



Society of Forensic Toxicologists, Inc.

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ToxTalk

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1998 ANNUAL MEETING HOSTS

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EDITOR: Joseph R. Monforte, PhD, DABFT

EDITORIAL BOARD: H. Chip Walls, B.S., Jim Wigmore, B.Sc., Daniel Isenschmid, Ph.D., DABFT, Vincent Papa, Ph.D.

PUBLISHER: Patricia Mohn-Monforte

IN THIS ISSUE

REGULAR FEATURES: Journal Club ☼ Professional Calendar ☼ Career Opportunities ☼
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Concentrations of Toluene Following Acute Hydrocarbon Poisoning (Kemp) and "Fen-Phen"
(Behonick and Baskin) ☼ Reference Notes

OF SPECIAL INTEREST: 1998 Committees & Chairs with notes from the February Board
Meeting ☼ SOFT/TIAFT '98 ☼

INSERTS*: 1998 SOFT Directory (SOFT members only)s ☼ '98 SOFT/TIAFT Preliminary
Program and Tour Information ☼ ERA Announcement ☼ *if available at time of distribution

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

In this issue, I have included the Table of Contents for the Nov 1997 issue of the **BLT Newsletter** from the Society Belgo-Luxembourgeoise de Toxicologie. I have requested permission from their editor to publish selected articles, primarily case reports, in future **ToxTalk** issues. This should be a valuable exchange of information if permission is granted. I also have requested subscription information which I will publish when available.

A case note on Fen-Phen is included in this issue of **ToxTalk** although the use of this drug for diet control is no longer permitted by law. It is very likely, however, that Fen-Phen will continue to be encountered in toxicology laboratories.

Thanks to all persons submitting Case Reports and other items for this issue. All members are encouraged to submit case reports and material of interest to SOFT members. Information, including Case Reports, need not be long or formal. ☼

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: monfortej@juno.com

DEADLINES: Feb. 1, May 1, Aug. 1, and Nov. 1.

NEXT DEADLINE: May 1, 1998

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

PRESIDENT'S MESSAGE by Joseph Saady, Ph.D., DABFT

There are three important areas on which I wish to comment:

I. PEOPLE AND INVOLVEMENT: The Society of Forensic Toxicologists has gained a great deal of prominence and credibility because the Society members are prominent and credible toxicologists. Non-scientists who come in contact with SOFT members frequently comment about "what a nice group of people" we have in this organization. They also comment about the enormous amount of work that our members volunteer to SOFT.

In order to capitalize on our members' desire to be involved, I wish to send an invitation. Any SOFT members wishing to have more involvement should let their feelings be known. Here are some options you might consider:

- A. Investigate the standing committees. This information is published below as well as posted at the SOFT web site.
- B. Discover the aspect(s) of SOFT where you have an interest.
- C. E-mail, fax, or write to the SOFT president noting your ideas, background, and interests. Some of you have already begun this process. Let's be reasonable, however. All wishes come true only in fairy tales!

II. VISIONING WORKGROUP 1998: It is time for SOFT to take a retrospective and prospective look at this organization and "envision" the future of forensic toxicology to the extent possible. I propose that this work group "brainstorm" possibilities then publish a final report for discussion at the SOFT/TIAFT Albuquerque Meeting in October, 1998. Veteran toxicologists, as well as those new to the field, who have a capability to "envision" should give serious consideration to participating in this work group. Here are some areas of discussion: Should forensic toxicologists "interpret" drug concentrations (other than ethanol) in drivers? Is there an algorithm that can be used for therapeutic drugs? Should we be more involved in occupational and environmental issues? Is there any agreement on how a forensic toxicology training program should structure course work? What will forensic toxicologists be doing in five years? . . .

Dr. Carl Selavka will coordinate this effort. Contact him at: e-mail: cayr@aol.com or Fax 518-457-9384.

III. DUI CONCENSUS GROUP: If there is one area upon which our toxicologists should be able to agree, it is the manner in which blood ethanol concentrations are determined, reported, QA/QC, etc. Many states presently have some statutory requirements for this process and some of the requirements may not be appropriate analytically. This consensus group will attempt to define forensically acceptable guidelines for ethanol determinations. If a process can not be agreed upon, the consensus group will at least describe the different processes occurring throughout the various states. This is a significant effort, and the membership will be apprised of the progress at the SOFT Annual Meeting in Albuquerque. The final report could be the subject of a future workshop. For further information, contact the workgroup coordinators directly:

Dr. Kurt Dubowski	fax: 405-271-3798	e-mail: kurt-dubowski@ouhsc.edu
Dr. Alphonse Poklis	fax: 804-828-7722	✉

1998 SOFT Committees and Chairs

Following are the 1998 SOFT Committees and Chairs. Their *e-mail addresses* and fax numbers, when available, are listed. Please refer to the enclosed 1998 SOFT Membership Directory for additional contact information. Abbreviated information from written reports submitted for the February, 1998, SOFT Board Meeting are also included.

Nominating - Vickie Watts, M.S. *toxilady@aol.com* Fax: 602-831-1049. Members: to be determined. Purpose: Prepare 1997 nominating slate of SOFT Officers and vacant Board positions. Plan: Select committee members who were former past-presidents.

Membership - Michael L. Smith, Ph.D., DABFT *smithm_at_AFIP04@email.afip.osd.mil* Fax: 301-319-0628 1998 Members: N. Fortner, A. Jenkins, K. Sun. Purpose: Encourage membership in SOFT, Evaluate membership applications, and welcome new members into SOFT. 1997 Report (by M. Huestis): 18 new members from 9/26/97 to 12/31/97. Total new members for 1997: 78. As of 12/31/97, SOFT total membership is 562: 25 charter, 420 full, 88 associate, 19 retired, and 10 students.

Budget, Finance, and Audit - James Valentour, Ph.D., DABFT *none* Fax: 804-371-8328. Purpose: Review the Treasurer's income and expense records.

