

# TOX TALK

## Society of Forensic Toxicologists, Inc.

1013 THREE MILE DRIVE • GROSSE POINTE PARK • MICHIGAN 48230-1412

VOLUME 16, No. 3

SEPTEMBER 1992

PRESIDENT'S MESSAGE . . . . . JEANNE M. BENO, Ph.D.

### PRESIDENT

Jeanne M. Beno, Ph.D.  
Monroe County Medical Examiner  
435 East Henrietta Road  
Rochester, NY 14620  
(716) 274-7970  
Fax (716) 274-7979

The 1992 SOFT Annual Meeting is fast approaching. Neal Reading and his committee have put together a diverse program of workshops and platform presentations that promise both practical assistance for the day-to-day operation of a laboratory and the opportunity to participate in policy decisions that will shape the practice of Forensic Toxicology for many years to come. Most importantly, however, the SOFT Annual Meeting allows members to meet face-to-face with their colleagues to discuss common problems and their solutions. Any long-term member of SOFT will agree that the interpersonal networking that begins at SOFT meetings is the greatest benefit that membership in SOFT offers.

### VICE PRESIDENT

Alphonse Poklis, Ph.D.  
MCV Toxicology Laboratory  
Box 597  
Medical College of Virginia Station  
Richmond, VA 23298  
(804) 786-0272  
Fax (804) 786-7722

At this year's business meeting, members will be asked to vote on two important issues: compensation for officers (discussed in the June issue of ToxTalk) and the revised consensus opinion on hair analysis. If you cannot be there, you can still express yourself! Write to me or the committee chairperson prior to the meeting. SEE YOU IN CONNECTICUT!

### SECRETARY

Vina Spiehler, Ph.D.  
Diagnostic Products Corp.  
5700 West 96th Street  
Los Angeles, CA 90045  
(213) 776-0180 ext 3014  
Fax (213) 776-0204

FROM THE EDITOR'S DESK . . . . . JOSEPH R. MONFORTE, Ph.D., DABFT

Through ToxTalk we are providing more information on hair analysis - a topic to be considered at the annual meeting. Many thanks to Lee Hearn and his committee for compiling a fine summary.

### TREASURER

Mark B. Lewis, B.S.  
24 Rip Van Lane  
Ballston Spa, NY 12020  
(518) 457-1208

Thanks to Yale Caplan for assisting with the enclosed Salary Survey. It is similar to the last (1989) survey but includes more detailed information in some areas. A summary of the survey will appear in the December 1992 issue of ToxTalk.

### ADDITIONAL DIRECTORS

Robert J. Osiewicz, Ph.D.  
Ronald C. Backer, Ph.D.  
Vickie W. Watts, M.S.  
Joseph J. Saady, Ph.D.  
H. Chip Walls, B.S.  
William H. Anderson, Ph.D.,  
ex officio

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\* S.O.F.T. ANNUAL MEETING: OCTOBER 13 - 17 CONNECTICUT \*  
\* \* \* \* \*  
\* Dates to remember - 9/21 Hotel Registration (for discount) \*  
\* 10/02 Meeting Registration (no late fee) \*  
\* Host: Dr. C. Neal Reading (203-649-4896) \*  
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### ToxTalk EDITOR

Joseph R. Monforte, Ph.D.

### IN THIS ISSUE

### EXECUTIVE COORDINATOR

Patricia Mohn-Monforte  
(313) 884-4718

REGULAR FEATURES - Journal Club - Elmer Gordon Open Forum - Communique  
- Career Opportunities - Editor's Desk - Treasury Notes  
OF SPECIAL INTEREST - Report of SOFT Advisory Committee on Hair Analysis  
for Drugs of Abuse (supplement)  
INSERTS - SOFT 1992 Meeting Information & Registration  
- 1993 SOFT Dues Notice - Salary Survey Form

### S.O.F.T. ANNUAL MEETING

October 12-17, 1992  
Connecticut

C. Neal Reading, Ph.D.  
S.O.F.T. Meeting Host  
P. O. Box 1689  
Hartford, CT 06144  
(203) 566-4258

ToxTalk is mailed quarterly to current members of the Society of Forensic Toxicologists, Inc. Non-members may now receive ToxTalk for \$15 per calendar year. Mail a check (payable to S.O.F.T.) to ToxTalk at the address above. All members and others are invited to contribute to ToxTalk. Contact the Administrative Office for membership applications.

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

NEXT DEADLINE --  
NOVEMBER 1, 1992

## NOMINATING COMMITTEE PRESENTS 1993 SLATE

The SOFT Nominating Committee, consisting of William Anderson (chairman), Paula Childs, and Norman Wade, proposes for your consideration the following nominees as 1993 officers and directors.

**PRESIDENT: ALPHONSE POKLIS, Ph.D., DABFT**

Dr. Poklis graduated from the University of Maryland in 1974 with a Ph.D. in Toxicology. After 10 years at the St. Louis University/Medical Examiner's Office, he joined the Medical College of Virginia in 1987 as Associate Professor, Dept. of Pathology, and Affiliate Professor, Dept of Pharmacology-Toxicology, as well as Director of the Toxicology Laboratories for the MCV Hospital. Dr. Poklis has served as a member of the SOFT Guidelines Committee, member of the Board of Directors, 1984 meeting host, Secretary, and, currently, Vice President.

**VICE PRESIDENT: MARK LEWIS, B.S., DABFT**

Mr. Lewis is a Charter member of SOFT. He received a B.S. in Medical Technology from the University of Buffalo and trained in forensic toxicology at the Erie County Medical Examiner's Office, Buffalo, NY. Since 1973, Mr. Lewis has been the Chief Toxicologist for the New York State Police Laboratory in Albany, NY. As an active member of SOFT, his service includes the Membership Drive Committee, Membership Committee, Meeting Site Selection Committee (Chairman), a member of the Board of Directors from 1986-89 and Treasurer for the past two terms (4 years).

**TREASURER: JOSEPH J. SAADY, Ph.D., DABFT**

After receiving his Ph.D. in Pathology/Toxicology from the Virginia Commonwealth University, Dr. Saady joined the Medical College of Virginia where he is currently Associate Director of Toxicology and Director of the Forensic Laboratory. A current member of the Board of Directors, Dr. Saady has been assigned the task of reviewing membership criteria. He has participated in numerous SOFT meetings and contributed many technical papers.

**ADDITIONAL DIRECTORS: (two 3-year terms, one 2-year term)**

**BARRY S. LEVINE, Ph.D., DABFT:** Dr. Levine received his Ph.D. from Virginia Commonwealth University/Medical College of Virginia in 1982. He is currently Chief Toxicologist in the Office of the Chief Medical Examiner, State of Maryland. He has also served as Chief, Forensic Toxicology Laboratory Division of the Armed Forces Institute of Pathology. Dr. Levine has presented numerous publications at SOFT meetings and serves on the Educational Research Awards Committee (1993 chairman). While a student at MCV, Dr. Levine was a recipient of the SOFT Educational Research Award.

**WILLIAM LEE HEARN, Ph.D.:** Dr. Hearn received his Ph.D. from the University of Miami in 1979. Since 1986, he has been the Laboratory Director of the Dade County Medical Examiner Department (Miami). Previously, he worked in independent laboratories performing a variety of forensic analyses. Dr. Hearn has presented numerous papers at SOFT meetings, served as chairman of the Publications Committee (Editor, 1991 SOFT Special Edition of JAT), and is currently the chairman of the Advisory Committee on Hair Analysis.

In the event of Dr. Saady's election as Treasurer, the Nominating Committee proposes that the remainder of his term (2 years) be completed by:

**RONALD C. BACKER, Ph.D., DABFT:** Dr. Backer received his Ph.D. from the University of Arizona in 1970 and is currently the Laboratory Director of Harrison and Associates Forensic Labs. Previously, he served as the Director of the toxicology laboratory of the Medical Examiner's Office for the State of New Mexico and State of West Virginia. Dr. Backer is currently completing a one-year term on the Board of Directors.

**(REMEMBER: ONLY FULL MEMBERS MAY VOTE AT THE ANNUAL BUSINESS MEETING)**

## TREASURY NOTES

**1993 DUES:** A 1993 dues notice is included with the ToxTalk mailing. The same notice will be included with the December issue. Since ToxTalk utilizes bulk mail, all pieces must be exactly the same. So if you pay your 1993 dues before the next ToxTalk arrives, you may ignore the duplicate form. Fair warning: All dues received after January 1, 1993, will be subject to the late fee so don't wait, pay your dues now!

**1992 DUES:** Persons who have not paid their 1992 SOFT dues will be officially removed from SOFT on January 2, 1993. (SOFT Members - If you received your own copy of this ToxTalk, you paid your 1992 dues.) Final notices for 1992 dues have been mailed.

**CORRECTION:** Mark Lewis notes an error in the "Summary of Cash Flow Report" as it appeared in the March 1992 issue. It should read "1/1/91 through 12/31/91," not "1/1/92."

**ATTENTION GRADUATE STUDENTS AND ADVISORS -- E.R.A. APPLICATIONS SOUGHT:** Treasurer Lewis reports the ERA fund is healthy. Contact the SOFT Administrative Office for application information. <>

### D.U.I.D. COMMITTEE REPORT

Approximately twenty surveys have been received to date. Great informational comments are contributing significantly to the impact of the survey.

Discussions with Vickie Watts, chair of the AAFS DUID Committee, suggest the advisability of an interim meeting of that committee (in Hartford), which will probably result in a joint SOFT/AAFS committee meeting since most participants serve on both the SOFT and AAFS committees. We will discuss the integration of the survey results with the AAFS database which should provide adequate knowledge for the practicing toxicologist on the analyses and interpretation of the DUID case.

