throughput Analysis of THC Metabolite in Urine Using the BondElute Matrix 96-Well Plate System
Andrea Belc	Automated Solid-Phase Extraction. What is Right for Your Laboratory?
Terry Lamoreaux, et al.	Utah Health Laboratory's Experience Using Robotic Solid-Phase Extraction in a Forensic Setting
John Cody	Automated Sample Preparation for GC/MS Analysis of Amphetamine- Type Compounds.
Daun Hahn	Semi-Automated Urine Extractions by a Hamilton 2200 Microlab Extraction Unit

WORKSHOP #6: Fetal and Pediatric Pharmacology.

Coordinator: Ralph Lugo, Pharm.D., University of Utah.

The pharmacologic principles that operate in pregnant women, the fetus and the rapidly maturing infant can be quite different than in adults. This workshop will present basic principles of pharmacology in the special context of perinatal and pediatric therapeutics. Pharmacokinetics and pharmacodynamics of drugs in pregnancy will be reviewed.

Ralph Lugo	Developmental Pharmacology and Pharmacokinetics
Robert Ward	Pharmacology of the Maternal-Placental-Fetal Unit
Robert Seegmiller	Mechanisms of Drug-Induced Birth Defects

WORKSHOP #7: Forensic Applications of LC/MS.

Coordinator: Rodger L. Foltz, Ph. D., University of Utah.

LC/MS has been relatively infrequently used by forensic toxicology laboratories. The high cost of instrumentation and lack of familiarity with current capabilities of LC/MS using atmospheric pressure ionization techniques are probable contributing factors. This workshop will attempt to show why LC/MS is destined to become more widely used than GC/MS in forensic laboratories.

Milton Lee	Forensic Applications of CE/MS
Dennis Crouch	Analysis of Alprazolam and Metabolites, Morphine and its Glucuronide Metabolites and Haloperidol
Don Eades	LC/MS/MS Identification and Quantitation of LSD Metabolites
John Hughes	Forensic Applications of LC/MS
Larry Bowers	Studying Phase II Metabolism of Steroids by LC/MS
Bob Lantz	Advantages of LC/MS for Analysis of Certain Drugs of Abuse
John Cody	Drug Determinations Using the LCQ

Forensic Applications of LC/MS: Analysis

Preliminary Program; SOFT 97

Session I - Plenary; Tuesday, 9:00am-11:00am

- B.S. Finkle, "Welcome from the Center for Human Toxicology."
- D.E. Rollins, "Welcome from the Center for Human Toxicology (con't)."
- T. Thomas, "Destruction of Chemical Weapons at Tooele Army Depot."
- W. Rathje, "Forensic and Anthropologic Aspects of Garbage Dumps."

Session II - ERA Platform; Tuesday, 11:15am-12:15am and 1:45pm-3:15pm

1. R.A. Jufer, "Plasma Concentrations of Cocaine and Metabolites During Chronic Cocaine Administration to Humans."
2. G.S. Behonick, "Fatty Acid Ethyl Esters in Long Evans Rats after Acute and Chronic Ingestion of Ethanol."
3. M.H. Slawson, "The Incorporation of Phencyclidine into Hair: A Comparison with Eumelanin and Pheomelanin Concentrations."
4. R.E. Joseph, Jr., "Designing and Integrating Studies to Evaluate Drug Disposition in Hair."

Session III - Platform; Tuesday, 3:15pm-4:30pm

5. M. Deveaux, "Measurement of Chloroquine in *Post-Mortem* Fluids by HPLC-DAD and $^1\text{H-NMR}$."
6. K. Blaho, "Clinical Findings and Drug Kinetics in Two Cases of Catastrophic Reactions to Cocaine."
7. S.B. Karch, "Does Alcohol Ingestion Increase Cocaine Toxicity?"
8. K.E. Goeringer, "Postmortem Forensic Toxicology of Trazodone in Man."
9. M. Deveaux, "Deaths Associated with Buprenorphine: Report of Fifteen Cases in France."

Session IV - Poster; Wednesday, 8:00am-10:00am

10. A.S. Valdez, "Buprenorphine and Norbuprenorphine in Human Hair After Multiple Doses: A Retrospective Study."
11. P.R. Nagasawa, "A Mouse Model for Studying Drug Incorporation into Human Hair."
12. K.L. Egli, "Nicotine Studies of Hair from Passive Smoke Contamination, Smokers, and Non-Smoke Ingested Drug Along with a Color Bias Investigation."
13. J.D. Roper-Miller, "Implementation of the State of Florida Hair Analysis Proficiency Testing Program."
14. S.J. Salamone, "Epimerization Studies of LSD Using ^1H Nuclear Magnetic Resonance (NMR) Spectroscopy."
15. B.D. Paul, "Detection of iso-LSD in Urine After Sodium Ethoxide Isomerization to LSD."
16. G.K. Poch, "Applications of Liquid Chromatographic / Mass Spectrometry (LC/MS) in Detection of LSD in Human Urine Matrices."
17. N. Bellet, "Immunoaffinity Purification of LSD Prior to Confirmation by GC/MS."
18. G.F. Grinstead, "Effects of Adulterants and Interferents on CEDIA DAU Assays."
19. A.L. Martin, "Integration of Multiple Spreadsheets for Efficient Quantification and Reporting."
20. A. Wu, "A PC-Based Computer Program to Handle Records of DHHS-Mandated Specimens."
21. C.L. Schilling, "Non-Halogenated Elution Solvents for Mixed Mode Solid Phase Extraction Sample Preparation of Urinary Benzoylcegonine, Opiates, Phencyclidine, and Amphetamines."
22. R.F. Foery, "Design, Development and Evaluation of an Automated Liquid Dispensing System for the Forensic Toxicology Laboratory."
23. E.D. Lykissa, "TMS-Opiate Analysis by GC/MS Following Oxime Stabilization of Keto-Opiates and Liquid/Liquid or Solid Phase Extraction."
24. A.C. Spanbauer, "Determination of Buprenorphine and Naloxone in Human Plasma by LC/MS/MS."
25. W. Huang, "Determination of Risperidone and 9-Hydroxy-Risperidone in Human Plasma by LC/MS/MS."
26. K.E. Ferslew, "A Fatal Drug Interaction Between Clozapine and Fluoxetine."
27. P.P. Singer, "Fatalities Associated with Moclobemide and Serotonin Reuptake Inhibitors."
28. T.M. Vermeulen, "Distribution of Paroxetine in Two Postmortem Cases."
29. M. Hall, "Acetylcodeine Abuse - A Case Report."
30. C.L. O'Neal, "The Detection of Acetylcodeine and 6-Monoacetylmorphine in Opiate Positive Urines."
31. R. Rutter, "Additional Testing of DHHS Specimens Reported Positive to the MRO."
32. L.P. Raymon, "Quantitation of Psychoactive Cannabinoids in Urine Samples from Driving Under the Influence Arrests."
33. T.L. Long, "Potentiation of the Vasoconstrictive Effect of Serotonin, Norepinephrine, and Tyramine by Cocaine on the Isolated Human Umbilical Artery."
34. L.J. Caughlin, "Are You A Detective?"