ToxTalk Editor - Joseph Monforte, Ph.D., DABFT *monforte@juno.com* Fax: 602-696-6663. Editorial Board: H.C. Walls, J. Wigmore, D. Isenschmid, and V. Papa. Purpose: Prepare and publish ToxTalk, the official quarterly newsletter of SOFT. Plan: Continue current mechanisms and encourage more participation.

. . .continued on next page

Drugs & Driving - H. Chip Walls, B.S. *hchipw@aol.com* Fax: 315-435-8439. Members: E. Solomons, M. Lewis, V. Watts, D. Crouch, S. Howell, J.R. McCutcheon, J. Saady, L. Farrell, L. Marinetti-Scheff, M. Robertson, J. Wigmore, and B. Logan. Purpose: Develop and disseminate information on the chemically-impaired driver. Plan: Benzodiazepine monograph in final stages, "Methamphetamine and Related Stimulants" is under way, a symptoms chart developed with DRE officers is to be reviewed and, if approved, distributed as an aid to toxicologists who testify in DUI/DWI cases, "Drugs and Driving" bibliography is updated and can be obtained by e-mail or disk, a bibliography of psychopharmacology- and neuropharmacology-related book has been compiled, and determine possible interaction with the International Assoc. of Chiefs of Police Drug Recognition Expert program.

By-Laws - Kurt Dubowski, Ph.D., DABFT *Kurt-dubowski@uokhsc.edu* Fax: 405-271-3798. Members: Y. Caplan Purpose: Monitor SOFT Bylaws, prepare Bylaws amendments as required, and provide advice and consultation to SOFT Board. 1998 Plan: Assemble a complete, current version of the SOFT Bylaws for use and reference by all concerned parties.

Publications (JAT Special Issue) - Bradford Hepler, Ph.D., DABFT *BHEP2001@AOL.COM* Fax: 313-833-2534 and Daniel Isenschmid, Ph.D., DABFT *75142.1174@COMPUSERVE.COM* Fax: 313-833-2534. Purpose: Prepare for publication and presentation of SOFT/JAT Special Issue for the 1998 SOFT Meeting. Plan: Develop rapport with JAT staff and deadlines for papers, etc., solicit reviewers, process papers received, and select appropriate papers to maintain the quality of the issue.

Education Research Awards (ERA) Endowment Fund - Barbara Manno, Ph.D., DABFT *bmanno@sumc.edu* Fax: 318-675-7811. Purpose: Recognize student pursuing advanced degrees whose research in forensic toxicology has progressed to the point of presentation to the members of SOFT. Plan: Determine number of awards available based on funds, announce, review and recommend applicants, and prepare a procedural guideline for future reference.

Meeting Resource - Marilyn Huestis, Ph.D. *mhuestis@irp.nida.nih.gov* Fax: 410-550-2971. Purpose: Identify future annual meeting sites and help meeting hosts. Plans: 1998 - Albuquerque, NM; 1999 - San Juan, Puerto Rico; 2000 - Milwaukee, WI; 2001 - New Orleans, LA

Professional Standards & Accreditation - Graham Jones, Ph.D., DABFT *jones@just.gov.ab.ca* Fax: 403-422-1265.

Continuing Education and Training - Ashraf Mozayani, Ph.D. (SOFT representative) *TOXICASH@AOL.COM* Fax: 713-796-6838. Members: B. Marker, to be determined. Purpose: To coordinate, develop, publicize and encourage the training and continuing educational activities of the members of the sponsoring organizations (SOFT, CAT, AAFS, AACC, MATT). Plan: Sponsored "Laboratory Accreditation: Exploring the Alternative" workshop at the 1998 AAFS meeting, plan a workshop for the 1998 SOFT meeting, establish a Web site with links to sponsoring organizations (S. Wong), and establish a permanent site and functional mechanism for the Lending Library (D. Isenschmid). A list of labs willing to participate in the Visiting Scientist Program has been published (A. Jenkins).

Policy & Procedures - William Anderson, Ph.D., DABFT *billa@ocme.unc.edu* Fax: 919-962-6263 Members: D. Fuller, M. Heustis and V. Watts. Purpose: Develop and maintain a policy and procedure manual. Plan: P & P documents will be completed and distributed before the 1998 SOFT Annual Meeting.

SOFT Internet Web Site - Bruce Goldberger, Ph.D., FTS *info@soft-tox.org* Fax: 352-846-1586 Members: L. Cauglin, J. Driskell, D. Frederick and V. Papa. Purpose: Maintain SOFT Web-Site including periodic updates. Plan: Add "introduction to Forensic Toxicology" (Basell & Cravey), educational links and other resources (e.g. slide exchange) and "URL Update" feature to Internet Resource and Employment Exchange pages.

Copyrighting - SOFT materials (ad hoc) - Mark Lewis, B.S., *MARKBLewis@AOL.COM* Fax: 518-457-2477.

Visioning Workgroup - Carl Selavka, Ph.D., DABFT *CAYR@AOL.COM* Fax: 518-457-9384. See President's Message.

Alcohol Consensus Workgroup - Kurt Dubowski, Ph.D., DABFT *Kurt-dubowski@uokhsc.edu* Fax: 405-271-3798 and Alphonse Poklis, Ph.D., DABFT *none* Fax: 804-828-7722. New Committee. See President's Message. ☺

PRESIDENT SAADY ENCOURAGES YOUR INPUT! You may . . . E-mail, fax, or write to Joseph J. Saady, Ph.D., DABFT
Virginia Division of Forensic Sciences, 1 North 14th Street, Richmond, VA 23219
e-mail at *Saady@hsc.vcu.edu* fax to 804-371-8328

SOFT/TIAFT '98: ACT NOW!

The rumor was circulating at the recent AAFS meeting that 300 rooms had already been booked in Albuquerque. If you have not made your hotel reservations, do so NOW. The Balloon Festival crowd will be competing for accommodation. Space is limited and will be reserved on a "first come" basis only. To qualify for conference rates, specify "SOFT" when making your reservations. Rates are not guaranteed after September 3rd.