For further information, contact Chip Walls at 315-435-3802.<>

DEADLINE: SEPT. 15th  
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ONLY YOU CAN MAKE THIS PROJECT WORK BY COMPLETING  
AND RETURNING THE SURVEY

### COMMUNIQUE

from Patricia Mohn-Monforte, S.O.F.t. Executive Coordinator  
1013 Three Mile Drive, Grosse Pointe Park, MI 48230-1412 (Tel/FAX: 313-884-4718)

**CONSIDERING RETIREMENT STATUS for 1993?** Per SOFT bylaws, only FULL members may apply for "retired" status and must be approved by the Board. A simple form is available to make this easy for you, but all requests should be sent to the Administrative Office before October 1st to allow time for processing. Subsequent requests will be subject to 1993 dues. Contact Pat (Phone/FAX 313-884-4718).

**AIR FARE SETTLEMENT:** If you attended a SOFT or AAFS meeting since 1988, chances are you will be eligible to receive some sort of rebate as part of class action litigation involving most major airlines and specific hub airports (including L.A., Chicago, Cincinnati, and Philadelphia) and passengers who flew between 1/1/88 and 6/30/92. Contact your travel agent or write to Airline Anti-Trust Litigation, Box 267, Pennsauken, NJ 08110 for necessary claim forms.

**TEMPORARY S.O.F.T. CONTACT:** As you know, the SOFT Administrative Office will be relocating to Arizona some time in 1993. More specific information will be provided when it is available. If you cannot locate SOFT, I have arranged a contact that will receive and forward SOFT mail: SOFT Temporary Contact, 8503 North 104th Avenue, Peoria, Az 85345.

**MEMBER FILES:** A great deal of effort has been spent developing a file for each member. This will reduce material accumulation with no means of reasonable retrieval.

**ADDRESS CHANGES** should be sent or FAXed to the SOFT Administrative Office.

# JOURNAL CLUB

**JOURNAL CLUB**

Submitted by: H. Chip Walls, Toxicology Lab, Rm 706, 600 South State St., Syracuse, NY 13202 (315-435-3802)

1. **A COHORT STUDY OF THE IMPACT OF PERINATAL DRUG USE ON PREMATUREITY IN AN INNER-CITY POPULATION.** Feldman et al. American Journal of Public Health. 82(5):726-728, 1992
2. **A STUDY OF HOUSE FIRE VICTIMS: AGE, CARBOXYHEMOGLOBIN, HYDROGEN CYANIDE, AND HEMOLYSIS.** Yoshida et al. Forensic Science International 52:13-20, 1991
3. **A LONGITUDINAL ANALYSIS OF FACTORS ASSOCIATED WITH MORBIDITY IN COCAINE ABUSERS WITH PSYCHIATRIC ILLNESS.** Stanislav et al. Pharmacotherapy 12(2):114-118, 1992
4. **ABNORMAL BLOOD-ETHANOL PROFILE ASSOCIATED WITH STRESS.** Hahn, Jones, and Norberg. Letter to the Editor Clin Chem 38(6):1193-94, 1992
5. **ACUTE CARBON MONOXIDE POISONING: ANIMAL MODELS: A REVIEW.** Penney. Toxicology 62:123-160, 1990
6. **ACUTE TOXIC INHALATIONS.** Rorison and McPherson. Emergency Medicine Clinics of North America 10(2):409-431, 1992
7. **ACUTE AND CHRONIC ETHANOL TOLERANCE: OPERANT BEHAVIOUR IN NAIVE AND ETHANOL TOLERANT RATS.** Hiltunen and Järbe. Psychopharmacology 107:511-516, 1992
8. **AMERICAN PSYCHIATRIC PRACTICE VOLUME 1.** Stoudemire and Fogel (Eds.). American Psychiatric Press, Inc.
9. **AMITRIPTYLINE AND AMITRIPTYLINE METABOLITES IN BLOOD AND CEREBROSPINAL FLUID FOLLOWING HUMAN OVERDOSE.** Hultén et al. Clinical Toxicology 30(2):181-201, 1992
10. **ANALYTICAL FORENSIC TOXICOLOGY.** Osselton. Arch. Toxicol. Suppl. 15(MED TOXICOL):259-67, 1992
11. **ANALYTICAL METHODS VALIDATION: BIOAVAILABILITY, BIOEQUIVALENCE, AND PHARMACOKINETIC STUDIES.** Shah et al. Journal of Pharmaceutical Sciences 81(3):309-312, 1992
12. **APPETITE SUPPRESSANTS A REVIEW.** Silverstone. Drugs 43(6): 820-836, 1992.
13. **AUTOMATED SCREENING PROCEDURE USING GAS CHROMATOGRAPHY-MASS SPECTROMETRY FOR IDENTIFICATION OF DRUGS AFTER THEIR EXTRACTION FROM BIOLOGICAL SAMPLES.** Neill et al. Journal of Chromatography 565:207-224, 1991
14. **CLINICAL THERAPEUTIC CONFERENCE.** Somberg and Gomez (Eds.) J Clin Pharmacol 32:511-519, 1992
15. **CLINICAL THERAPEUTIC CONFERENCE.** Somberg and Gomez (Eds.). J Clin Pharmacol 32:118-123, 1992
16. **CLINICAL PHARMACOKINETICS OF PROPAFENONE.** Hii et al. Clin. Pharmacokinet. 21(1):1-10, 1991
17. **CLOZAPINE.** Jann. Pharmacotherapy 11(3):179-195, 1991
18. **CONSIDERATION OF THE TARGET ORGAN TOXICITY OF TRICHLOROETHYLENE IN TERMS OF METABOLITE TOXICITY AND PHARMACOKINETICS.** Davidson and Beliles. Drug Metabolism Reviews 23(5&6):493-599, 1991
19. **COST EFFECTIVE EMIT ASSAYS, FOR DRUGS OF ABUSE IN URINE, USING THE EPPENDORF EPOS ANALYSER.** Gooch, Caldwell, et al. Journal of Immunoassay 13(1):85-96, 1992
20. **DETECTION OF BENZODIAZEPINES IN HUMAN HAIR BY RADIOIMMUNOASSAY.** Sramek et al. The Annals of Pharmacotherapy 26:469-72, 1992
21. **DETECTION OF ANTICONVULSANTS AND THEIR METABOLITES IN URINE WITHIN A 'GENERAL UNKNOWN' ANALYSIS PROCEDURE USING COMPUTERIZED GAS CHROMATOGRAPHY-MASS SPECTROMETRY.** Maurer. Arch Toxicol 64:554-561, 1990
22. **DETERMINATION OF RING- AND N-SUBSTITUTED AMPHETAMINES AS HEPTAFLUOROBUPTYL DERIVATIVES.** Lillsunde and Korte. Forensic Science International 49:205-213, 1991
23. **DEVELOPMENT OF A THERAPEUTIC PROCEDURE FOR BISMUTH INTOXICATION WITH CHELATING AGENTS.** Slikkerveer et al. J Lab Clin Med 119:529-37, 1992
24. **DOES COCAINE CAUSE CORONARY VASOSPASM IN CHRONIC COCAINE ABUSERS? A STUDY OF CORONARY AND SYSTEM HEMODYNAMICS.** Majid, Cheirif, et al. Clinical Cardiology 15:253-258, 1992
25. **EFFECT OF ETHANOL ON FATAL CARBON MONOXIDE POISONING IN AWAKE RATS.** Tomita et al. Toxicology Letters 50:151-157, 1990
26. **EFFECTS OF ALCOHOL INTOXICATION ON THE INITIAL ASSESSMENT OF TRAUMA PATIENTS.** Jurkovich et al. Ann Emerg Med 21:704-708, 1992
27. **EFFECTS OF ETHANOL IN ACUTE CARBON MONOXIDE POISONING.** Sharma and Penney. Toxicology 62:213-226, 1990
28. **ELEVATED BLOOD CYANIDE CONCENTRATIONS IN VICTIMS OF SMOKE INHALATION.** Baud et al. N Engl J Med 325:1761-6, 1991
29. **FALLING OFF THE STRAIGHT LINE: SOME HAZARDS OF CORRELATION AND REGRESSION.** An editorial. J Clin Psychopharmacol. 12(2):75-78, 1992
30. **FATAL SELF-INDUCED HYPERINSULINAEMIA A DELAYED POST-MORTEM ANALYTICAL DETECTION.** Patel. Med Sci Law 32(2):151-159, 1992
31. **FORENSIC ANALYSIS OF TRIAZOLAM IN HUMAN TISSUES USING CAPILLARY GAS CHROMATOGRAPHY.** Kudo et al. Int J Leg Med 104:67-69, 1991
32. **FORMATION OF FORMALDEHYDE ADDUCTS FROM VARIOUS DRUGS BY USE OF METHANOL IN A TOXICOLOGICAL SCREENING PROCEDURE WITH GAS CHROMATOGRAPHY-MASS SPECTROMETRY.** Köppel. Journal of Chromatography 563:73-81, 1991.
33. **HAVE YOU EVER META-ANALYSIS YOU DIDN'T LIKE?** Goodman. Ann Int Med 114:244, 1991
34. **IDENTIFICATION AND DETERMINATION OF PROPAFENONE AND ITS PRINCIPAL METABOLITES IN HUMAN URINE USING CAPILLARY GAS CHROMATOGRAPHY/MASS SPECTROMETRY.** Leloux and Maes. Biological Mass Spectrometry 20:382-388, 1991
35. **IMPACT OF COURT MONITORING ON THE ADJUDICATION OF DRIVING WHILE INTOXICATED (DWI).** Shinar. Accident Analysis and Prevention 24(2):167-179, 1992
36. **INFLUENCE OF INTOXICATED PRACTICE ON THE DEVELOPMENT OF ACUTE TOLERANCE TO THE MOTOR IMPAIRMENT EFFECT OF ETHANOL.** Lê and Kalant. Psychopharmacology 106:52-576, 1992
37. **INTRAINDIVIDUAL VARIABILITY IN NIFEDIPINE PHARMACOKINETICS AND EFFECTS IN HEALTHY SUBJECTS.** Soons et al. J Clin Pharmacol 32:324-331, 1992
38. **MANAGEMENT OF CHILDHOOD LEAD POISONING: A SURVEY.** Glotzer and Bauchner. Pediatrics 89(4):614-618, 1992
39. **MANDATORY DRUG TESTING: BOON FOR PUBLIC SAFETY OR LAUNCH OF A WITCH HUNT?** Sutherland. Canadian Medical Association Journal 146(7):1215-1220, 1992

**Society of Forensic Toxicologist  
21st Annual Business Meeting  
Montreal, Quebec, Canada  
September 26, 1991**

President, Dr. William Anderson, called the meeting to order at 3:20 p.m. EST, and requested that the Secretary, Dr. Alphonse Poklis, determine if a quorum was established by a show of hands.