Session V; Platform, Wednesday, 10:00am-12:00noon

35. H.A. Poulsen, "Potency of Cannabis in New Zealand from 1976 to 1996."
36. S.J. Heishman, "Pharmacokinetic-Pharmacodynamic Relationships Following Acute Marijuana and Cocaine."
37. S.J. Salamone, "Plasma and Urine Concentrations of Flunitrazepam by Immunoassay and GC/MS After a Single Oral Dose."
38. K.E. Goeringer, "Review of Postmortem Toxicology in Twenty Deaths Involving Sertraline."
39. S.H. Wong, "Chiral Analytical Toxicology and Pharmacology of Fluoxetine and Norfluoxetine."

40. P.P. Singer, "Very Unusual Ethanol Distribution in a Fatality."
41. S. Winbery, "Increased Incidence of PHEN-FEN Associated Complaints in an Emergency Department."
42. D. de Boer, "Is N-OH-MDA a Possible Metabolite of MDMA Intoxications?"

Session VI; Poster, Thursday, 8:00am-10:00am

43. K.M. Hold, "Simultaneous Quantitation of Cocaine, Opiates and Metabolites in Human Hair by GC/MS."
44. W.D. Darwin, "Simultaneous GC/MS Assay of Cocaine, Codeine, 6-Acetylmorphine and Metabolites in Human Biological Specimens."
45. D.L. Hubbard, "The Preferential Incorporation of Cocaine and Its Metabolites into Pigmented Hair: A Dose Response Study."
46. A. Basham, "Drug Testing with Alternative Matrices I. Pharmacological Effects and Cocaine Disposition in Plasma."
47. G.W. Kunsman, "Methylephedrine Concentrations in Blood and Urine Specimens."
48. D.W. Jehn, "Determination of D,L Methamphetamine Isomers by Chiral Derivative/Chiral Column GC/MS."
49. R.E. Clouette, "The Determination of Amphetamine, Methamphetamine and other Phenethylamines in Blood and Urine by a Dual Derivatization Technique."
50. D. Hensley, "Labetalol Interference with Methamphetamine Analysis; Assessment and Elimination."
51. D.M. Andrenyak, "Analysis of Fenfluramine and Norfenfluramine in Blood."
52. G.F. Grinstead, "Fen-Phen: A Major Cause of False Positive Results in CEDIA DAU-Amphetamine Assays."
53. M.J. Scofield, "Multi Component Immunoassay Screen for Amphetamine Drugs of Abuse in a Department of Defense Drug Testing Laboratory."
54. R.C. Meatherall, "Enhanced Sensitivity for the CEDIA dau Benzodiazepine Screening Assay."
55. M.L. Cheever, "Detection of Methadone, LAAM and Their Metabolites by Methadone Immunoassays."
56. M. Lehrer, "Assessment of the Status DS, a New Rapid Screening Test Kit for the Analysis of Drugs in Urine."
57. S.C. Bogema, "Evaluation of Three Rapid Immunoassay Devices for Screening of DHHS Five Drugs in Urine."
58. W.E. Wingert, "Adulterating Effects of Various Salts on Urine Drug of Abuse Testing."
59. C.R. Crooks, "Rapid Gas Chromatographic Procedure for the Determination of Topiramate in Serum."
60. J. Sklerov, "GC/MS/MS and GC/FTIR Methods for the Determination of Fentanyl in Biological Matrices of Opiate Abusers."
61. L.R. Glass, "Factors Affecting Enzymatic Hydrolysis, Mixed Mode Solid Phase Extraction, and GC-MS Analysis of Urinary Nordiazepam, Oxazepam, Temazepam and alpha-Hydroxyalprazolam."
62. S. Winbery, "Tricyclic Antidepressant Concentrations in Overdose Patients Presenting to an Inner City Emergency Department."
63. L.J. Marinetti-Sheff, "Heroin and Scopolamine Combination Makes an Appearance in the Midwest."
64. S.B. Gock, "Self-Intoxication of Morphine Obtained from an Infusion Pump - A Case Report."
65. E.D. Lykissa, "Release of Low Molecular Weight Silicones and Platinum from Silicone Breast Implants."
66. S.V. Kala, "Toxicity of Breast Implant Cyclic Siloxanes on Rat-1 Fibroblasts and MCF-7 Human Breast Carcinoma Cells."

Session VII; Platform, Thursday, 10:00am-12:00noon

67. D.G. Wilkins, "Dose-Proportional Distribution of Drugs for the Treatment of Substance Abuse into Rat Hair."
68. A. Negrusz, "Detection of Doxepin and Desmethyldoxepin in Hair During and Following Drug Therapy."
69. R. Brenneisen, "Lack of Dose-Concentration in Hair Relationship in a Controlled Heroin Maintenance Program."
70. K.M. Hold, "Quantitation of Cocaine in Human Hair: The Effect of Centrifugation of Hair Digests."
71. J.M. Oyler, "Drug Testing with Alternative Matrices II. Stratum Corneum."
72. A.T. Wtsadik, "Drug Testing with Alternative Matrices III. Sebum."
73. E.J. Cone, "Cocaine Disposition in Saliva after Intravenous, Intranasal and Smoked Administration."
74. M.A. Huestis, "Urine and Sweat Monitoring of Illicit Cocaine Use."

Session VIII; Platform, Thursday, 1:30pm-3:30pm

75. R. Kronstrand, "Drug Use Patterns in Sweden."
76. R.E. Willette, "Evaluation of 15 Non-Instrumented Drug Testing Devices."
77. M.L. Lee, "CE-TOFMS for the Analysis of Drugs of Abuse."
78. H.A. Poulsen, "Automated Solid-Phase Extraction and GC/MS Quantitation of Therapeutic and Fatal Levels of Basic Drugs in Post-Mortem Whole Blood and Liver."
79. K.A. Moore, "The Effect of Consumption of Dihydroepiandrosterone (DHEA) on Testosterone: Epitestosterone Ratios in Human Urine."
80. B.K. Logan, "Ante/Post Mortem Kinetics of Cocaine in Juvenile Swine."
81. M.A. ElSohly, "11-Hydroxy- Δ^9 -THC and 8- β , 11-di-hydroxy- Δ^9 -THC and Their Glucuronides as Major Metabolites of Δ^9 -THC in Meconium: GC/MS Analysis."
82. A.J. McNally, "An analysis of LSD in urine Under Various Storage Conditions."