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

Preliminary program and registration information has been included in 2 previous issues of ToxTalk as well as this issue. Here are some important deadlines to remember:

July 1st	Abstracts must be submitted
July 1st	Free t-shirt with registration
Aug. 1st	Early registration. \$50 late fee applies after this date
Sept. 7th	Last day mail registrations will be accepted
Sept. 3rd	Hotel reservation <u>rate</u> guaranteed (but NOT room space)

This year, you have two registration options. The basic difference between the Mesa and Sandia registrations, is that the Mesa does not include the following: Wednesday and Friday luncheons, Farewell Banquet, Workshop #6, and the published Congress Proceedings.

Additional information can be obtained by writing to:

SOFT-TIAFT 1998, P O Box 40711, Albuquerque, NM 7196-0771

or contact:	N.G. Rao (SOFT)	Phone: 505-841-2562	e-mail: nrao@state.nm.us (THIS IS NEW)
	Ron Backer (SOFT)	915-561-8851	toxmantx@aol.com
	Vina Spiehler (TIAFT)	714-642-0574	TIAFT98@aol.com

TREASURY NOTES: SOFT 1997 Annual Treasurer's Report

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

\$19,947	INCOME 1997	\$179,174	TOTAL ASSETS as of 12/31/97
14,338	Dues, including late fees	100,000	Certificates of deposit (includes \$25,000 Emergency Fund 67,885 ERA Fund)
45	Applicaition fees	25,000	Treasury note
4,746	Interest (all accounts) 1997	38,000	Treasury note
845	Promotions (logo items)	16,174	Checking account balance
0	ERA Fund donations		
*	1997 Annual Meeting *info not available		

\$35,748	EXPENSES 1997		
11,221	Administrative Office	1,216	Officer expense
2,070	Labor	10,191	Committee expenses
5,945	Office expenses, supplies	1,346	Guidelines
3,206	Credit card readers	5,376	ToxTalk
2,612	Professional fees	2,719	Web site
2,072	CPA	750	ERA Fund Award
170	Bank	5,192	Promotion
200	Bonding insurance	2,080	Shirts & Hats
170	Incorporation fee	3,112	Hospitality at AAFS
5,116	Meeting expense	200	Misc. (ABFT)

Treasurer's note: This report is incomplete due to information not available at the time of submission to ToxTalk. The 1997 Utah meeting proceeds have not been finalized, and with the addition of the Credit Card Service, dues and other fees in the amount of \$13,506 were received in December but posted to January 1998.

REVISED FORENSIC TOXICOLOGY LABORATORY GUIDELINES APPROVED BY SOFT AND AAFS/TOX SECTION

The revised guidelines have been distributed to and subsequently approved by members of SOFT and the Toxicology Section of the American Academy of Forensic Sciences. The SOFT Board is currently considering posting the new guidelines, in its completed form, on the SOFT Website. Chairman Graham Jones and his committee members have done a stellar job in bringing this important document to fruition. ☺

1997 SOFT ROBOTICS SURVEY

Jennifer Limoges reports an inadequate response to complete the survey. However, she is still interested in establishing a network of robotics users. If you have an interest in or utilize robotics, or have any questions regarding this issue, please contact Jennifer Limoges at 518-457-1208 or e-mail rjlimoges@juno.com or fax to 518-457-2477. You may also write to: Jennifer F. Limoges, New York State Police Forensic Investigation Center, 1220 Washington Ave., Building 30, Albany, NY 12226. ☺

AAFS AWARDS HONOR OUTSTANDING FORENSIC TOXICOLOGY EFFORTS

The following SOFT members were recognized by the American Academy of Forensic Sciences at their recent meeting in San Francisco for their outstanding contributions to forensic toxicology. Bradford Hepler, Ph.D., DABFT, Wayne County Medical Examiner's Office, Detroit, MI, was awarded the "Raymond Abernethy Award" for his extraordinary work at the bench. Dr. Hepler was introduced by Dr. Joseph R. Monforte. Dr. Kurt Dubowski introduced Alphonse Poklis, Ph.D., DABFT, Medical College of Virginia, Richmond, VA, recipient of the Rolla Harger Award for his outstanding contributions to forensic toxicology. The A.O. Gettler Award for his outstanding analytical achievement in forensic toxicology was presented to Michael Peat, Ph.D., DABFT, LabOne, Overland Park, KS, after an introduction by Dr. Graham Jones. Diana Wilkins, Ph.D., Center for Human Toxicology, Salt Lake City, UT, was presented the Irving Sunshine for outstanding research in forensic toxicology by a young investigator. Dr. Wilkins' achievements were summarized by Dennis Crouch. Also honored was Dr. Sidney Kaye who received the "Gradwohl Award". ☺

PLEASE POST: THE ERA ANNOUNCEMENT included in this **ToxTalk**. Encourage Masters and Ph.D. students to apply for this funding opportunity which will assist them in presenting their work before SOFT members at our annual meeting. Deadline is May 1st of each year.

ABFT NEWS

The ABFT Laboratory Accreditation Program has now certified 3 Medical Examiners' laboratories: Baltimore, MD - Dr. Barry Levine; Monroe County, NY - Dr. Jeanne Beno; and Suffolk County, NY - Dr. Edward Briglia.. To receive specific information, please contact the ABFT Administrative Office.

The **annual election** was held at the recent ABFT Board Meeting, and the following officers were re-elected: President - Dr. Yale Caplan, Vice President - Dr. Joseph Monforte, and Secretary/Treasurer - Richard Shaw.

The following **ABFT certificants successfully requalified in 1997**: Forensic Toxicologists (Diplomates): Roy Altman, Paula Childs, C Richard Crooks, D Russell Lowe, Richard Schlesinger, and Michael Smith. Forensic Toxicology Specialist: Bruce Goldberger.

The Annual ABFT Breakfast will once again be held during the SOFT Annual Meeting. Only persons currently certified by ABFT may attend. Further information will be included in the next issue of **ToxTalk** or contact President Yale Caplan (e-mail: ycaplan@aol.com; phone: 410-486-7486; fax: 410-653-4824).

Congratulations to Edward Stern, Ph.D., DABFT (MN Forensic Science Lab, St. Paul, MN), who recently successfully qualified for certification by the American Board of Forensic Toxicology as an ABFT Toxicologist (Diplomate).