The president asked that the agenda be approved as published. There was no opposition. He then asked that the minutes of the 1990 business meeting be approved as circulated and published in TOXTALK. The minutes were approved.

**President's Report: Dr. William Anderson**

President Anderson reported on the Board of Directors' meeting of September 24, 1991. The society contacted the chairman of the toxicology section of the American Academy of Forensic Sciences (AAFS), Dr. Graham Jones, concerning the division of funds obtained from the sale of the "Forensic Toxicology Laboratory Guidelines". It was agreed the profit will be used to support the guidelines committee. A letter was received from the U.S.S.R. Center for Joint Projects inquiring as to the interest of SOFT in sending a delegation to Russia. The Board decided not to take any action as a society, but the letter will be published in TOXTALK so that individuals may respond. The society received a request from John Marshall Law School for a membership list to publish for attorneys seeking expert witnesses. The board decided it is not the policy of the society to supply membership listings for this purpose. The society also received a request from a group of attorneys that SOFT review a case and provide expert opinions. The Board rejected this offer. It is the policy of SOFT not to provide such services as a society.

At the request of the secretary and treasurer, the Board decided that membership applications and fees be sent directly to the executive coordinator. The Board approved the purchase of a printer for the executive coordinator.

Dr. Anderson reported he had formed a committee, chaired by Dr. Robert Bost, which will develop possible training courses to be sponsored by SOFT. He has also appointed a committee to consider the use of society funds to defray the expenses of society officers attending meetings.

**Treasurer's Report: Mark Lewis**

Treasurer Lewis reported that from January 1 to December 31, 1990 total income was \$46,253, expenses \$37,444 leaving \$19,519 in the checking account balance, and the E.R.A.CD accounts were \$43,051. From January 1st to September 20th, 1991 society income was \$23,370 and expenses of \$10,937. The budget was for expenses of \$13,950; at present the society is \$3,000 under budget. The present checking account balance is \$26,090 and E.R.A. accounts balance is \$45,133. Dues should be sent to the executive coordinator. Dr. Pat Fields raised an objection to the accessing of a late fee on dues prior to year which the dues covers. Discussion on this topic was tabled.

**Secretary's Report: Dr. Alphonse Poklis**

Secretary Poklis reported that at present the society has 366 members, 35 charter members and 3 retired charter members. Of these, 235 are full, 83 associate and 10 student members. During 1991 the society accepted as new members, 39 full, 9 associates and 5 student members. During 1991, 24 members were dropped from the roll for non-payment of dues for three consecutive years. Three members were promoted. Presently 15 new applications are being processed. A directory was not published due to difficulty in determining who was a member. This matter has now been resolved. Members were reminded to notify the executive coordinator of any changes of address. Application fees

have increased from \$5.00 to \$10.00. Dr. Poklis thanked Treasurer Lewis and Executive Coordinator Pat Mohn-Monforte for their help in resolving membership problems.

### **Vice President's Report: Dr. Jeanne M. Beno**

Vice President Beno called for the following committee reports: Budget, Finance and Audit Committee Chairman, Dr. James Valentour, reported that after reviewing all Treasurer Lewis' records including 1990 IRS 990 form, the committee found all financial transactions and records in proper order. They commended Treasurer Lewis for his diligence and attention to detail. The report was accepted.

Meeting Resource Committee Chairman, Dr. Horton McCurdy, reported the 1992 meeting will be in Hartford, CT from October 12th to 17th at the Raddison Convention Center. The 1993 meeting combined with CAT will be in Pheonix AZ hosted by Vickie Watts. The 1994 meeting will be in Tampa, FL around November 1st hosted by Dr. McCurdy and Betty Bucan. This will be a combined meeting with TIAFT. The 1995, Silver Anniversary meeting will be held in Baltimore, MD hosted by Dr. Yale Caplan. The report was accepted.

Publications Committee Chairman, Dr. Lee Hearn, reported the SOFT special issue call for papers generated 41 abstracts of which 28 were followed up with manuscripts. Of these 24 were accepted; 15 to be published in the SOFT Special Issue and the remaining 9 in the January 1992 issue of JAT. Forty reviewers evaluated the manuscripts. The report was accepted.

TOXTALK Chairman, Dr. Joseph Monforte, thanked his co-editors, Dr. Chip Walls, Dr. Brad Hepler and Vickie Watts. He reported that the newsletter is focusing on special topics and attempting to expand the scientific content. He hopes that sixteen pages of material can be generated for each issue.

Education Research Awards Chairman, Dr. Robert Bost, reported that only one application has been received, but no action has been taken. The report was accepted.

Grants and Endowments Committee Chairman, Richard Prouty, reported the committee was unsuccessful in soliciting funds from industry for the ERA. The reported was accepted.

The By-Laws Committee report of Dr. Kurt Dubowski was read by Vice President Beno. The committee has not been instructed to recommend new additions, nor has it found a need to change the present by-laws. The report was accepted.

DUID Committee Chairman, Dr. Chip Walls, reported a questionnaire had been prepared concerning analytical techniques and court experiences for those working DUID cases. The results will be made available to the membership. The report was accepted.

Health and Safety Committee Chairman, Dr. Dan McCoy, reported that a review of a recent publication, "Laboratory Safety and Practice" is being prepared for distribution to the membership. The report was accepted.

The Laboratory Guidelines Committee report of Dr. Michael Peat was read by Vice President Beno. The committee is presently working on a Check List revision. The structure of committee will consist of nine members who are members of SOFT and AAFS. The committee is exploring the development of a voluntary accreditation program including who should be the accreditation body, what are the criteria of accreditation, and what would be the administrative protocol. Committee encourages feedback on the check list from members. The report was accepted.

Legislation, Research and Reporting Chairman, Dr. Yale Caplan, reported that it is impractical for the society to monitor proposed legislation in a meaningful way on a long range basis. The report was accepted.

Nominating Committee Chairman, Dr. Robert Bost, reported that the committee recommended the following nominations: President, Dr. Jeanne Beno; Vice President, Dr. Alphonse Poklis; Secretary, Dr. Vina Spiehler and Directors, Drs Joseph Saady and Chip Walls. The report was accepted. This completed the Vice President's report.

**Old Business**

President Anderson in accordance with the directions of membership at the 1990 business meeting called for discussion on the SOFT position on hair as a specimen for drug testing. Dr. Pat Fields moved that the society reaffirm the present position. Michael McGhee moved that the motion be amended such that at the next annual business meeting the position on hair be re-evaluated. Both the motion and admendment passed. Dr. Caplan moved that a committee be appointed by the President to review the "hair" position. The motion passed. Dr. Tully Speaker suggested that the "hair" position committee report be published in TOXTALK in advance of the annual meeting. Dr. Lee Hearn asked if members had any specific knowledge of the impact of CLEA88 on forensic toxicology laboratories. Dr. Bost reported in his investigations of the issue, no specific information is available from the federal government at this time. Dr. Donna Bush informed the members that NIDA accredited laboratories are exempt under CLEA88.

**New Business**

President Anderson announced that Dr. Michael Peat was receiving an Award of Appreciation from the society for his outstanding efforts in chairing the Guideline Committee. Members of the committee were asked to stand and were acknowledged by the membership of the society. Retiring Board of Director members Dr. Thomas Manning and Bill Robinson received an Award of Appreciation for their service to the society. Past President, Dr. Bost, presented President Anderson an Award of Appreciation for his service to the society. Bill Robinson then explained the complexities of the Canadian tax system and the "value added tax". President Anderson informed Dick Prouty and society members that there was not a value added rebate for liquor purchases.

**Nominations and Election of Officers**

President Anderson called for nominations from the floor for the offices of President, Vice-President, Secretary, and Board of Directors. None were forthcoming. A motion was made to unanimously accept by acclamation the candidates for office recommended by the Nominating Commitee. The motion was seconded and unanimously accepted. Dr. Ronald Backer was then nominated to fill Dr. Spiehler's term of one year left on the Board of Directors. He was unanimously accepted. Congratulations were extended to the new officers.

**Announcements**

Vickie Watts invited all members to attend the AAFS meeting in New Orleans, LA. She described the program and distributed copies of the workshops program.

**Adjournment**

Hearing no other business, President Anderson adjourned the meeting at 4:20 p.m. EST.