Utah 1997

27th Annual Meeting

October 5-9, 1997

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Includes admission to all scientific sessions, Welcome Reception, Tuesday Happy Hour & Dessert, Wednesday evening social events, and three lunches (Tues, Wed, Thurs).
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	<u>Member</u>	<u>NonMember</u>	<u>AMOUNT ENCLOSED</u>
	\$ 125.00	\$155.00	_____
WORKSHOP #1 Fundamentals of Alcohol Testing and Interpretation (10/5, 8:30am - 6:00 pm. Includes textbook.)	95.00	115.00	_____
WORKSHOP #2 The Pharmacology of Herbal Preparations (10/5, 8:30am - 12:30pm)	40.00	50.00	_____
WORKSHOP #3 Principles of Solid Phase Extraction (10/5, 2:00 pm - 6:00 pm)	40.00	50.00	_____
WORKSHOP #4 Why Sample Mass Spectra and Library Spectra Don't Match (10/6, 8:30 - 12:30 pm)	40.00	50.00	_____
WORKSHOP #5 Automated Sample Preparation for Chromatographic and Mass Spectral Analysis. (10/6, 8:30 am - 12:30 pm)	40.00	50.00	_____
WORKSHOP #6 Fetal and Pediatric Pharmacology. (10/6, 2:00pm - 6:00 pm)	40.00	50.00	_____
WORKSHOP #7 Forensic Applications of LC/MS. (10/6, 2:00 pm - 6:00 pm)	40.00	50.00	_____
ABFT Breakfast (Diplomates and Forensic Toxicology Specialist only) (10/7, 7:30am - 9:00 am)	20.00		_____
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Welcoming Reception # _____	30.00		_____
Happy Hour/Drinks # _____	25.00		_____
Dessert/Drinks # _____	15.00		_____
Mystery Dinner/Dance # _____	40.00		_____
Optional Thursday Evening Activity: Saints & Sinners # _____	17.00		_____

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Utah 1997

27th Annual Meeting

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Lodging

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DATE OF ARRIVAL _____ TIME _____ DATE OF DEPARTURE _____ TIME _____

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Smoking Non-Smoking

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Cliff Lodge:

(Conference Headquarters)	Nightly, per room
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___ Deluxe Bedroom (1-2 persons)	\$138
___ One Bedroom Suite (1-6 persons)	\$225
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FORENSIC TOXICOLOGY LABORATORY GUIDELINES

1997 Draft Copy with Proposed Changes

The Guidelines have been copyrighted
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Distributed to SOFT members with the September, 1997, issue of **ToxTalk**

Any changes or additions will be distributed in a future issue of **ToxTalk**
after approval by both SOFT and AAFS

SOFT / AAFS

**FORENSIC TOXICOLOGY
LABORATORY GUIDELINES**

1997 Draft Copy with Proposed Changes

INTRODUCTION

The *Forensic Toxicology Laboratory Guidelines* were originally published in 1991 as two main documents (*Guidelines* plus *Appendix*), plus the self-evaluation checklist. The primary document, the *Guidelines*, was initially drafted in response to the growth and regulation of forensic urine drug testing. It was an attempt to take the important issues that were addressed for *Federal Workplace Drug Testing Programs* and draft them into terms which could be more realistically applied to the areas of *Post-Mortem Forensic Toxicology* and *Human-Performance Forensic Toxicology*. However, the Guidelines Committee agreed that there were many additional issues which were important to cover, but which might better belong in a supplementary document - the Appendix to the Guidelines. Since 1991, the profession has matured in many ways. In 1996 the American Board of Forensic Toxicology launched a Forensic Toxicology Accreditation program based primarily on the SOFT/AAFS Guidelines and Appendix. Recently at least one state has passed legislation requiring the accreditation of all forensic laboratories, and others may follow. The Guidelines Committee concluded that it was time to redraft the original *Guidelines* and *Appendix* into a single cohesive document which would be easier to refer to and update in the future.

Introduction from 1991 Guidelines

In response to the Guidelines for Federal Workplace Drug Testing Programs issued by the U. S. Department of Health and Human Services in 1987, the Society of Forensic Toxicologists and the Toxicology Section of the American Academy of Forensic Sciences appointed a joint committee of members to recommend a supplementary set of guidelines for the practice of forensic toxicology. The federal guidelines, especially with respect to laboratory personnel and operating procedures, may not always be appropriate for other types of forensic toxicology, and the guidelines set forth below represent recommendations of the Society/Academy committee in response to that issue. These suggestions do not necessarily reflect opinions about the minimum requirement for any laboratory, and have no regulatory purpose; rather, they are intended to assist laboratories engaged in the practice of forensic toxicology in achieving future goals.

The committee concluded that specific guidelines for the practice of forensic toxicology would be appropriate for three defined areas:

Post-Mortem Forensic Toxicology, which determines the absence or presence of drugs and their metabolites, chemicals such as ethanol and other volatile substances, carbon monoxide and other gases, metals, and other toxic chemicals in human fluids and tissues, and evaluates their role as a determinant or contributory factor in the cause and manner of death;

Human-Performance Forensic Toxicology, which determines the absence or presence of ethanol and other drugs and chemicals in blood, breath or other appropriate specimen(s), and evaluates their role in modifying human performance or behaviour. (The analysis of ethanol in breath, although important, was not considered by the committee because such tests are not conducted in a laboratory setting); and

Forensic Urine Drug Testing, which determines the absence or presence of drugs and their metabolites in urine to demonstrate prior use or abuse. (Because this subject has been covered by the Department of Health and Human Services Guidelines and by the College of American Pathologists Accreditation Program, it was not discussed further by the committee and will not be discussed in this document).

The specific aims of the committee, with respect to postmortem and human-performance forensic toxicology, have been to provide detailed guidelines for laboratory practices and to prepare a checklist for self-evaluation that may also serve as an important component of a program designed to prepare a laboratory for accreditation. The committee unanimously agreed that a secondary aim of its deliberations should be to develop a voluntary accreditation program for laboratories performing postmortem and human-performance toxicology.

PERSONNEL

The forensic toxicology laboratory should be directed by a person who is qualified by reason of appropriate education and experience to assume the required professional, organizational, educational and administrative responsibilities.