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 ☺

Case Notes: Fenfluramine and Phentermine ("FEN-PHEN") Submitted by: George S. Behonick, Ph.D. and Steven I. Baskin, Pharm.D., Ph.D., Pharmacology Division, United States Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD 21010-5425
Edited by Vince Papa, Ph.D.

A class of anorectics are sympathomimetic amine drugs that are prescribed for the clinical treatment of obesity. Members of this class, for example, are fenfluramine hydrochloride (Pondimin[®]) and phentermine hydrochloride (Adipex-P[®]), which are both controlled substances (Schedule IV). The drugs have been individually approved by the Food and Drug Administration (FDA) as appetite suppressants. Despite the lack of explicit FDA approval for combinational use, the number of prescriptions for fenfluramine and phentermine together ("fen-phen") in 1996 exceeded 18 million. Presumably the action of these drugs in treating obesity is primarily one of appetite suppression by activation of satiety centers in the ventromedial hypothalamic nuclei. The phentermine may function as an indirect-acting catecholamine, while the fenfluramine may function as a serotonin uptake inhibitor.

The usual dose of fenfluramine is one 20 mg tablet three times daily before meals. The maximum daily dosage is two tablets three times daily and should not exceed 120 mg per day. The usual adult dose of phentermine is one capsule or tablet (37.5 mg) daily before breakfast or 1-2 hours after breakfast. Fenfluramine is biotransformed by N-dealkylation to norfenfluramine, which is subsequently oxidized to m-trifluoromethyl benzoic acid and excreted as a glycine conjugate, m-trifluoromethylhippuric acid. Unchanged fenfluramine and norfenfluramine are also excreted in the urine; however, the rate of excretion is pH dependent, with considerably lesser amounts appearing in alkaline as opposed to acidic urine. The principal routes for the biotransformation of phentermine are p-hydroxylation (p-hydroxyphentermine) and N-oxidation (N-hydroxyphentermine). Excretion of unchanged phentermine is favored in an acid urine.

Acute overdosage with fenfluramine or phentermine results in cardiovascular, respiratory, CNS and gastrointestinal manifestations. Fatal poisonings usually terminate in convulsions and coma or in respiratory failure and cardiac arrest. Serious intoxications with fatal outcomes have been reported in adults and children following overdosage with either fenfluramine or phentermine. Nevertheless, the associated primary pulmonary hypertension and cardiac valvular disease attributed to "fen-phen" are what have attracted much media attention and public interest in the United States during the latter part of 1997. Pulmonary hypertension has been reported in association with treatment with fenfluramine or phentermine alone; moreover, dexfenfluramine, the d-enantiomer of fenfluramine, also can cause the disorder. One noteworthy case report describes progressive, fatal pulmonary hypertension in a 29-year-old woman after taking "fen-phen" for only 23 days. The emerging reports of pulmonary hypertension in users of "fen-phen" in the United States mirror previous outbreaks of primary pulmonary hypertension in Europe. Other combinations employing the "fen-phen" pharmacological concept are also being employed. In one case, phenylpropanolamine is being substituted for phentermine. "Herbal" fen-phen has also been commercialized, and Ma-huang (*Ephedra equisetina*), with ephedrine as an active constituent, has been substituted for phentermine, while St. John's Wort is substituted for fenfluramine. Since this mechanism of St. John's Wort is unclear, it can be speculated that this herbal substitute could lead to similar adverse effects.

The serotonergic effects produced by methysergide and ergotamine may help explain the pathophysiologic mechanisms of the valvular lesions in patients taking "fen-phen." The pathological, surgical and echocardiographic features of carcinoid, a serotonin-releasing neoplasm, and of ergotamine-induced valve disease are indistinguishable from the lesions observed in users of "fen-phen." Speculatively, fenfluramine taken in combination with phentermine may in some manner potentiate the effect of circulating serotonin, thus inducing valvular injury resembling that caused by carcinoid syndrome or ergot preparations.

Assays for fenfluramine and norfenfluramine include gas chromatography with flame-ionization, electron-capture and nitrogen-specific detection. A method involving liquid-liquid extraction and derivatization with trifluoroacetic anhydride for blood and plasma has also been described. Formation of the N-trifluoroacetamide derivative and GC-FID or GC-MS is used for the determination of phentermine in biological samples.

Understanding the pharmacology and clinical consequences of "fen-phen" may be beneficial in postmortem investigations or cases pertaining to possible medical malfeasance.

The opinions or assertions contained in this article are the private views of the authors and are not to be construed as official or as reflecting the views of the Army or Department of Defense.

References:

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- Curfman, G.D. Diet pills redux. **N Engl J Med**, Vol. 337, No. 9, pp. 629-630, Aug 28, 1997
- Fleisher, M.R. and Campbell, D.B. Fenfluramine overdosage. **The Lancet**, Vol. 2, pp. 1306-1307, Dec 13, 1969
- Gold, R.G., Gordon, H.E., da Costa, R.W.D., Porteous, I.B. and Kimbler, K.J. Fenfluramine overdosage. **The Lancet**, Vol. 2, p. 1306, Dec 13, 1969
- Mark, E.J., Patalas, E.D., Chang, H.T., Evans, R.J. and Kessler, S.C. Fatal pulmonary hypertension associated with short-term use of fenfluramine and phentermine. **N Engl J Med**, Vol. 337, No. 9, pp. 602-606 Aug 28, 1997
- Winbery, S.L., Smith, R. and Blaho, K. Increased incidence of phen-fen associated complaints in an emergency department. **ToxTalk insert, Abstracts of the 1997 S.O.F.T. Annual Meeting**. Vol. 21, No. 4, p. 24, 1997
- Physicians' Desk Reference**, 47th Ed., Medical Economics Co. Inc., Montvale, NJ, 1993

Case Notes: Maternal and Fetal Concentrations of Toluene Following Acute Hydrocarbon Poisoning

Submitted by: Philip Kemp, Ph.D., and Sheena McArroy, B.S. Office of the Chief Medical Examiner, State of Oklahoma

Inhalant abuse continues to be a problem in Oklahoma. Consequently, from time to time, the toxicology laboratory at the Office of the Chief Medical Examiner is able to acquire postmortem blood and tissue data regarding these volatile substances. This report presents the data from both mother and her unborn child from a case involving a pregnant 35-year-old female who was found unresponsive at her home. She was 5 months pregnant and had a history of alcohol and paint abuse. External examination revealed the presence of gold paint around her mouth. An empty plastic soft drink bottle was also found which contained no liquid, but the sides were coated with gold paint. Interestingly, there is also a history of losing unborn children in mid-pregnancy.