Alphonse Poklis, Ph.D.  
Secretary, August 16, 1992

# SOFT '92 MEETING "AT A GLANCE"

- TUES 10/13: "Alcohol Testing in the Transportation Workplace" seminar (8 am - 5 pm)  
SOFT Board Meeting (6:30 pm)
- WED 10/14: "The PC in the Toxicology Lab" workshop (8 am to 5 pm)  
"NIDA Certification Inspections" workshop (8 am to noon)  
"Training and Professional Development in Toxicology" workshop (1 to 5 pm)  
Welcome Reception (6 to 7 pm)
- THUR 10/15: Exhibits open (8 am)  
Platform sessions 1-4 (8:30 am to 5 pm)  
Poster presentations (opens noon)  
Dinner and Murder on the River - optional (6 to 10 pm)  
President's Informal Exchange (10 pm)
- FRI 10/16: Platform sessions 5 - 6 (8:30 to noon)  
Awards Luncheon (noon to 2 pm)  
SOFT Annual Business Meeting (2:30 to 4:30)
- SAT 10/17: Optional - deep sea fishing (5 am to 6 pm), world class golf (8 am to 1 pm)

## ELMER GORDON OPEN FORUM

AN OPPORTUNITY FOR INFORMAL DIALOGUE

Congratulations DOCTOR MARILYN HEUSTIS who recently completed her Ph.D.  
CHARLES WINEK has been re-elected president of the Academy of Toxicological Sciences. <>

## CAREER OPPORTUNITIES

Positions available are listed for the consideration of SOFT members. There is no fee for this service. No information has been received for this issue. Persons seeking employment are encouraged to attend the SOFT Annual Meeting where job announcements will be posted. <>

## PROFESSIONAL CALENDAR

CALIFORNIA ASSOCIATION OF TOXICOLOGISTS quarterly meetings and workshops. For information contact Susan Knight, CAT V.P., 18457 Santa Carlotta, Fountain Valley, CA 92708 (phone/fax: 714-965-9854) NOV 6-7 QC Workshop, Garden Grove; FEB 5, 1993 Forensic Toxicology Workshop, Sacramento; May 7 (Los Angeles) and Aug. 6 (N. Calif.) to be announced; Oct. 11-16 joint meeting with SOFT, Phoenix, AZ.

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\* S.O.F.T. ANNUAL MEETING - OCTOBER 12-17, 1992 - HARTFORD, CONNECTICUT: For \*  
\* further information, contact C. Neal Reading, Ph.D., 3 Tanner Street, Manchester, \*  
\* CT 06040 (Phone 203-649-4896) \*  
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"FOCUS ON FORENSICS" (including the Kennedy assassination) - A.A.C.C. Texas Section Meeting, Nov. 12-13, Dallas. Contact: Phil Mendershausen (214-376-5451 ext 5579) or Shan Wong (713-792-5079).

LEGALMEDSCI '92 - 4th INDO-PACIFIC CONGRESS ON LEGAL MEDICINE AND FORENSIC SCIENCES, Nov. 2-6, Bangkok, Thailand. Contact: Institute of Forensic Medicine, Surgeon-General Office, The Royal Thai Police Dept, Henry Dunant Road, Bangkok 10330, Thailand (air mail).

"FORENSIC ENTOMOLOGY SEMINAR" - December 9, Baltimore, MD. C.E. seminar sponsored by the Entomological Society of America. Contact Betty Cox, 232 E. University Pkwy, Baltimore, MD 21218 (Phone/FAX 410-243-5943)

A.A.F.S. ANNUAL MEETING - FEBRUARY 15-20, 1993 - BOSTON

Future SOFT meeting sites: 10/11-10/16/93 - SOFT/CAT Phoenix (V. Watts)  
10/31-11/05/94 - SOFT/TIAFT Tampa (H. McCurdy)  
1995 - 25th Anniversary, Baltimore (Y. Caplan)



1993 DUES NOTICE

IMPORTANT INSTRUCTIONS: This notice will be included in the September and December issues of ToxTalk to all persons on the ToxTalk mailing list.

If you have already paid your 1993 dues, disregard this notice.

REMEMBER: The SOFT Administrative Office will be relocating in 1993. Early dues payment will help keep our records and mailing list accurate.

MEMBERSHIP PERIOD: January 1, 1993, to December 31, 1993 DATE DUE: JANUARY 1, 1993

NAME (last) \_\_\_\_\_ (first) \_\_\_\_\_ (mdl) \_\_\_\_\_
Degrees, \_\_\_\_\_ This is how it will appear
etc. \_\_\_\_\_ Title \_\_\_\_\_ in the directory

MAILING INFORMATION - Only this address will be published in the next Directory:

Company/Agency \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Country \_\_\_\_\_ If you DO NOT want information published check here
Do not publish: Mailing address ( )
Daytime numbers ( )

DAYTIME Phone ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_

ALTERNATE contact information (will not be published, for SOFT office reference only)

Address \_\_\_\_\_

\_\_\_\_\_ Phone \_\_\_\_\_ FAX \_\_\_\_\_

\$ \_\_\_\_\_ DUES: Full \$35 Associate \$35 Retired \$0 Student \$15 \_\_\_\_\_ Institution

\$ \_\_\_\_\_ Educational Research Award fund contribution (voluntary)

\$ \_\_\_\_\_ + \$7.00 LATE FEE (applicable after January 1, 1993)

\$ \_\_\_\_\_ TOTAL (No purchase orders please; U.S. funds only, payable to SOFT, Inc.)

MAILING INSTRUCTIONS: Until May 1, 1993:

SOFT Administrative Office
1013 Three Mile Drive
Grosse Pointe Park, MI 48230-1412
Tel/FAX: 313-884-4718

After May 1, 1993:

SOFT Temporary Contact
8503 North 104th Avenue
Peoria, AZ 85345

Do not write below:

Fed ID No. 51-0233801

Date recd \_\_\_\_\_ Ck No \_\_\_\_\_ Mbr No \_\_\_\_\_

Database run \_\_\_\_\_ To Treas \_\_\_\_\_ Confirmation mailed \_\_\_\_\_



S.O.F.T. 1992 SALARY SURVEY - SUBMIT ONE SURVEY PER LABORATORY

Due to members' requests, we are once again surveying salaries and need as wide a response as possible to make the information useful. In this survey we are looking at forensic toxicology sub-specialties as well. Realizing that titles differ among organizations, for the purpose of this survey use the job descriptions noted below ( ).

POSITION (job description/responsibilities)	Annual Salary Range	Current Annual Salary	# Years at Present Position	% of time performing:			Full- or Part-time
				Post-Mortem Tox.	Human Perform. Tox.	Wrkplace Drug Testing	
1. LABORATORY DIRECTOR (manages ALL lab services: =Tox Lab ONLY: <u>yes</u> <u>no</u> )	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
2. CHIEF TOXICOLOGIST (manages tox lab <u>only</u> )	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
3. TOXICOLOGY SUPERVISOR (daily lab operation, supv. chemists reports directly to #1 or #2)	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
4. TOXICOLOGY CERTIFYING SCIENTIST (reviews lab section data or Cert. Scientist in NIDA/CAP lab)	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
5. ANALYST (benchwork, requires some supervision)	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
***** * The identity of the * * participants and * * laboratories shall * * remain confidential * *****	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
*****	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
PLEASE RETURN BY NOV. 1st	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
*****	\$ _____ - _____	\$ _____	_____	_____ %	_____ %	_____ %	F P
6. Type of laboratory: _____ Government _____ Non-government							

To make this survey as accurate as possible, submit one detailed survey per lab. Members working at more than one lab should prepare a survey for each laboratory. Make additional copies of this survey or attach sheets as needed.

RETURN BY NOVEMBER 1, 1992 to: S.O.F.T. SALARY SURVEY, 1013 Three Mile Drive, Grosse Pointe Park, MI 48230-1412  
 =====  
 (Phone/FAX 313-884-4718)



S.O.F.T. ANNUAL MEETING

October 13 - 17, 1992



Radisson Convention  
Center  
Cromwell, Connecticut

----- PRELIMINARY PROGRAM -----

DAY	DATE	TIME	ACTIVITY
TUE.	13TH	8:00-5:00	SEMINAR- "Alcohol testing in the transportation workplace."
		6:30-9:00	SOFT Board of Directors Dinner Meeting.
WED	14TH	8:00-5:00	REGISTRATION
		8:00-5:00	WORKSHOP - "The PC in the Toxicology lab"
		8:00-12:00	WORKSHOP - "NIDA certification inspections."
		12:30-5:00	ABFT Board Meeting (Lunch)
		1:00-5:00	WORKSHOP - "Training and Professional development in Toxicology."
		6:00-7:00	WELCOMING RECEPTION

THU.	15TH	8:00-3:00	REGISTRATION
		8:00	EXHIBITS OPEN
		<u>8:30-10:20</u>	<u>PLATFORM SESSION 1</u>

"Response of the EMIT II Amphetamine/methamphetamine assay to specimens collected following use of Vicks inhalers." A. Poklis,

"Detection of Cocaine and Anhydroecgonine Methyl Ester in air and on wall surfaces by GC/MS after "crack" vaporization." David Yousefnejad.

"Toxicity from "Crack" Cocaine ingestion." Kevin S. Merigian,

"Arterial and venus blood levels of Cocaine in human subjects after smoking 'Crack'". Mary J. Hillsgrove

"Identification and quantitation of Cocaine and three metabolites in Meconium by GC/MS." N.A. Ansari.

10:20-10:40 REFRESHMENTS

10:40-12:00 PLATFORM SESSION 2

"Difluorococaine and Difluorobenzoyllecgonine as internal standards for the analysis of Cocaine and Benzoyllecgonine in biological fluids." Mahmoud A. ElSohly.

"Infrared techniques for drug analyses." Kathryn S. Kalasinsky.

"A new nitrogen phosphorus detector designed for ease of use."  
J.M. Raccio.

"Automated confirmation of drugs of abuse by GC/MS." D. Swain.

12:00-1:30 LUNCH (ON OWN)

12:00 Poster Presentation Gallery Opens

"Liquid ready-to-use homogeneous enzyme immunoassays for drugs of abuse testing." C.I. Lin.