The director should be responsible for (1) ensuring that the laboratory personnel are adequately trained and experienced to conduct the work of the laboratory and (2) maintaining the competency of laboratory personnel by monitoring their work performance and verifying their skills. This training and experience should be documented by the director. The director should be responsible for the management of the laboratory, and for the development of a complete, up-to-date procedures manual that is available to and followed by all personnel performing tests. The manual should include administrative procedures as well as analytical methods and be reviewed, signed, and dated whenever it is first placed into use or changed. The laboratory director should establish a procedure for validating new drug assays, and he or she should also be responsible for maintaining a quality assurance program to ensure the proper performance and reporting of all test results.

The director should possess documented, specific qualifications comparable to those of persons certified as Diplomates by the American Board of Forensic Toxicology. Alternative acceptable qualifications include a doctoral degree in a biological or chemical discipline and at least three years of full-time laboratory experience in forensic toxicology; or a Master's degree in a biological or chemical discipline and at least five years of full-time laboratory experience in forensic toxicology; or a Bachelor's degree in a biological or chemical discipline and at least seven years of full-time laboratory experience in forensic toxicology. The director should have documented training and/or experience in the forensic applications of analytical toxicology (such as court testimony, research, participation in continuing education programs, and/or peer review of appropriate manuscripts in the field). Because forensic toxicology involves legal issues, the director should also have knowledge of evidentiary procedures that apply when toxicological specimens are acquired, processed, and stored and when toxicological data are submitted as part of a legal proceeding.

The range and type of duties of other laboratory personnel will vary according to the size and the scope of the laboratory. It is recommended that each laboratory should have:

(1) a person with the title of deputy director, assistant laboratory director, assistant chief toxicologist, or supervisory toxicologist, who has sufficient training and experience to be familiar with all administrative and testing procedures. He or she may supervise the work of all analysts, and should be capable of performing full scientific review of all test data, and of acting for the laboratory director in the director's absence. It is recommended that such individuals should have a minimum of a Bachelors degree in a natural science and 3 years of training in analytical toxicology, at least 1 year of which is in forensic toxicology.

(2) one or more analysts who are capable of performing a variety of test procedures for alcohol, drugs, and other chemicals. An analyst may supervise and review the work of less experienced technicians, and may supervise a section in a larger laboratory. It is recommended that such individuals should have a minimum of a Bachelor's degree in a natural science, at least 1 year of experience in analytical toxicology and 6 months experience in the present employment.

(3) one or more analysts who are capable of performing tests for one or several analytes, and who are certified in each procedure by the laboratory director. These analysts may be limited in function to perform specified tasks - for example, an analyst who performs only immunoassays.

Since forensic toxicology laboratories handle controlled substances and generate results essential to the criminal justice system, the director, to the extent practical or permitted by law, should exert reasonable efforts to ensure that all personnel meet high ethical and moral standards.

OPERATING PROCEDURES

The laboratory should have a procedure manual that is complete, up-to-date, and available to all personnel who are performing tests. The manual should include detailed descriptions of procedures for sample receiving, accessioning, chain-of-custody, analysis, quality assurance and quality control, review of data, and reporting. When this kind of documentation is not available for infrequently performed assays, it should be added as each is performed for the first time.

The manual should include, for each analytical procedure if appropriate, the following: a) theory and principle of the method, b) instructions for preparation of reagents, c) details of the analytical procedure, d) instructions for preparation of calibrators and controls, e) information about any special requirements for handling reagents or for ensuring safety, and f) references.

The laboratory should maintain out-dated copies of the SOP manual and provide a means for their retrieval from archival storage.

SAMPLES AND RECEIVING

The following guidelines will deal primarily with the collection, labelling, submission and receipt of biological specimens for subsequent toxicological analyses. They can apply equally to investigations by Medical Examiners or Coroners (postmortem forensic toxicology) and to investigation by law-enforcement agencies of drivers suspected of being under the influence of alcohol or other drugs.

The proper selection, collection, and submission of biological and other specimens for toxicological analyses is of paramount importance if analytical results are to be accurate and their subsequent interpretation is to be scientifically sound and therefore useful in the adjudication of forensic cases. The director should develop and provide detailed guidelines and instructions to all agencies or parties the laboratory serves. These instructions should state the types and minimum amounts of specimens needed to accomplish the requisite analyses and subsequent interpretations. (Whenever possible, the amount of specimen collected should be sufficient to ensure that enough remains for subsequent re-analysis if necessary). Instructions should include specific requirements for the type and size of specimen

containers and, if appropriate, the type and amount of preservative to be added to biological fluids. Instructions for labelling individual specimen containers, and acceptable conditions for packing and transportation, should also be stated. Submitting agencies should also be instructed how to label clearly all samples from living subjects or decedents who may carry a highly infectious disease such as tuberculosis, hepatitis or Human Immunodeficiency Virus.

Each specimen should be identified as to type. For blood, the anatomical site of collection should be stated. When antemortem and/or perimortem specimens are available from a decedent, each specimen should be labelled with the time and date of collection. The name of the subject from whom the specimens were collected should appear on each label together with other appropriate identification; for example, the Medical Examiner's Case Number and/or the subject's Social Security Number. Where provided, the time and date registered for each specimen should be initialled or signed by a responsible person who performed or witnessed the collection and who assumes responsibility for the chain of custody.

A chain-of-custody form should be designed that should accompany specimens from the place of collection to the laboratory; this document may be incorporated in the laboratory-request form. The chain-of-custody section should be properly executed by responsible personnel at the time the specimens are collected. Handling and transportation of a specimen from one individual or place to another should always be accomplished and documented through proper chain-of-custody procedures. Every effort should be made to minimize the number of persons handling a specimen. Individual specimens should be placed in containers designed to minimize the possibility of degradation, contamination and/or damage in shipment. It is recommended that these containers be immediately and securely sealed to eliminate the possibility of undetected tampering. The condition of the external package should be documented upon receipt at the laboratory, either on the requisition form that accompanies the specimen(s), in the log book, on the external chain-of custody form, or on other documents that constitute normal laboratory records.

Acceptable means of transport may include hand-delivery, U.S. mail, or a private or government courier service. The means of delivery should be recorded by the receiving laboratory. Shipping containers should be opened only in a secure area and only by an individual designated to record receipt of specimens. A "secure area" may be defined as an area to which unauthorized individuals do not have access without escort by authorized personnel.

A hard copy of the specimen-receipt record should be permanently maintained; this record may be computer-generated, typed, or hand-written. Specimens should be logged-in immediately upon receipt. The integrity of the individual specimen container should be checked as should the condition of each specimen. Discrepancies should be recorded.