Routine toxicology screening was negative. Neither alcohols nor drugs, including prescription and drugs of abuse, were found. Screening for volatiles other than alcohol, however, was positive. The toluene data are shown below (mcg/mL or mcg/g).

Tissue	Mother:	Child
Heart Blood	1.27	3.83
Brain	2.55	3.68
Amniotic Fluid	1.27	--

In addition to the above data, the mother's gastric contents contained a mixture of kerosene and diesel fuel. Surprisingly, these chemicals were not found in other specimens. Although the data in this report are of limited scope, we believe that accumulating such information will add to the knowledge of the pharmacological relationship between a mother and her unborn child. ☒

 **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 4.0) may be mailed or faxed to: 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 is : monforte@juno.com
Other items of interest to SOFT members are also welcome. **Next deadline: May 1, 1998**

Technical Notes: BLUTALKOHOLKONZENTRATION No. 20

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

A Case Report of a Blood Sample Containing Ethanol Without Ethyl Glucuronide. G. Schmitt, P. Dronner, R. Aderjan, and G. Skopp, *Blutalkohol*, 34:371-378, 1997. *German title: Blutprobe mit 1.44 Promille Ethanol enthielt kein Ethylglucuronid-Fallbericht*

A case report of a German drug squad undercover police officer who was involved in a serious motor vehicle accident while on duty for at least 20 hours. His passenger was killed, and he was seriously injured. Full, empty, and broken beer bottles were found in the police car. Blood was collected at hospital from the unconscious driver via a catheter, 3.5 hours after the accident.

The serum alcohol concentration was 0.150 g/100mL. The blood was stored at -18C, and 1.5 years later an additional alcohol analysis confirmed the original results. The serum was then tested serologically which confirmed that it was the driver's blood. The serum, however, did not contain ethyl glucuronide, a metabolite of alcohol, which suggests an exogenous origin for the alcohol. A limited stability study showed that the ethyl glucuronide should still be detected even after 1.5 years storage. A drinking test with the police officer showed that ethyl glucuronide was produced in his serum.

The swab that was used to collect the blood sample on the night in question contained 80% ethanol. Additionally, methanol and butanone-2 were detected in the blood sample which were also present in the swab. But reconstruction tests using similar swabs could only result in positive BACs of less than 0.012 g/100mL.

Due to doubts regarding the blood, the DWI charge was dropped. ☒

"DRUGS IN THE NEWS"

Submitted By Vince Papa, Ph.D., Brooks Air Force Base, San Antonio, TX. The following expresses the view of the author and not necessarily those of the USAF or DOD.

STADOL: USA Today and other newspapers recently reported a growing alarm generated over the addictive potential of the migraine drug butorphanol (Stadol). A number of well-publicized suicide cases of individuals using Stadol therapeutically and its "alleged" relationship to some criminal activities have led to an increasing number of complaints to regulatory agencies. Consequently, ten states have classified Stadol as a controlled substance. In 1995, the manufacturer of the drug made the unprecedented request to the FDA that Stadol be considered a controlled substance. Last year, 18 deaths and 654 cases of addiction were associated with the nasal spray.

Stadol is a synthetic narcotic analgesic with antagonist properties (5-8 times the potency of morphine and 30 times the potency of meperidine). The drug is available as a 1- mg/mL salt-solution nasal spray prescribed in doses of 0.5-4 mg every 3/4 hours. Butorphanol is also administered intravenously or intramuscularly with peak levels (15 minutes) reaching as high as 1.3-2 ug/mL and declining to 0.6-1.3 ug/mL in 1-4 hours depending on the route of administration. Butorphanol is metabolized by hydroxylation of the cyclobutyl ring and by N-dealkylation. A total of 72% of the dose is eliminated in the urine and 14% in the feces after 96 hours. Elimination products consist of free butorphanol (4-5% of a single dose), free hydroxybutorphanol (36%), and free (4%) and conjugated (4%) norbutorphanol. Stadol is not detected in standard immunoassay drugs-of-abuse screens. However, it can be detected by a specific radioimmunoassay, electron capture gas chromatography following heptafluorobutyric anhydride derivatization, and gas chromatography-mass spectrometry with trimethylsilyl derivatization. Toxic reactions to Stadol include sedation, dizziness, nausea, vomiting and insomnia. Overdose may cause respiratory depression and coma. However, instances of toxicity involving Stadol have not been reported.

Stadol is synthetically related to morphine and codeine. It was developed in an effort by pharmaceutical companies to treat pain without developing chemical dependency. Historically, narcotic analgesics such as meperidine (Demerol), propoxyphene (Darvon) and pentazocine (Talwin) were all considered non-addictive when first introduced. Talwin was quickly discovered by drug abusers to intensify their highs when combined with other drugs. Research dating back 19 years have indicated that Stadol is an effective pain killer and does not cause respiratory arrest in an overdose scenario. In 1991, Stadol was approved as a nasal spray, even though the spray was five times more potent than the injectable form. The rationale behind this approval was its intermittent therapeutic use. The DEA is currently reviewing the future classification of Stadol.