"Data file format translations from Hewlett-Packard Chemstations: A convenient way to produce publication quality chromatograms and spectra." William D. Darwin.

"The identification and quantitation of Triamterene in blood and urine from a fatal aircraft accident." Dennis V. Canfield.

"Discrepancies in Methomyl (Lannate<sup>R</sup>) lethal blood concentrations." A. Tsatsakis.

"Application of a Kinetic EIA to the measurement of opiates in whole blood." V. Spiehler and S. El Shami.

"Alcohol-induced alterations of psycho-motor performance as measured by the simultaneous hand and foot tracking (shaft) test." J.E. Manno.

"Extraction and simultaneous elution and derivatization of Tetrahydrocannabinol (THC) prior to GC/MS analysis of urine using SPEC On-Disc<sup>R</sup>." Kent G. Johnson.

"Diazem<sup>R</sup> chromatographic packings: Utility in forensic toxicology laboratory." J.A. Patel

"Cocaine and metabolite excretion in saliva under stimulated and unstimulated conditions." Kenichi Kato.

"Method comparison of Syva EMIT II and Roche Online with RIA for drug screening." David Armbruster.

"Method comparison of EMIT 700 and EMIT II with RIA for drug screening." Robert H. Schwarzhoff.

1:30-3:00 PLATFORM SESSION 3

"Immunoassay detection of Nordiazepam, Triazolam, Lorazepam and Alprazolam in blood." D.E. Moody.

"Investigation of blood-related matrix effect: Impact on the quantitation of Tricyclic Antidepressants in whole blood." W.B. Walker.

"Predictive models for estimating time of Marijuana usage from plasma Cannabinoid levels." Marilyn A. Huestis.

"Analysis of delta-9-tetrahydrocannabinol (THC) metabolites in plasma using Gas Chromatography/ Mass Spectroscopy (GC/MS) Chemical Ionization." P.M. Kemp.

3:00-3:20 REFRESHMENTS

3:20-5:00 PLATFORM SESSION 4

"An overdose of Bron and Verapamil." Barry Levine.

"Forensic Medicine in Greece." M. Michalodimitrakis.

"Characterization of a novel stationary phase for toxicological analysis." Richard Morehead.

"Hair analyses for the detection of drugs: A committee report"

6:00-10:00 DINNER AND MURDER ON THE RIVER  
(Optional)

10:00- President's information exchange

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FRI. 16th 8:00-12:00 REGISTRATION

8:30-10:20 PLATFORM SESSION 5

"Borohydride reduction - Possible aid in Morphine identification." John Fenton.

"Immunoassay evidence for Fentanyl in hair of surgery patients." Wen-Ling Wang.

"Identification of Heroin, 6-Acetylmorphine and Morphine in post mortem urine by GC/MS." Bruce A. Goldberger.

"A simplified procedure for the determination of Free Codeine, Free Morphine, and 6-Acetylmorphine in urine." Dwain C. Fuller.

"Homicide by Morphine injection." Jeanne M. Beno.

10:20-12:00 PLATFORM SESSION 6

"Paraquat Poisonings. Never is late." M. Michalodimitrakis.

"Matrix effects in Radioimmunoassays for drugs of abuse." Sandra L. Dickerson.

"Does Nystagmus have a role in alcohol induced changes in Static Ataxia?" B.R. Manno.

"Validity testing of the Hycor Accupinch THC test." Amanda J. Jenkins.

12:00-2:00 AWARDS LUNCHEON  
2:30-4:30 ANNUAL BUSINESS MEETING

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SAT 17TH 0500-1800 DEEP SEA FISHING  
0800-1300 WORLD CLASS GOLF

----- EXHIBITORS -----

We look forward to seeing these exhibitors in Connecticut:

Abbott Diagnostics Div.	Diagnostic Reagents	Radian Corp.
Applied Separations, Inc.	Finnigan/MAT	Sigma Chemical Co.
Biochemical Diagnostics	Hewlett-Packard Co.	Syva Company
Biosite Diagnostics, Inc.	Lynn Peavey Co.	Worldwide Monitoring
Diagnostic Products Corp.	Preston Publ./JAT	Zymark Corp.

Is your company listed above? If not, contact Dr. Joel Milzoff at 203-635-2000 today.

Special thanks to program advertisers Diagnostic Products Corp., Finnigan/MAT, Sigma Chemical and Worldwide Monitoring and to Radian Corporation for contributing to the President's Hospitality Suite.

----- HOTEL -----

HOTEL RESERVATION DEADLINE 9/21/92 FOR REDUCED RATES. Call the Radisson Hotel and Conference Center Cromwell at 203-635-2000 or Radisson Worldwide at 800-333-3333. Travel directions: I-92, Exit 21 (route 372) to 100 Berlin Rd (I-91 - Route 372 intersection, NE corner). Ten minutes south of Hartford. In-room coffee makers, indoor pool, saunas and exercise equipment; free parking, scheduled airport limousine services (for a fee), nearby golf, tennis and racquetball, rooms equipped for the handicapped and for non-smokers available.

WEATHER WATCH - should be cozy sweater weather. Bring a medium weight jacket or overcoat. Remember to pack the hiking boots if you wish to trek among the fall splendor.

-----  
FOR FURTHER MEETING INFORMATION contact:

Dr. C. Neal Reading  
SOFT 1992 Meeting Host  
3 Tanner Street  
Manchester, CT 06040

Tel: 203-649-4896

FOR SOFT MEMBERSHIP INFORMATION contact:

Patricia Mohn-Monforte  
SOFT Executive Coordinator  
1013 Three Mile Drive  
Grosse Pointe Park, MI 48230

Tel/FAX: 313-884-4718



**SOCIETY OF FORENSIC TOXICOLOGISTS, INC  
1992 ANNUAL MEETING**

**OCTOBER 13-17  
RADISON CONFERENCE CENTER  
CROMWELL, CONNECTICUT**

**REGISTRATION FORM**

NAME \_\_\_\_\_ DEGREE \_\_\_\_\_  
 AGENCY/CO \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
 TELEPHONE ( ) \_\_\_\_\_ - \_\_\_\_\_ CURRENT SOFT MEMBER YES ( ) NO ( )

	SOFT MEMBER	NON- MEMBER	TOTAL ENCLOSED
<b>MEETING REGISTRATION:</b> includes Welcome Reception and Awards Luncheon: Beef( ); Fish( ); Chicken( ). Chicken served unless otherwise noted above.	\$45	\$65	\$ _____
<b>SEMINAR:</b> <i>Alcohol Testing in the</i> Tues 10/13 <i>Transportation workplace.</i>	30	40	_____
<b>WORKSHOP:</b> <i>The PC in the Toxicology Lab.</i> Wed 10/14 all day	50	60	_____
<b>WORKSHOP:</b> <i>NIDA certification inspections.</i> Wed 10/14 am	30	40	_____
<b>WORKSHOP:</b> <i>Training and professional</i> Wed 10/14 pm <i>development in Toxicology.</i>	30	40	_____
<b>STUDENT REGISTRATION:</b> includes Welcome Reception and Awards Luncheon. Make selection under Meeting Registration above.			\$20 _____
<b>EXTRA TICKETS: AWARDS LUNCHEON</b>			20 _____
<b>LATE FEE:</b> for all registration after Friday, 10/2/92			20 _____
<b>TOTAL ENCLOSED: check or money order, <u>US FUNDS ONLY</u></b>			\$ _____

All workshops have limited enrollment, are subject to cancellation due to insufficient enrollment, and require pre-registration. Meeting registration at the the door will be accepted as space allows, but materials are not guaranteed.

The hotel is the Radison Conference Center, 100 Berlin Road, Cromwell, CT. 06416, 203-635-2000, Deadline for reservations is September 21, 1992.

Send completed registration form and payment, made out to SOFT, to:

**Neal Reading  
SOFT REGISTRATION  
3 Tanner Street  
Manchester, CT. 06040 (Phone 203-649-4896)**



SOFT ANNUAL MEETING 1992  
WORKSHOPS AND SEMINAR

**SEMINAR: "Alcohol Testing in the Transportation Workplace."**

The *Omnibus Transportation Employee Testing Act of 1991* has directed the Secretary of Transportation to establish a program which conducts preemployment, reasonable suspicion, random and post accident testing of all personnel engaged in interstate commerce who are responsible for safety-sensitive functions (as determined by the Administrator) for the use in violation of Federal regulation, of alcohol or controlled substances

TUESDAY  
10/13  
8 a.m. to  
5 p.m.

Procedures for testing are to be established by Federal regulations. Once again the science of Forensic Toxicology will come under expanded regulatory supervision and it is important that SOFT take an active roll in determining how these regulations are formulated. This seminar will provide a forum for examining the issues and providing a balanced view of the possible solutions. Your attendance is important as your input could be crucial.

**WORKSHOP: "The PC in the Toxicology Laboratory."**

The personal computer has grown in power and versatility to where it now rivals and in some instances surpasses the main frame computer. This development has been coupled with an ever decreasing cost of the hardware and an increase in the versatility and ease of use of the software. This workshop will explore the options available to the Toxicology Laboratory in terms of off the shelf equipment and software which allow us to do our work faster, smarter and at less cost.

WEDNESDAY  
10/14  
8 a.m. to  
5 p.m.

**WORKSHOP: "NIDA certification inspections."**

NIDA certification has become increasingly important for many laboratories. The stringent requirements of this certification require an exact attention to detail. NIDA inspections have shown that several problems are common to many labs and that often the same or very similar mistakes are repeated. This workshop, presented by NIDA inspectors, will highlight those areas of common and repeated problems.