Recommended Amounts of Specimens

Post-Mortem Forensic Toxicology Specimens: In death investigations, the types and minimum amounts of tissue specimens and fluids needed for toxicological evaluation of the role of drugs and other toxic chemicals are frequently dictated by the analyte or analytes that must be identified and quantitated. For example, in the evaluation of carbon monoxide poisoning, 10 mL of whole blood would be sufficient with adequate specimen volume remaining for re-analysis if required. On the other hand, to evaluate the role of amitriptyline in a death, 25 gm of liver, 10 mL of heart blood, 5 mL of peripheral blood and the entire gastric contents should be made available.

Many deaths involve ingestion of multiple drugs, necessitating larger amounts of tissue and fluids to be collected at autopsy for toxicological examination. The following is a suggested list of specimens and amounts to be collected at autopsy in such cases:

Brain	100 gm
Liver	100 gm
Kidney	50 gm
Heart Blood	25 mL
Peripheral Blood	10 mL
Vitreous Humor	All Available
Bile	All Available
Urine	All Available
Gastric Contents	All Available

Unique poisons may dictate the need for other specimens, e.g. lung and intestine. Such cases should be addressed on an individual basis.

Human Performance Forensic Toxicology Specimens: As defined earlier, this activity encompasses the identification and quantitation of ethanol and other drugs and chemicals in blood, breath or other appropriate specimens for evaluation of their role in modifying human performance and behaviour. The analysis of breath ethanol was not considered by this Committee.

Although in many instances the analytes are clearly specified in advance in human performance forensic toxicology testing, the spectrum of drugs and chemicals may potentially approach those encountered in postmortem toxicology. Because of this and remembering the difficulties involved in obtaining samples from living persons, it is recommended that a minimum of 15 mL of blood be collected for toxicological analysis.

Urine, and more recently saliva, are specimens that may also be submitted for testing. It must be emphasized that neither qualitative or quantitative analysis of either of these specimens permits a prediction of the effect of the drug or chemical on human behaviour. If these specimens are collected, a minimum of 30 mL of urine and all saliva available should be submitted.

SECURITY AND CHAIN-OF-CUSTODY

Access to the forensic toxicology laboratory should be limited. The laboratory director should authorize and document personnel to enter designated areas. Unauthorized personnel should be escorted and may be required to sign a log-book upon entry and departure from the laboratory, recording the time, date and purpose of the visit.

The physical layout of the laboratory must be such that unauthorized personnel cannot enter without detection. Specimens must be stored in a secure manner. Any transfer of specimens, or portions thereof that are removed for analysis, must be documented as part of the permanent laboratory record. The laboratory should maintain a written policy and instructions pertaining to retention, release and disposal of specimens.

For the maintenance of specimen security it is recommended that, where possible, the laboratory have a

separate accessioning area. In this area, specimens are received, assigned accession numbers, aliquots removed and/or stored in refrigerator/freezers. Specimens received should be labeled with the name of the decedent or suspect, case number, date specimen taken and identification of the individual taking the sample. Receipt of specimens should be indicated by signature, and date and time of individuals receiving the specimens.

It is recommended that chain of custody documentation reflects not only the receipt of the specimen from an outside source, but also transfers of the specimen or an aliquot thereof, within the laboratory. If multiple specimens are involved, a batch form may be used. An aliquot or a batch of aliquots chain of custody may be used for indicating the transfer of portions of specimens for testing. This form should indicate the date, the test for which the aliquot was taken, the laboratory accession numbers, the identity of the individual obtaining the aliquots and the identity of the individual to whom the aliquots were given, if applicable.

Specimens may be transferred to a secure long-term refrigerator/freezer after analysis. Transfers between storage areas and/or subsequent disposal should be documented. The laboratory should develop a standing operating procedure for retention and disposal of specimens. This procedure should reflect local, state, or federal regulations.

ANALYTICAL PROCEDURES

Confirmatory Tests

Forensic toxicology laboratories are required to analyze a variety of specimens for a wide range of drugs and other substances. As a general matter of scientific and forensic principle, the detection of drugs and other toxins should be confirmed whenever possible by a second technique based on a different chemical principle. Generally the confirmatory (second) test should be more specific and sensitive than the first test for the target analyte. Wherever possible and practical, the use of mass spectrometry is recommended. Less specific chromatographic procedures (eg. GC) might be used to confirm immunoassay results or a sufficiently different second chromatographic method used to confirm a chromatographic preliminary test (eg. TLC and GC, HPLC and GC).

The confirmatory step is particularly important where the initial test is one that is designed to determine the presence or absence of an analyte class. The detection limit or cut-off of the second or confirmatory test should be equivalent to or less than that of the initial test. However, it is recognized that for some analytes only a single analytical procedure is available and that sometimes one procedure may provide sufficient proof of identity.

In some circumstances, confirmation using the same GC system as the first might be acceptable if chemical derivatization (eg. silylation or acylation) is used to change the retention times. However, confirmation using a second GC system with a similar though not identical column, is not usually acceptable since the retention indices of many analytes may not differ substantially from one system to the other (eg. DB-1 and DB-17).

Use of a second immunoassay system (eg. RIA) to confirm another immunoassay (eg. FPIA) is not regarded as acceptable, even though the assays differ somewhat in principle. The rationale for this is that the analytes which cross-react with one assay are also likely to cross-react in the second assay

because the antibodies may be raised to the same drug or closely related substance. However, a second immunoassay with different cross-reactivity may sometimes be used to augment the initial screen (for example a broadly cross-reacting opiate immunoassay, followed by a second immunoassay with more specific cross-reactivity to unconjugated morphine). These results would normally still require confirmation with a more specific method (e.g. GC/MS).

Confirmation of the identity of an analyte in a different specimen from that used for the first test (eg. urine and blood) is acceptable, as is confirmation in a second aliquot of the same specimen. However, confirmation of a drug or toxin in the same original extract would not normally be regarded as acceptable, since that would not rule out the possibility that the vial or extraction tube used was contaminated.

The quantitation of an analyte may serve as acceptable confirmation of its identity if it was initially detected by a significantly different method (eg. GC or HPLC quantitation of a drug detected by immunoassay).

Notwithstanding the above, it is recognized that in some circumstances a suitable second test procedure is not available and the probability that the first test is incorrect is almost zero. For example, the probability that a 75% carboxyhemoglobin in a well documented suicide is incorrect, when obtained by a properly conducted spectrophotometric assay, is exceedingly low. However, the unexpected finding of a 30% carboxyhemoglobin from a motor vehicle accident victim by a similar determination in blood holds a lower degree of certainty.