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NJ Oradell, **Physicians' Desk Reference**, 41st Ed. Medical Economics Co. pp 754-755, 1987. ☼

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

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

SOFT ADDS 18 TO ROSTER

Between September 26 and December 31, 1997, 6 associate and 12 full members were admitted to SOFT: Estela Estape, Tracy Cody, Larry Broussard, Salvador Sena, Harold Schueier, Jeffrey Lavelle, Catherine Schilling, Ron Shearer, Daniel Anderson, Rosa DeJusus, Karoline Martin, Michael Osselton, Anthony Wu, Christopher Wise, Matthew Slawso..., AnnMarie Gordon, Stephen Heishmann, and Cheri Baird. Welcome! ☼

REFERENCE NOTES

Submitted by Arthur J. McBay, Ph.D., DABFT, Chapel Hill, NC

obbe HWJ and O'Hanlon JF. *Marijuana and Actual Driving Performance*. U.S. DOT HS 808 078, Final Report, Nov. 1993, 133 pages

Actual driving tests have been conducted in city traffic and on highways with speeds up to 26 MPH after drivers have smoked marijuana cigarettes in doses of 0, 100, 220, and 300 mcg/kg. Plasma concentrations of THC were 3.3 to 45.9 ng/mL and of THC-COOH were 3.3 to 49.9 ng/mL 40 minutes after smoking.

The authors concluded that "THC's effects at doses up to 300 mcg/kg never exceeded alcohol's at BAC's of 0.08%" They also stated that "It appears not possible to conclude anything about a driver's impairment on the basis of his/her plasma concentrations of THC or THC-COOH in a single sample."

A shorter paper on the same subject can be downloaded from internet by searching for the "Journal of the International Hemp Association" Dec. 1994 issue. A Medline author search of "O'Hanlon JF" revealed more than a dozen papers which evaluated the effects of drugs on actual driving performance. ☒

Sited in the **BLT NEWSLETTER*** (November 1997) *Society Belgo-Luxembourgeoise de Toxicologie:

Abstracts

Therapeutic Monitoring of Antidepressant Drugs. C Charlier & G Plomteux, Sart Tilman
Orphenadrine Poisoning in a Child: Clinican and Analytical Data. K Mertens et al, Brussels, Belgium.
Suicide Attempt by Oral Ingestion of Pentothal. PM Honore et al, Brussels
Midazolam (MDZ) in Non-head (Beard) Hair. UP Capo-Chichi et al, Brussels
BLT - QC 20. [ed. note: Proficiency specimen survey result]

Case report *Proficiency Testing in Belgium and Luxembourg - A Follow UP*. V. Maes et al, Luxembourg.

Report Recommendations for the reliable detection of illicit drugs in urine in the European Union, with special attention to the workplace. ☒

SOFT-WEAR

Looking for that perfect gift for someone special? How about a SOFT logoed polo shirt or hat?
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_____ total number of polo shirts @ \$25 each = \$ _____

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Phone: (_____) _____

Note: SOFT will soon be offering the SOFT SIDED attache cases which were so popular at the Denver meeting. For futher information, contact Treasurer Robert Zettl (E-mail: JRZettl@Ecentral.com)

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ELMER GORDON OPEN FORUM

AN OPPORTUNITY FOR INFORMAL DIALOGUE

SO-SOFT: Considering bringing your SO (Significant Other) to Albuquerque? Some SOFT members have brought their spouses or other guests to SOFT Annual Meetings, and many of these SO's have developed rewarding relationships among each other as they bannned together to enjoy themselves while you were attending meetings. If your SO-SOFT will be attending the Albuquerque meeting and would like to hang out with the group, have her/him contact Pat Monforte via monforte@juno.com or ToxTalk. Pat is the self-appointed matriarch of SO-SOFT by virtue of seniority (Albuquerque will be her 20th consecutive SOFT meetintg).

SOFT HOSPITALITY SAN FRANCISCO STYLE: SOFT hosted a reception at the Steelhead Brewing Company on Fisherman's Wharf. SOFT members and guests who attended had a great time. The beer and pizza were outstanding! Special thanks to Mike Slade who made the local arrangments, including transportation to the brewery. ☺

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. If you have a job position available, FAX (602-595-6663) or E-MAIL (monforte@juno.com) to ToxTalk or mail to: Dr. Joseph Monforte, ToxTalk Editor, 42408 N. Sombrero Rd., Cave Creek, AZ 42408-2821.

Supervisor of Analysts: DHHS-certified lab seeking positive certifying scientist and supervisor of analysts to review and/or certify all pertinent data and quality control results for initial and confirmatory test results. Must have bachelor's degree (chem or biolog sciences or med tech or equivalent) + 2 yrs DHHS-cert urine drug testing lab experience as + cert scientist &/or supy of analysts. Contact Sue Brown, Ph.D., Presbyterian Laboratory Services, 1851 E. 3rd St., Charlotte, NC 28204 or c 704-384-5574 or e-mail: csb@phsc.com.

Forensic Toxicologist: PharmChem Labs has immediate opening for Ph.D., ABFT or ABCC-Tox certified or eligible, reports to VP Lab Operations. Compensation = experience. Relocation package available. PharmChem Labs, Menlo Park, CA. Contact Neil Fortner 800-446-5177 x217 or e-mail: neil_fortner@pharmchem.com ☺

ATTN CAT - MAFS - ALL FORENSIC TOXICOLOGY RELATED GROUPS:

ToxTalk would be happy to note your next meeting below if you will send us the appropriate information. Your materials may be edited and length determined by available space. Send your request to:

Dr. Joseph Monforte, ToxTalk Editor, 42408 N. Sombrero Rd., Cave Creek, AZ 85331-2821.

PROFESSIONAL CALENDAR

SOFT MEETING: October 5-9, 1998, SOFT/TIAFT, Albuquerque, New Mexico. Co-Hosts Drs. NGS Rao and Ronald Backer. For information contact Dr. NGS Rao, 505-841-2562, FAX: 505-841-2543, e-mail: NRAO@NUMEX.UNM.EDU.

FUTURE SOFT MEETINGS:

1999:	San Juan, Puerto Rico
2000:	Milwaukee, WI
2001:	New Orleans, LA

American Academy of Forensic Sciences (AAFS) annual meeting: February 15-20, 1999, Orlando, FL; February 21-26, 2000, Reno, NV. Contact Brenda Papke, 719-636-1100. ☺

03/02/98 pat



Land of Enchantment

SOFT-TLAFT 1998



Albuquerque Hilton, October 5 - 9, 1998
Albuquerque, New Mexico, USA



Society of Forensic Toxicologists

EDUCATIONAL RESEARCH AWARDS

Description:

The education of specialists in the field of forensic toxicology continues to be a challenge. Forensic toxicologists are scientists who engage in the analysis of body fluids and tissues for the presence of drugs and chemicals and interpret these analytical results for judicial purposes. The ever-increasing sophistication of analytical methodologies and the enhanced knowledge of underlying physiological and pharmacological factors governing our understanding of the effects of these substances promise to add information to the judicial process that was not thought possible just a few years ago.