WEDNESDAY  
10/14  
8 a.m. to  
noon

**WORKSHOP: "Training and professional development in Toxicology."**

The *Forensic Toxicology Laboratory Guidelines* adopted by SOFT and the AAFS Toxicology Section state that the director will be responsible for both the training and documentation of training of laboratory personnel. The California Association of Toxicologists (CAT) has initiated efforts to prepare a manual that can be used in training of new entrants into our profession. Drawing on this work and adding some new perspectives, this workshop will present some concepts that need to be incorporated into a program for training new employees. Topics will include the philosophy and techniques for continuing professional development in the toxicology laboratory, components of and documentation for on the job training, sample collection, preservation and processing; mass spectrometry and problems of a medical examiner toxicology laboratory. At the conclusion of this workshop participants should have many ideas for addition to, revision of or development of a training program for use in their laboratory.

WEDNESDAY  
10/14  
1 p.m. to  
5 p.m.

RE: REPORT TO THE BOARD (for October 13, 1992, meeting)

Please complete below (or use a separate sheet containing required information) an return to me by September 15th.

NAME OF COMMITTEE/OFFICE/APPOINTMENT: TOXTALK (Quarterly newsletter)

COMMITTEE MEMBERS: Editor - Joseph R. Monforte, Ph.D., DABFT  
Editorial Staff - H. Chip Walls, Vickie Watts, Bradford Hepler  
Publication Editor - Patricia Mohn-Monforte

RESPONSIBILITY: Produce and distribute the official SOFT newsletter (March, June, September, December issues)

ACTIVITY REPORT:

Financial Profile: (subject to reconciliation with Treasurer)

	March	June	Sept	Prorated	Totals
printing	272.15	297.81	233.20		\$ 803.16
labor	432.45	357.45	454.95	36.00	1,280.85
misc.	34.42	21.75	49.95		106.12
add'l postage				271.82	271.82
	-----	-----	-----	-----	-----
Totals	\$739.02	677.01	738.10	207.82	\$2,461.95
# mailed	352	388	393		
foreign post #/\$	26/\$52	32/\$44	34/\$50		

Cost comparison: U.S. bulk v. 1st class for U.S. distribution:

Actual @ bulk rate	110.32	82.95	83.05	60.00	\$ 336.32
1st class equiv.	392.04	276.00	351.82		1,019.86

Publication Notes: We continue to depend heavily upon the editorial staff to secure material for ToxTalk. The membership does not respond to repeated calls for case reports, etc. The "Special Topics" for each issue has been well received, but, again, there has been no response for topics or materials for future issues. Suggestions would be appreciated.

ToxTalk continues to be an excellent vehicle to distribute materials to members (dues notices, meeting flyers, calls for papers, etc.).

I would like to thank Vickie Watts and Brad Hepler for their assistance and particularly recognize Chip Walls for his consistent contributions to ToxTalk.

POLICY QUESTION: The mailing labels are generated from the official SOFT database which was firmly established this year based on 1992 dues received. Question - should the March 1993 issue be distributed only to those members who paid their 1993 dues. Late dues notices would be mailed mid-January.

Next deadline: NOVEMBER 1st (for projected 11/13/92 printing)

SUBMITTED BY Joseph R. Monforte, Ph.D., ToxTalk Editor

Date 9/15/92



M E M O R A N D U M

DATE: August 31, 1992  
TO: Editor Monforte  
FROM: Patricia Mohn-Monforte, ToxTalk, Publications Editor  
RE: SEPTEMBER 1992 TOXTALK - PRODUCTION REPORT

393 copies of the MARCH 1992 issue of TOXTALK were distributed 8/26/92

BULK RATE: 359 U.S. (members & applicants, comp. (AAFS)  
4 subscriptions  
@ .20 bulk stamps ea. +11.85 = \$83.05  
1st class would have cost \$351.82

FIRST CLASS: 27 Canada @ \$1.09 ea (26 mbrs, 1 comp) = \$29.43  
(pre-purchased 7 Other @ \$2.90 ea (5 mbrs/apps, 1 comp,  
stamps) 1 subscription) = \$20.30

393 TOTAL DISTRIBUTED - (last issue, 388)

OTHER EXPENSES:

\$233.20 printing (paid directly to printer), includes Salary Survey  
454.95 publication editor fees  
49.95 misc. + add'l bulk postage charge (\$11.85)

\$738.10 Total

COMMENTS:

A check for \$150 was received from Treasurer Lewis and used to purchase postage stamps. These are used for foreign and other ToxTalk related first-class mailings. The cost of 34 foreign mailings equalled approximately \$50, compared to approximately \$100 for 359 US bulk mailings (including \$15 permit prorated). This means a third of our postage expense is for foreign mailings.

This issue was mailed to members and applicants since it included the Preliminary Meeting Program and registration form. The required 1993 Nominating Committee slate and Minutes of the 1991 Annual Meeting were included as well as regular features. Inserted were the 1992 Salary Survey, the report of the Hair Analysis Committee which is to be discussed at the Annual Meeting, and the 1993 dues notice.

This issue was prepared in a bit of a rush at the end. Seems nobody was able to submit required materials by the deadline - it's a busy time of year! Fortunately, due to a great relationship with the printer, all members should have this copy one month before the meeting as required by the bylaws.

c: President Beno, Treasurer Lewis, VP Poklis, Secretary Spiehler





# Society of Forensic Toxicologists, Inc.

## REPORT OF SOFT ADVISORY COMMITTEE ON HAIR ANALYSIS FOR DRUGS OF ABUSE

August 11, 1992

Submitted by W. Lee Hearn, Ph.D.  
Dade County Medical Examiner Department  
Number One on Bob Hope Road  
Miami, FL 33136-1133

The committee consists of the following SOFT members:

W. Lee Hearn, Ph.D., Chairman  
Brian Donnelly, Ph.D.  
Marilyn Huestis, Ph.D.  
Bruce Goldberger, M.S.  
Jane Speaker, Ph.D.

The committee met during the American Academy of Forensic Sciences meeting in February, 1992 and agreed to re-examine the points raised by the original "SOFT Consensus Opinion Summarizing the Current Applicability of Hair Analysis to Testing for Drugs of Abuse" adopted by the membership at the SOFT Annual Business Meeting in 1990. After reviewing the current literature on hair analysis, the committee recommends revision of SOFT's consensus opinion. The text of the recommended revised Consensus Opinion is attached along with a discussion of the committee's rationale for the changes.

Please review the attached documents and bring them to the SOFT meeting in October. We will have an opportunity to discuss the committee's recommendations prior to the Annual Business Meeting. We have also prepared a supplemental bibliography on Hair Analysis for drugs so that SOFT members can remain informed on this rapidly changing field.

To be discussed at the 1992 Annual Meeting

October 13 - 17 Cromwell (Hartford), CT

Refer to the meeting program for specific time and date





# Society of Forensic Toxicologists, Inc

## REVISED CONSENSUS OPINION ON APPLICABILITY OF HAIR ANALYSIS FOR DRUGS OF ABUSE

Prepared by the SOFT Advisory Committee August 11, 1992

1. The use of hair analysis for employee and pre-employment drug testing is premature and cannot be supported by the current information on hair analysis for drugs of abuse. Critical questions remain to be answered before the results can be accurately interpreted.
2. Hair is a useful specimen in forensic investigations when the data are supported by other competent evidence of drug use and when assays are performed under generally accepted guidelines for forensic drug testing.
3. Before a laboratory reports results of hair analysis for drugs in any forensic context, its methods must be fully validated. Assay characterization including assessment of accuracy, precision, sensitivity and specificity must be documented. All details of procedures used for the analysis of forensic specimens and all data that serve as the basis of a positive finding as well as related quality control data must be available for peer review. This information must be available before hair analysis can stand alone for drug abuse testing.
4. The reporting of a positive result based upon a single or replicate immunoassay is not acceptable in situations where any adverse action is reasonably anticipated. Adverse consequences should not be imposed upon an individual based solely upon unconfirmed immunoassay results obtained from the analysis of hair as well as any other biological specimen. Such adverse consequences include, but may not be limited to, denial or termination of employment, denial of insurance coverage or benefits, loss of freedom, or denial of child custody or visitation rights. In clinical situations, a presumptive positive may be reported, as long as the report indicates that the result was not confirmed. All positive presumptive tests having any forensic implications must be confirmed by a second independent test prior to reporting a final result. Currently, GC/MS and MS/MS are the only technologies offering sufficient sensitivity and specificity for use in confirming presumptive positive hair analysis results.

(continued on Supplement Page 3)

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5. Before hair analysis is acceptable for workplace drug testing, important questions remain to be answered. Among these are:
  - a. How is incorporation, retention and analytical detection of drugs in hair biased by race, age, sex, or other individual differences?
  - b. How is retention and detection of drugs in hair affected by cosmetic treatments or by intentional efforts to avoid detection?
  - c. To what extent is an externally applied drug from environmental exposure retained in hair, and what is the effect on externally applied drugs of hygienic washing practices and cosmetic treatments?
  - d. What is the effect of various laboratory hair pretreatment procedures in removing externally applied drug or internally incorporated/bound drug? Are washing procedures effective in distinguishing between environmental contamination and internal incorporation of drugs?

CONCLUSION:

Some unanswered questions indicating important deficiencies in our present knowledge of the analysis of hair are delineated above. The committee concluded that, because of these deficiencies, hair analysis alone is not a sufficient technology for workplace drug testing at this time.

N.B. This document should be reviewed in its entirety; no single item should be taken out of context.

N.B. This summary document was prepared by the SOFT Advisory Committee on Analysis of Hair for Drugs of Abuse. It does not represent an official position statement endorsed by the Society of Forensic Toxicologists, Inc., at this time.