However, it is recommended that at least the presence of a drug or toxin be verified in more than one specimen, or if only one specimen is available by replicate analyses on different occasions and with adequate positive and negative controls in the same matrix. Nonetheless, use of a second confirmatory technique is encouraged for all analytes, including ethanol (eg. GC, ADH, or colorimetric) and carbon monoxide (eg. visible spectrophotometry, palladium chloride or GC).

Method Calibration and Validation

When conducting analyses, laboratories may group specimens into batches. Each batch should contain a sufficient number of calibrators and controls, the total number of which will depend on the size of the batch and the nature of the tests. When analyses are being performed on unusual specimens (decomposed tissue, vitreous fluid, etc.), appropriate matrix-matched calibrators should, when possible, be prepared and tested concurrently with the specimens. However, for such specimens and for infrequently analyzed compounds (heavy metals, gases, anions, pesticides, etc.) fewer calibrators and controls might be needed than for routinely performed assays.

For immunoassays, a laboratory should, at a minimum, be able to demonstrate that the blank or negative calibrator plus two standard deviations does not overlap with the cut-off or the lowest positive calibrator. More commonly, the laboratory may determine the limit of detection (LOD) by determining the mean value for the blank and adding three standard deviations to this value ($LOD = \bar{X}_m + 3SD$). However, it should be noted that for other assays (e.g. GC, HPLC) the true LOD may be higher than indicated by this formula if significant adsorption or other losses occur. For example, in chromatographic assays, the LOD might be the smallest blood concentration of a drug needed to give a peak height three times the noise level of the background signal from a blank blood sample. Alternatively, for infrequently performed assays where the analyte measured is always within the

calibration range of the assay and well above the LOD, it may be sufficient to indicate that the detection limit is "less than" a certain value. Thus the true LOD may be derived experimentally, but should not be less than the blank plus three standard deviations. The limit of quantitation (LOQ) may be derived by adding ten standard deviations to the true value of the blank. Similarly, it is preferable to determine the LOQ experimentally as the lowest concentration for which an acceptable coefficient of variation can be routinely achieved.

The use of a suitable internal standard for all chromatographic assays (eg. GC, HPLC, GC-MS) is recommended. The internal standard should have chemical and physical properties as similar to the analyte as possible. If the analyte is to be derivatized, an internal standard should be chosen which will form an analogous derivative. Stable isotope (eg. deuterated) standards are recommended for GC-MS assays. The internal standard should be added to the sample at the earliest possible stage in the method, and in any event before buffering and extraction of the sample. Markers which are added after the initial extraction are regarded as "external standards" and are discouraged.

Linearity of the procedure should be established by typically using at least three calibrators. The concentration of the calibrators should be such that they bracket the anticipated concentration of the specimen(s). If the concentration of the specimen exceeds the concentration of the highest calibrator, the specimen should be diluted and re-extracted if accurate quantitation is required. Otherwise the specimen should be reported as having a concentration greater than the highest calibrator. If the concentration of the specimen should be less than that of the lowest calibrator, an additional calibrator should be set up which falls below the expected range of the analyte in the sample. Alternatively, the volume of the specimen may be doubled and re-extracted if it can be demonstrated that the assay is not matrix dependent. If an accurate quantitation is not necessary, then the specimen can be reported as containing the analyte at less than the lowest calibrator (as an alternative to the term "trace amount").

For specimens having concentrations significantly higher than the highest calibrator, the laboratory should exercise precautions so that carry-over of analyte into the next specimen does not occur. Similarly, specimens with very low concentrations should be checked to ensure that carry-over from a previous very high positive has not occurred.

It is recognized that for a variety of reasons occasional analytical results will be "outliers"; that is, analytical values which deviate significantly and spuriously from the true value. "Outlier" results of control, blanks or calibrators should be obvious. However "outlier" results of case specimens may not be identified if only run singly, unless that result can be compared with one from a separate analytical determination. For this reason replicate quantitative analysis of all case specimens, at least in duplicate, is recommended. The laboratory should determine the acceptable criteria for duplicate analysis.

Standard Additions

It is recognized that the matrix of some forensic specimens may be "unique" in some way (eg. putrefied or embalmed) such that it is difficult or impossible to obtain a similar matrix for the preparation of reliable calibrators and controls. In these circumstances, the use of a "standard addition" procedure may actually be preferable to a conventionally calibrated assay. In the method of "standard addition" known amounts of analytes are added to specimen aliquots and quantitation performed by comparing the proportional response of the fortified aliquots with that of the unknown specimen.

QUALITY ASSURANCE

Quality assurance encompasses all aspects of the analytical process, from specimen collection and reception through analysis, data review and reporting of results. It includes, but should not be limited to, quality control of each analysis and proficiency testing of the laboratory.

Quality assurance assumes a unique role in the forensic science disciplines because results are subject to challenge in the "adversarial" justice system. One purpose of a quality assurance program is to detect error, whether random or systematic, and to initiate appropriate remedial action.

In these Guidelines, the terms are defined in the following manner:

- * A standard is a reference material possessing one or more properties that are sufficiently well established that calibrators can be prepared.
- * Calibrators, either prepared from the reference material or purchased, are used to calibrate the assay. Where possible, calibrators should be prepared in a matrix similar to that of the specimens.
- * Controls are either prepared from the reference material (separately from the calibrators; that is, weighed or measured separately), purchased, or obtained from a pool of previously analyzed samples. Controls from all three of these sources are used to determine the validity of the calibration; that is, the stability of a quantitative determination over time. Where possible, controls should be matrix-matched to specimens and calibrators, as indicated above.

Standards used should be appropriate for the test being performed, and documentation should be maintained describing their sources and dates of acquisition. Reference material should be stored so as to ensure its stability and integrity. If a standard is prepared in the laboratory, the source(s) of the chemical reagent(s), the method of preparation, and verification of the final product should be recorded and maintained on file.

Purchased reference materials are generally accompanied by certification as to chemical identity, quality, and concentration. However, the laboratory should independently verify this certification.

Labelling should be uniform for all standards and reagents. Date of acquisition or preparation, and the initials of the preparer, should be included on the label. The expiration date should always appear on the label. An expiration date furnished by a vendor/manufacturer determines the useful lifetime of the standard/control unless it can be verified beyond that date.

Initially, a sufficient number of calibrators should be run to determine the characteristics of the calibration curve; a blank and at least three calibration points are recommended for the initial calibration process. The stability of the calibration curve should be tested under laboratory conditions by the addition of controls, both positive and negative.