The Society of Forensic Toxicologists is dedicated to continuing effective education in this field and actively supports research projects that advance the foundations of the science in academic settings. The award will recognize students pursuing advanced degrees whose research has progressed to the point of presentation to the members of SOFT.

Eligibility:

The Educational Research Award (ERA) is designed to recognize students pursuing advanced degrees (Ph.D. and M.S.) with research in an area relevant to forensic toxicology.

Award:

An award of \$750 will be made to offset travel expenses to the SOFT Annual Meeting. Awardees may reapply.

Deadline:

May 1. (Successful applicants will be announced by July 1.)

Application Materials:

1. Resume of student.
2. Copy of Abstract to be presented at Annual Meeting.
3. The abstracts of ERA awardees will be forwarded to the program committee.
4. Description of research (research proposal, supplemented with current findings).
5. Cover letter from the research advisor providing background information about the student, the proposed research, and the advisor's or institution's willingness to receive and administer funds.

Submission Address:

**E.R.A. Chairman
c/o S.O.F.T. Administrative Office
P.O. Box 5543
Mesa, AZ 85211-5543**

TOUR INFORMATION

DESTINATION SOUTHWEST For SOFT / TIAFT 1998

Saturday, October 3, 1998

Acoma "Sky City" Pueblo Tour 10:00am-4:00pm \$38.00 per person

Travel to El Malpais, Spanish for "badlands," where you will enjoy a delicious box lunch and assorted soft drinks. El Malpais encompasses miles of terrain covered by the ancient lava flows of over 3000 years ago. Next, you will arrive at Acoma Pueblo, the oldest continuously inhabited village in the US, which sits atop a 300 foot mesa. Wear comfortable shoes and sunscreen today, as your tour consists of approximately a 3/4 mile walk. There is a \$10.00 still camera fee. Video cameras are prohibited. Bring extra cash if you'd like to shop with the local Acoma Pueblo residents for crafts and goodies. *(This tour is limited to 45 total participants.)*

Saturday, October 3, 1998

Turquoise Museum/Old Town/IPCC 10:00am-4:00pm \$39.00 per person

Your day will begin at 10:00am when your deluxe coach will take you on your way to the Turquoise Museum near Old Town in Albuquerque. A 30-minute seminar on turquoise will enlighten you on these differences – a must before purchasing any type of turquoise. You will be taken to historic Old Town. Lunch will be at the La Placita restaurant, located in Old Town. The Indian Pueblo Cultural Center features a Native American museum and exhibits on the history of the state's 19 Indian Pueblos. You will have the special pleasure of watching Native American dances today at 2:00pm. *(This tour is limited to 45 total participants.)*

Sunday, October 4, 1998

Kodak Albuquerque Balloon Fiesta 5:30am-9:30am \$30.00 per person

It's early to rise this morning! Mass Ascension will occur around 7:30am where you will marvel at over 800 hot air balloons that will fill the sky ascending in "waves". You will see the most photographed event in the world. Bring your camera and dress in layers. The cool, high-desert air can be very chilly before the sun rises. Make sure and have breakfast at one of the many vendors that line the field. *(This tour is limited to 45 total participants)*

Sunday, October 4, 1998

Hot Air Balloon Rides 6:00am-10:00am \$150.00 per person

You will be picked up at the Hilton Hotel and taken to the launch site for this morning's unforgettable experience. At approximately 7:30am it's up, up and away as you soar high above Albuquerque and float like the clouds. The scenery is magnificent as you view the Rio Grande Valley, and the Sandia Mountains will shadow the old trails and pastures of the land below. Upon completion of your balloon excursion, you will be presented with a champagne toast, and flight certificate to commemorate your adventure. *(A minimum of 6 people are required)*

Saturday, October 10, 1998 Post Conference Tour

Northern New Mexico \$695.00 single/\$540.00 double per person

This post conference tour will take you up the Turquoise Trail to Taos New Mexico. You will overnight in Taos. Day 2 you will visit the Taos Pueblo, Rio Grande Gorge Bridge have lunch at Rancho de Chimayo located on the "High Road". After lunch you will travel to the Santuario de Chimayo where people have received miraculous cures for their ills. A visit to Ortega's Weavers will round out your day before checking into the Radisson Hotel Santa Fe. Day three will be spent in the "City Different", Santa Fe. Known all over the world for their bronze work, you will make a stop at Shidoni Bronze Foundry. Enjoy a walking tour of Santa Fe including the Loretto Chapel, the San Miguel Mission and the State Capital Building. Your farewell dinner will be at the Palace Restaurant. There will be time for last minute shopping on the plaza before departing for the Albuquerque airport at 1:00pm arriving at 2:30pm at the Airport. Price includes deluxe coach transportation, tour guide, 3 night's accommodations, 3 breakfasts, 2 lunches, 1 dinner, admission to the Taos Pueblo, admission to the Georgia O'Keeffe Museum, walking tour of Santa Fe, Santuario de Chimayo, all taxes. *(A minimum of 30 people are required)*

Saturday, October 10, 1998 Post Conference Tour

Southern New Mexico \$460.00 single/\$360.00 double per person

Travel south today stopping at the Valley of Fires State Park. Continuing south to White Sands National Monument a source of rare gypsum sand and large dunes. Overnight will be in Ruidoso. Day two will take you to Carlsbad Caverns for your self guided tour. Overnight at White's City with dinner on your own and then back to the Cavern for "flight of the bats". Day three head north for Roswell making a stop at the Roswell museum and Art Center. Lunch will be in Lincoln "Billy the Kid Country" and then to the Albuquerque Airport for late afternoon departures. Price includes deluxe coach transportation, guide, 2 night's accommodations, 2 breakfasts, 2 lunches, admission to Carlsbad Caverns, admission to Roswell Museum, admission to Valley of Fires, admission to White Sands, all taxes. *(A minimum of 30 people are required)*

* All Tours will depart and return from the Hilton Hotel

* Tour registrations will be accepted on a first-come, first-serve basis, as limited by space availability.