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## BASIS OF THE COMMITTEE'S RECOMMENDATIONS

The question of forensic acceptability of hair testing for drugs of abuse involves two issues: 1. Can analysis of a hair sample demonstrate the presence of a drug and/or drug metabolite to a forensically acceptable degree of certainty? 2. What is the significance of a negative or positive finding?

The first issue is an analytical problem and is subject to the same concerns as any other forensic analysis. It is simply the extension of existing analytical techniques to a new biological specimen. Before a laboratory reports hair analysis results, it must first validate its procedures including determination of accuracy, precision, sensitivity and specificity. This is true even when implementing a "tried and true" method widely used by others. A forensic method must include a conclusive identification of the targeted analyte(s). Among currently available technologies, only GC/MS and MS/MS appear to provide the degree of certainty and the sensitivity necessary for confirmation of drugs in hair.

Over the past few years, numerous papers dealing with immunoassay screening and GC/MS or MS/MS confirmation of drugs in hair samples have been published in peer reviewed journals. Some papers have included data on the accuracy, precision, sensitivity and specificity of reported methods and have presented data from the analysis of actual human hair samples for various drugs. These studies demonstrate that using widely available technology, it is possible to detect and identify abused drugs and metabolites including cocaine, opiates, amphetamines, tetrahydrocannabinol and others including nicotine, methadone, barbiturates and benzodiazepines in hair samples. Published reports describe the use of instruments and techniques commonly employed in forensic urine drug testing and other forensic toxicology analyses. Furthermore, reports from multiple laboratories support the concept that forensic hair analysis for many abused drugs is achievable by a forensic laboratory.

Certified quality control hair samples are presently available only for cocaine analysis, but, undoubtedly, others will be produced as a need is demonstrated. In the meantime, most laboratories can obtain hair from known drug abusers and from individuals known to be drug free. Many forensic laboratories presently use comparable specimens as quality control materials. Certainly, forensic urine drug testing was well established before the first commercial quality control materials became available.

For any new forensic technique to achieve acceptance by the relevant scientific community, all details of the procedure and supporting validation documentation must be made available for peer review. Furthermore, in any given case, the sample and QC

data and chain of custody documents must be made available, upon request, to experts appointed by or on behalf of the testee or to a Medical Review Officer.

From a purely analytical standpoint, the analysis of hair for some drugs of abuse can rise to the level of forensic acceptability if done by a laboratory of quality under generally accepted guidelines for forensic drug testing. However, the interpretation of hair testing results is subject to major uncertainty that severely limits the applicability of the methodology at this time.

The most critical concern from the standpoint of protection of the innocent is the potential for contamination of the hair by drug introduced from the environment. Because hair is continuously exposed, the potential for contamination with a drug from the air or from physical contact with the hands or some contaminated object (e.g.: a comb) gives rise to serious concern. Recently published reports indicate that externally introduced drug is extremely difficult, if not impossible, to remove completely, even with harsh washing procedures that partially extract drug and metabolites deposited from the body fluids. Data have been presented in support of a "wash kinetics" approach involving analysis of sequential washings from drug-positive hair samples to distinguish hair contaminated by the environment from hair containing drug deposited from body fluids<sup>1</sup>. However, the data come from the analysis of freshly contaminated control hair samples. This controlled experimental scenario does not mimic exposure of a hair sample to low level, but frequent, environmental contamination or even a single contamination event followed by weeks or months of daily bathing. In such a situation, the only remaining traces of drug may be those that have penetrated into the hair shaft, perhaps making the wash kinetics analysis ineffective as a means of recognizing the contamination. If the wash kinetics approach is to be recognized as effective for identifying environmental contamination of hair samples it must be evaluated further with control samples approximating realistic contamination scenarios.

Perhaps, the best approach to overcoming concerns over environmental contamination involves identification of metabolites of the drugs in hair. To provide convincing evidence of drug use, the targeted analytes would need to be true metabolites, not chemical hydrolysis or pyrolysis products. For example, cocaine, benzoylecgonine, ecgonine methyl ester, cocaethylene and norcocaine have been demonstrated in the hair of cocaine abusers. Norcocaine or cocaethylene would appear to satisfy the criterion of metabolic origin, but not

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<sup>1</sup>Baumgartner and Hill, 1992. (See Supplemental Bibliography). Also presented at the International Symposium on Forensic Toxicology, (FBI Academy, Quantico, VA. June 15-19, 1992.) under the title "Hair Analysis for Drugs of Abuse: Forensic Issues."  
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benzoylecgonine or ecgonine methyl ester which can be formed by chemical hydrolysis. The identification of 11-nor-9-carboxy-delta-9-tetrahydrocannabinol in hair would document marijuana use more effectively than detection of THC which might have come from the smoky atmosphere of a rock concert. Clearly more research is needed before hair analysis can conclusively identify use of illegal drugs and exclude identification of innocent persons whose hair was inadvertently and unknowingly contaminated with traces of a drug.

Another area of concern that has not been adequately investigated is the potential for bias conveyed by age, sex, racial characteristics, hair color, hair type, or various hair treatments. Research is needed to determine if problems exist and, if so, to what extent they may adversely affect the use of hair testing.

The above issues must be resolved before hair testing can be accepted for workplace drug screening, since serious adverse consequences may result from a positive laboratory report. On the other hand, when accompanied by other competent evidence implicating an individual in illegal drug use, hair analysis can provide useful information that may be unobtainable through any alternative toxicological examination. As part of a postmortem investigation, the analysis of a hair sample may yield evidence concerning the decedent's drug use pattern over the weeks or months prior to death. In addition, hair analysis may be used to support or discredit claims of innocence made by an individual whose urine has tested positive for drugs or who is accused by witnesses of having used a drug at some remote time. If morphine is detected in urine or other body fluid, testing hair for heroin and 6-monoacetylmorphine might distinguish between heroin abuse and consumption of poppy seed products or some legitimate pharmaceutical preparation containing codeine and/or morphine.

The committee believes that use of hair analysis as an investigational technique need not await the resolution of all factors potentially affecting its interpretation. For example, establishing a relationship between dose of a drug and ultimate concentration of that substance and/or its metabolites in hair would add dimension to the interpretation of drug concentrations in hair segments, but the absence of that knowledge does not render hair analysis useless. Neither is it necessary to understand the mechanism of incorporation of drugs in hair or to accurately define the interval from drug use to drug appearance in the hair shaft prior to acceptance of the technology of hair analysis. Continuing research will define the various factors that affect interpretation of hair analysis results. In the interim, interpretation of positive or negative hair analyses must be limited to that supported by current knowledge, as is the case with other aspects of forensic toxicology.

SUPPLEMENTAL BIBLIOGRAPHY ON HAIR TESTING FOR DRUGS

- Arnold, W., "The Determination of Drugs and Their Substitutes in Human Hairs," For. Sci. International, 46:17-18 (1990).
- Baer, J.D., Baumgartner, W.A., Hill, V.A., Bland, W.H., "Hair Analysis for the Detection of Drug Use in Pretrial, Probation and Parole Populations," Federal Probation, 55:1-10 (1991)
- Bailey, D.N., "Drug Screening in Unconventional Matrix: Hair Analysis," JAMA, 262(23):3331 (1989).
- Balabanova, S., Arnold, P.J., Brunner, H., Luckow V., and Wolf, H.U., "Detection of Methadone in Human Hair by Gas Chromatography/Mass Spectrometry", Z. Rechtsmed, 102:495-501 (1989).
- Balabanova, S., "Investigations of the Cocaine and Methadone Transfer In and Out of the Hair in Vitro," The International Association of Forensic Toxicologists, Copenhagen (Abstract) (June, 1991)
- Balabanova, S., Schneider, E.I., "Comparative Determination of Cocaine in Human Hair using Radioimmunoassay and Gas Chromatography/Mass Spectrometry." The International Association of Forensic Toxicologists, Copenhagen (Abstract) (June, 1991).
- Baumgartner, W.A., "Hair Analysis for Drugs of Abuse: Solving the Problems of Urinalysis," Testimony before the Subcommittee on Human Resources, Committee on Post Office and Civil Service, United States House of Representatives, May 20, 1987.
- Baumgartner, W.A. and Hill, V.A., "Hair Analysis for Drugs of Abuse," Recent Developments in Therapeutic Drug Monitoring and Clinical Toxicology, ed. I. Sunshine. Marcel Dekker, Inc., New York, NY. 577-597 (1992).
- Baumgartner, W.A., Hill, V.A., Baer, J., "Hair Analysis for Drugs of Abuse, Parole/Probation Populations." National Institute of Justice Final Report. Grant 86-IJ-CX-0029. Long Report, awaiting NIJ release for publication (report available).
- Baumgartner, W.A., Hill, V.A., Tallos, J.A., Bland, W.H., "Detection of Drug Use by Radioimmunoassay (RIA) Analysis of Hair," Clinical Nuclear Medicine, (Suppl., Vol. 10): p.A3 (1985).
- Brunner, H., Balabanova, S., Homoki, J. Wolf, H.U., "Determination of Benzoyllecgonine in Human Scalp Hair Following Cocaine Abuse by Gas Chromatography-Mass Spectrometry (GC-MS) [Ger]," Beitrag zur Gerichtlichen Medizin, 46:127-134 (1988).
- Cartmell, L.W., Aufderhide, A., Weems, C., "Cocaine Metabolites in Pre-Columbian Mummy Hair," J. of the Oklahoma State Med. Assoc., 84:11-12 (1991).

08/11/1992 1

Cartmell, L.W., Aufderheide, A.C., Springfield, A., Weems, C., Arriaza, B., "The Frequency and Antiquity of Prehistoric Coca Leaf Chewing Practices in Northern Chile: A Radioimmunoassay Study of a Cocaine Metabolite in Human Mummy Hair," Latin American Antiquity, (September, 1991).