Controls are not analyzed for calibration purposes. As a general rule an adequate set of controls should

include, at a minimum, a specimen which does not contain the analyte (defined as a negative control) and a specimen containing the analyte at a concentration which realistically monitors the performance of the assay. Additional controls can be used to test the linearity of the calibration over the desired range.

The SOP manual should specify corrective action to be taken when control results are outside acceptable limits. Under optimal conditions a laboratory should have a quality control supervisor, but having a staff member dedicated to quality control may be impractical for small laboratories.

Forensic toxicology laboratories should participate in an external proficiency testing program which includes, at a minimum, a proficiency testing program for alcohol in blood or serum, and for drugs in at least one type of specimen; the program should realistically monitor the laboratory's quantitative capability.

The laboratory director should regularly review results of quality control and proficiency testing. Signing and dating the record constitutes appropriate evidence of review. It is important that bench personnel be informed of quality control and proficiency test results. Attention should be given to procedures for monitoring potential sources of error.

Quality Control

Source of Information: There are many good references relating to the general topic of quality control as well as to specific application relating to analytical procedures. Amongst these are texts in clinical chemistry including Textbook of Clinical Chemistry, by Norbert W. Tietz, W.B. Saunders Co., Philadelphia, 1986. A convenient and widely respected source is Cost-Effective Quality Control: Managing the Quality and Productivity of Analytical Processes, by James O. Westgard and Patricia L. Barry, AACC Press, Washington DC, 1986.

Certified Reference Materials: The following definitions are taken from the AOAC Official Methods of Analysis (1984):

Reference Material (RM) can be defined as a material or substance one or more properties of which are established sufficiently well to be used for calibration of an apparatus, assessing a measurement or assigning values to material.

Certified Reference Material (CRM) is an RM, one or more whose property values are certified by a valid procedure, or accompanied by or traceable to a certificate or other documentation which is issued by a certifying body.

The National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards (NBS), refers to these as Standard Reference Material (SRM). For example, a specific RM may have a melting point of such sharpness and reproducibility that it can be offered as an RM for the calibration of a thermometer in a melting point apparatus. However, it may not be appropriate for preparing a calibration curve. A CRM, or SRM, suitable for the preparation of a standard to which calibration material can be compared, must be certified by a method generally recognized by the scientific community as one which validates the CRM for this purpose. The nature of the procedure depends, of course, on the properties of the analyte.

Several different organizations supply CRMs of a variety of types. A complete listing of organizations

supplying CRMs is available from the International organization for Standardization, American National Standards Institute, 1430 Broadway, New York, NY 10018. Catalogs or literature describing CRMs are available from individual organizations, such as the NIST.

It is important to remember that most RMs are not 100% pure. The label or package insert should indicate the purity or the nature of the contaminants or the degree of water of hydration. Further instructions may provide guidance as to how the RM is to be used. For example, perhaps it must be protected from light, or stored at a low temperature or protected from moisture. These instructions must be carefully followed in order to use the RM according to its specifications.

Drugs, perhaps more than many other chemicals, may have limited shelf-lives. Degradation due to photo-reactions, oxidation in the air or by other means, requires that periodic assessment of these changes must be monitored. Methods for detecting such changes are varied but even RMs may not retain their original purity.

Metabolites: Many testing procedures, particularly immunoassay tests, are targeted to detect drug metabolites. As might be expected, these are more difficult to obtain in pure form, free of interferences and certified as to their authenticity. A number of commercial sources offer drugs and some metabolites, together with deuterated forms useful as internal standards in GC-MS. Frequently the commercial sources will supply a statement of purity with the material. This is not the same as a CRM or SRM, but after verification of purity, may be quite acceptable.

Metabolites of pharmaceutical drugs can, at times, be obtained from the company which manufactures them. This often requires a personal contact with an appropriate official of the company, completion of necessary paperwork and some time delay. The *Physicians' Desk Reference* in its "Manufacturers' Index" lists names and telephone numbers of contact officials.

When the identity of the metabolite has been described in a reputable scientific journal, but no source is evident, a search of catalogs from suppliers of organic chemicals may be fruitful. If this is not successful, then it may be necessary to synthesize the metabolite. In this case its identity should be confirmed by standard, acceptable methods. In all of these alternatives, purity must be assessed.

The importance of acquiring pure chemicals used as standards and periodically monitoring their purity, requires the development and implementation of procedures which are part of the standard operating procedure of the laboratory. The steps which can be used are summarized as follows:

- 1) maintain instruments and all measuring devices at optimal performance with regular calibration checks.
- 2) acquire chemicals to be used as standards from reliable sources who validate the stated purity, preferably by a certifiable trace to a CRM or SRM, or
- 3) acquire chemicals as RM, carefully following any instructions accompanying the RM for maintaining anhydrous conditions or to avoid deterioration, or
- 4) acquire chemicals from other sources but always assess the purity of the material by appropriate measurement of physical constants and/or instrumental methods.

- 5) regardless of the source of the chemical for preparation of the standard, devise a means by which the standard can be monitored periodically in order to detect any deviation from its original purity.
- 6) before using a newly prepared standard, compare its properties with a previously validated standard or with a CRM or SRM.

Control Materials: In the true sense, a control is a test sample, identical to the unknown, but containing the analyte at a known concentration. With each batch of specimens, whether a single specimen or multiple ones, controls would be carried through the procedure in parallel with the unknowns. It is suggested that each batch of specimens include at least 10% controls. The controls must include one positive and one negative control. The control must give a result within a predetermined deviation from its mean value, or the test is deemed "out of control" and therefore, the result generated from the unknown specimen is unacceptable.

For some forensic toxicology procedures, providing a true control is no more difficult than any other test. For others, however, in which the matrix may be unique (eg. decomposed tissues, bone, hair or nails), providing a control is not only difficult, but can never approach the ideal of being identical to the unknown specimen.

Open Controls: These are specimens which are prepared for the express purpose of being used as a control and their identity is known to the analyst. They can be purchased from commercial vendors, prepared in the laboratory, distributed by professional organizations or saved and pooled from former cases. Regardless of the source, the concentration of the analyte in the control must be validated.

For tissue specimens or other unusual matrices, more innovative approaches may be necessary. Fortifying drug-free matrices, such as tissue homogenates, out-dated blood bank blood, plasma to simulate the unknown specimen is acceptable. A "blank" or negative control may, of course, be the unfortified matrix.