* Tickets can be picked up at the tour registration desk at the hotel.

There will be a \$1.00 per ticket surcharge applied to all on-site tour registrations. No cancellations will be accepted and no refunds will be made after June 1, 1998, unless tours are canceled due to lack of sufficient interest. Full refunds for canceled tours will be issued at the DSW tour Desk. On-site registration will be limited and offered on a space-available basis only.

Name _____
Address _____
Telephone # _____

Guest/Spouse Name _____
City, State, Zip _____
Hotel _____

10/03/98	Acoma "Sky City" Indian Pueblo Tour	\$38/person x _____ (# of Tickets)
10/03/98	Turquoise Museum/Old Town/Indian Pueblo Cultural Center	\$39/person x _____ (# of Tickets)
10/04/98	Kodak Albuquerque International Balloon Fiesta	\$30/person x _____ (# of Tickets)
10/04/98	Hot Air Balloon Rides	\$150/person x _____ (# of Tickets)
10/10/98	Northern New Mexico Post-Conference Tour	\$695/person single x _____ (# of Tickets)
		\$540/person double x _____ (# of Tickets)
10/10/98	Southern New Mexico Post-Conference Tour	\$460/person single x _____ (# of Tickets)
		\$360/person double x _____ (# of Tickets)

Total Amount Due \$ _____

METHOD OF PAYMENT

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Expiration Date _____

Signature _____

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Destination Southwest, Inc.

20 First Plaza Galeria NW Suite 603

Albuquerque, NM 87102

800 999-3109

Fax 505 766-9065

JCETT Laboratory Registration to Accept Visiting Scientists

Laboratory Name

Street Address

City State Zip Code Country

() _____
Phone Number Fax Number

Lab Type (gov't., private, etc.)

Laboratory Director Contact Person e-Mail Address

Type of Work Performed: (Check all that Apply)

<input type="checkbox"/> Postmortem	<input type="checkbox"/> Human Performance (DUI - Alcohol, Drugs)
<input type="checkbox"/> Clinical Toxicology	<input type="checkbox"/> Human Performance (Athletics, Other)
<input type="checkbox"/> FUDT (NIDA/SAMHSA, CAP)	<input type="checkbox"/> Other (Specify)

Acceptable Visit Period: _____ Days _____ Weeks _____ Months
(Enter the time period)
_____ Other

Restrictions/Comments:

Return Completed Forms to: Robert Middleberg, Ph.D.
National Medical Services
3701 Welsh Road
Willow Grove, PA 19090

FAX: (215) 657-2972
Phone: (215) 657-4900
e-Mail: romiddle@compuserve.com

JCETT Visiting Scientist Program Request for Laboratory Participation

Several years ago the Joint Committee on Education and Training in Toxicology (JCETT) developed a visiting scientist program. In brief, the mission of this program is to provide a forum whereby practicing forensic and clinical toxicologists can exchange ideas, technical skills and know-how through interaction with other laboratories.

An initial survey produced a list of approximately thirty laboratories willing to accept visiting scientists. As word of the program has spread, other laboratories have expressed interest in becoming facilities willing to accept visiting scientists. Therefore, on the reverse side of this letter is the necessary form to be included as a visiting scientist accepting laboratory.

As a reminder, the visiting scientist, or sponsoring home laboratory, is expected to provide the necessary funding for the visit. No finances exist through JCETT to fund such visits. The visiting scientist should inquire of a particular accepting laboratory to see if some assistance is available (housing, stipend, etc.).

Laboratories that have already agreed to participate in the program are also asked to complete the form on the reverse side since changes in the required information may have occurred.

As a reminder, the following laboratories have already agreed to participate in the program:

Laboratory Name	Contact Person	Laboratory Name	Contact Person
Alabama Reference Laboratories, Inc	Jim Taylor	Laboratory Specialists, Inc.	Pat Pizzo
Alberta Medical Examiner's Office	Dr. Graham Jones	Michigan State Police Tox. Subunit	Laureen Marinetti-Sheff
Analytotox, Inc.	Dr. Christopher Jones	Montana State DOJ For. Sci. Div.	Susan A. Rasmussen
Bexar Cty. Forensic Science Center	Dr. James Garriott	OCME For. Lab. - New York, NY	Dr. Marina Stajic
Boca Raton Community Hospital	Marilyn Rautio John Kirkhum	OCME - Tox. Div. - Oklahoma	Dr. Timothy P. Rohrig
Calif. Dept. Justice, Tox. Lab.	Keojii Ota	Royal Canadian Mounted Police Central For. Lab.	Brian Joynt
Chemistry & Drug Metabolism, ARC	Dr. Edward J. Cone	SED Medical Labs	Dr. D. Boehme
Dade County Med. Exam. Dept.-Tox. Lab	Dr. Wm. Lee Hearn	Toxicology Lab. - Med. College of Virginia	Dr. Al Poklis
Daniel YK Chan	Dr. Daniel YK Chan	Tox. & Accid. Res. Lab.	Dr. Dennis V. Canfield
Drug Conc. Lab.	Judy Store	Univ. Texas - Hermann Hosp.	Dr. Shan S. Wong
For. Tox. Lab. - Wayne Cty. M.E. Office	Dr. Bradford R. Hepler	Victorian Inst. For. Path.	Dr. Iain McIntyre
GBI-DOFS Tox. Lab.	Dr. Everett T. Solomons	Washington State Tox. Lab.	Dr. Barry Logan
Inst. Of For. Sciences Tox. Lab.	Flor R. Mattos	Wisconsin State Lab. Hygiene - Tox. Section	Dr. Patricia H. Field

A list of participating laboratories will be placed on the JCETT web page (www.mcw.edu/jcett).