Ceder, G., Ecklund, A., "Determination of Opiates in Biological Materials and Some Aspects on the Interpretation of the Presence of Morphine and 6-acetylmorphine." The International Association of Forensic Toxicologists, Copenhagen (Abstract) (June, 1991).

Cone, E.J., Yousefnejad, D., Darwin, W.D., Maguire, T., "Testing Human Hair for Drugs of Abuse. II. Identification of Unique Cocaine Metabolites in Hair of Drug Abusers and Evaluation of Decontamination Procedures." J. Anal. Tox., 15:250-255 (1991).

Darwin, W., "Simultaneous Assay for the Detection of Cocaine, Opiates and Their Metabolites in Hair by GC/MS." Society of Forensic Toxicologists, Montreal (Abstract) (September, 1991).

Denk, R., Raff, I., Sachs, H., "Qualitatssicherung bei Untersuchung Von Kopfharen zum Nachweis von Betaubungsmitteln. (Quality Assurance in Examination of Hair for Drugs of Abuse)," Toxichem & Krimtech, 79-83 (1991).

Forman, R., Schneiderman, J., Klein, J., Graham, K., Greenwald, M., Koren, G., "Accumulation of Cocaine in Maternal and Fetal Hair; the Dose Response Curve," Life Sciences, 50(18):1333-1341, (1992).

Fritch, D., Groce, Y., Rieders, F., "Cocaine and Some of its Products in Hair by RIA and GC/MS." J. Anal. Tox., 16:112-114 (1992).

Goldberger, B.A., Caplan, Y.H., Maguire, T., Cone, E.J., "Testing Human Hair for Drugs of Abuse. III. Identification of Heroin and 6-Acetylmorphine as Indicators of Heroin Use." J. Anal. Tox., 15:226-231 (1991).

Harkey, M.R. and Henderson, G.L., "Hair Analysis in Drugs of Abuse," Advances in Analytical Toxicology, R.C. Baselt (Editor), Year Book Medical Publishers, Inc., Chicago, Vol. 2, 298-329 (1989).

Harkey, M., Henderson, G.L., Zhou, C., "Simultaneous Quantitation of Cocaine and Its Major Metabolites in Human Hair by Gas Chromatography/Chemical Ionization Mass Spectrometry," J. Anal. Tox., 15:260-265 (1991).

Jeger, A., Briellman, T., "Morphine Determination in Hair by TLC." The International Association of Forensic Toxicologists, Copenhagen (Abstract) (June, 1991).

08/11/1992 2

Kaferstein, H., and Stich, "Anmerkungen zu: Detection of Methadone in Human Hair by Gas Chromatography/Mass Spectrometry, and Tetrahydrocannabinole im Haar Von Haschischrauchern," Z. Rechtsmed. 103:393-396 (1990).

Kidwell, D.A., and Blank, D.L. "Hair Analysis: Techniques and Potential Problems," Recent Developments in Therapeutic Drug Monitoring and Clinical Toxicology, I. Sunshine. ed., Marcel Dekker, Inc., New York, New York, 555-563 (1992).

Kintz, P., Ludes, B., Mangin, P. "Evaluation of Nicotine and Cotinine in Human Hair by RIA and GC/MS," J. For. Sci., 37:72-76 (1992)

Kintz, P., Ludes, B., Mangin, P. "Detection of Drugs in Human Hair Using Abbott AD<sub>x</sub> With Confirmation by Gas Chromatography/Mass Spectrometry (GC/MS)," J. For. Sci., 37:328-331 (1992).

Kintz, P., Tracqui, A., Ludes, B., Mangin, P. "Opiate Concentrations in Human Hair of Head, Axillary, and Pubic Regions," American Academy of Forensic Sciences, New Orleans, (Abstract K59) (1992).

Magura, S., Freeman, R.C., Siddiqi, Q., Lipton, D.S., "Validity of Hair Analysis for Detecting Cocaine and Heroin Use Among Addicts," Int. J. Addictions, 27:51-69 (1991).

Martz, R., Donnelly, B., Fetterolf, D. and Lasswell, L., Hime, G.W., Hearn, W.L., "The Use of Hair Analysis to Document a Cocaine Overdose following a Sustained Survival Period Before Death", J. Anal. Tox., 15:279-281 (1991).

Matsuno, H., Uematsu, T., and Nakashima, M." The Measurement of Haloperidol and Reduced Haloperidol in Hair as an Index of Dosage History," Br. J. Clin. Pharmacol., 29:187-194 (1990).

Maurer, H.H., Fritz, C.F., "Forensic-toxicologic Detection of Pholcodine in Urine and Hair," Beitrag zur Gerichtlichen Medizin, 48:37-39 (1991).

McBay, A.J., "Forensic Hair and Urine Drug Testing," Society of Forensic Toxicologists, Montreal, (Abstract) (September, 1991).

McBay, A.J., "Hair Drug Testing: Review and Update," Proceedings: 29th International Meeting of TIAFT, ed. B. Kaempe, 20-41 (1991)

Mieczkowski, T., Barzelay, D., Gropper, B., Wish, E., "Concordance of Three Measures of Cocaine Use in an Arrestee Population: Hair, Urine, and Self-Report," J. Psychoactive Drugs, 23:241-246 (1991).

Mieczkowski, T., "New Approaches in Drug Testing: A Review of Hair Analysis." Annals, Amer. Acad. Political and Social Sci., 521:132-150 (1992)

08/11/1992 3

Miyazawa, N., Uematsu, T., Mizuno, A., Nagashima, S., Nakashima, M., "Ofloxacin in Human Hair Determined by High Performance Liquid Chromatography," For. Sci. International, 51:65-77 (1991).

Moeller, M.R., and Fey, P. "Detection of Cocaine, Benzoyllecgonine and Methylecgonine in Human Hair by Gas Chromatography/ Mass Spectrometry," Naunyu-Schmiedeberg Archives of Pharmacology, 344 (Suppl. 2): R120 (Abstract) (1991)

Nagai, T., Sato, M., Nagai, T. Kamiyama S., Miura, Y., "A New Analytical Method for Stereoisomers of Methamphetamine and Amphetamine and Its Application to Forensic Toxicology," Clinical Biochemistry, 22(6):439-442 (1989).

Nakahara, Y., Takahashi, K., Shimamine, M., Takeda, Y., "Hair Analysis for Drug Abuse: I. Determination of Methamphetamine and Amphetamine in Hair by Stable Isotope Dilution Gas Chromatography/Mass Spectrometry Method," J. For. Sci., 36(1):70-78 (1991).

Ostrea, E.M., Jr., Welch, R.A., "Detection of Prenatal Drug Exposure in the Pregnant Woman and Her Newborn Infant," Clinics in Perinatology, 18(3):620-645 (1991).

Reuschel, S.A., and Smith, F.P., "Benzoyllecgonine (Cocaine Metabolite) Detection in Hair Samples of Jail Detainees Using Radiomunoassay (RIA) and Gas Chromatograph/Mass Spectrometry (GC/MS)". J. of For. Sci., 36(4):1179-1185 (1991).

Sato, R., Uematsu, T., Sato, R., Yamaguchi, S., Nakashima, M. "Human Scalp Hair as Evidence of Individual Dosage History of Haloperidol: Prospective Study," Therapeutic Drug Monitoring, 11:686-691 (1989).

Scheller, M., Sachs, H., "The Detection of Codeine Abuse by Hair Analysis [Ger]," Deutsche Medizinische Wochenschrift, 115(35):1313-1315, (1990).

Siegel, R.K., "Repeating Cycles of Cocaine Use and Abuse," Treating Drug Problems, 2:289 (1992).

Springfield, A.C., "Coca Leaf Practices Among Ancient Chiribayas: Benzoyllecgonine in Mummy Hair." American Academy of Forensic Sciences, New Orleans (Abstract K59) (1992).

Sramek, J., Baumgartner, W.A., Ahrens, T.N., Hill, V.A., Cutler, N.R. "Detection of Benzodiazepines in Human Hair by Radioimmunoassay," The Annals of Pharmacotherapy, 26:469-472 (1992).

Suzuki, O., Hattori, H., "Detection of Methamphetamine and Amphetamine in a Single Human Hair and Nail Clippings by GC/CI," Koenchu-Iyo Masu Kenkyukai, 8:201-204 (1984).

08/11/1992 4

Suzuki, O., Hattori, H., "Analysis of Methamphetamine in Human Hair by Mass Fragmentography," Esie Kagaku, 30:23-26 (1984).

Tagliaro, F., Marigo, M., Dorizzi, R., Rigolin, F., "Detection of Morphine in the Hair of Opiate Addicts With the Abbott TD<sub>x</sub>: A Note of Caution", Clin. Chem., 34(6):1365-1366 (1988).

Tracqui, A., Kintz, P., Ludes, B., Mangin, P. "Amitriptyline Concentrations in Hair from Psychiatric Subjects: A Tool for Estimating Long-Term Patient Compliance to Therapy," American Academy of Forensic Sciences, New Orleans (Abstract K57) (1992).

Uematsu, T., Yamada, K., Matsuno, H., Nakashima, M. "The Measurement of Haloperidol and Reduced Haloperidol in Neonatal Hair as an Index of Placental Transfer of Maternal Haloperidol," Therapeutic Drug Monitoring, 13:183-187 (1991).

Uematsu, T., Miyazaw, N., Nakashima, M., The Measurement of Ofloxacin in Hair as an Index of Exposure," Eur. J. Clin. Pharmacol., 40:581-584 (1991).

Welch, R.A., Matres, S., Ages, J., Ostrea, E., Sokol, R.J., "Radioimmunoassay of Hair is a Valid Technique in Determining Maternal Cocaine Abuse," Substance Abuse, 11:214-217 (1990).

08/11/1992 5