Blind Controls: As the name implies, these are identical to open controls except their identity is unknown to the analyst. It is generally recognized that this is the ideal way to maintain quality control. A blind control should test the entire laboratory process including receiving, accessioning, analysis and reporting. This can be accomplished by setting up a "dummy account" or by co-operation with the submitting agency. Such blind controls are sometimes called "double blinds". A more practical approach is to have the accessioning section insert blind controls into each batch of specimens. However, either of these processes can be difficult to accomplish in a small laboratory; they are both costly and time consuming.

REVIEW OF DATA

Before results are reported, each batch of analytical data should be reviewed by scientific personnel who are experienced with the analytical protocols used in the laboratory. At a minimum this review should include:

- * chain-of-custody documentation
- * validity of analytical data (e.g., shape and signal-to-noise ratio of chromatographic peak)

- and calculations
- * quality control data.

The review should be documented within the analytical record.

REPORTING OF RESULTS

Many, if not most, forensic toxicology laboratories are an integral part of state or local government supported, medico-legal investigative agencies, or are associated with them. Each laboratory must follow the mandates of the particular agency and/or governmental sub-division when reporting results. Thus, while it is neither possible nor desirable to suggest a uniform format for reports, they should include all information necessary to identify the case and its source, and should bear test results and the signature of the individual responsible for its contents.

The following recommendations are made:

- 1) name and/or identification number
- 2) laboratory identification number
- 3) name of submitting agency or individual
- 4) submitting agency's identification number
- 5) date submitted
- 6) date of report
- 7) specimens tested
- 8) test results
- 9) signature of approving individual

Although most forensic toxicology reports are confidential and often sensitive in content, some jurisdictions may treat the report as an official public document. If the results are confidential, every precaution should be exercised to ensure that a properly authorized person receives the information when it is transmitted by telephone, computer, FAX, or any other method different from conventional delivery of a written report. Each laboratory should formulate its own policy for retention or release of information and for response to requests for its documentation.

Terminology in Reports

- 1) "Positive" indicates that a particular substance has been identified in accordance with the laboratory protocols. "Negative", "Not Detected", or "None Detected" has been generally used to indicate the absence of an analyte or analytes. "None detected" is preferable. This indicates that particular substances were absent within the limitations of the test(s) performed.
- 2) Tests may be described in a number of ways, individual chemical entities, groups or classes of chemicals or combinations of drugs or chemicals. A description of the entity should appear in the laboratory's standing operating procedure manual. This description should include the limitations of the test, such as the drugs included, the limits of quantitation, cut-off for the drugs included, cut-off concentrations (if applicable) or other terms to describe the lowest concentration reliably measured and reported in the specimen.

3) There may be both qualitative and quantitative results on a report. Qualitative results should be indicated by naming the test followed by positive or none detected. The term "trace" or a non specific numerical designation (e.g. positive but less than 0.5 mg/L) may be used if a substance was detected in a sample, but the concentration was less than the lowest point on a calibration curve or a designated cut-off.

Quantitative results should be identified using appropriate nomenclature (see #4). No quantitative value should be reported from a non specific immunological or other initial testing procedure, unless the procedure has been appropriately validated through parallel studies with a reference quantitative method.

4) Units should comply with established nomenclature as approved by the Toxicology Section of the American Academy of Forensic Sciences. Preferred units include mg/L, mcg/L, mg/Kg for fluids and tissues. Other units have been frequently used such as mg/dL, mg%, ng/mL, mcg/mL, mg/100 gm etc. Such terms may be appropriate, but laboratories should strive for the use of common terms on a national basis. Ethanol should be reported as percent (grams per 100 mLs.) Other commonly accepted units for certain analytes should continue to be used, such as mg/dL for glucose and meq/L for metals.

Preliminary Report

A report may be issued before the final report has been prepared. This report should have the same identifying information as the final report but be limited to the tests performed by that date. It is recommended that all written reports reflect confirmed results according to laboratory protocols.

Revised, Supplemental or Addendum Report

After the final report has been issued, it may be necessary to perform additional tests, in which case an addendum or revised report should be issued. These tests can be added to the existing report, a revised report may be issued and so identified, or an addendum may be created to provide the results of the additional tests. Such a report should contain the same identifying information as the original report.

Oral Reports

Occasionally, it may be necessary to provide information on a report to a police or other external agency. In such situation, the results may be transmitted by telephone subsequent to ensuring that the individual is appropriately identified, that tests are recorded and the results reviewed.

Corrected Reports

After the final report has been issued it may become necessary to correct an error, typographical or otherwise, in the original or supplemental reports. In this instance the report should be clearly labeled as corrected and contain the same identifying information as the original report(s).

Release of Reports

There should be a procedure in the SOP manual for sending a report to the submitting agency.

Referred Tests

When samples are forwarded to other laboratories for analysis, there should be a record on the final report indicating this fact. Results of referred tests may be incorporated into the laboratory's final report.

Retention of Records

Records should be retained as long as practical, but for at least 5 years. Records should include a copy of the report, request and custody forms, work sheets, laboratory data, quality control and proficiency testing records.

There may be state or local regulation governing the time period over which records must be retained. Laboratory directors are advised to check with the appropriate agencies in their jurisdictions for information.

SAFETY

The laboratory should have a safety manual that addresses at a minimum the following issues:

- * specimen handling, including the handling of infectious material and the disposal of biological specimens
- * handling and disposal of solvents, reagents, and other chemicals in the laboratory
- * handling and disposal of any radioactive materials used in the laboratory
- * handling and disposal of laboratory glassware
- * responses to personal injuries and spillage of biological specimens, chemicals, solvents, reagents, or radioactive materials
- * regulation governing dress (e.g. laboratory coats and safety glasses), eating, drinking, or smoking in the laboratory.

Each laboratory must be aware of State and/or Federal Regulations that may exceed minimum standard established on the basis of the above considerations.

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*Robert V. Blanke, Ph.D.
Yale H. Caplan, Ph.D.
Leo Dal Cortivo, Ph.D.
Graham R. Jones, Ph.D.
H. Horton McCurdy, Ph.D.
Joseph R. Monforte, Ph.D.
Michael A. Peat, Ph.D.
Alphonse Poklis, Ph.D.
Richard W. Prouty, B.S.
Michael I. Schaffer, Ph.D.
Richard F. Shaw, B.S.*

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1997 SOFT/AAFS Laboratory Guidelines Committee: W. Lee Hearn, Ph.D., Graham R. Jones, Ph.D., H. Horton McCurdy, Ph.D. and J. Rod McCutcheon, B.S.

The Guidelines may only be modified by the Laboratory Guidelines Committee of the Society of Forensic Toxicologists and the Toxicology Section of the American Academy of Forensic Sciences as approved by the voting membership of both organizations.

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